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SOME ASPECTS OF MOTIVATION IN SUCCESS AND FAILURE AT UNIVERSITY

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1. INTRODUCTION

The outline of my findings which I shall try to present in this paper must be extremely sketchy although I have been engaged in the work of educational survey and counselling for the last four years and have accumulated a substantial amount of data about various aspects of academic success and failure. My chief difficulty lies in presenting to you a small body of results which should satisfy your wish for a compact hypothesis supported by verifiable data, without at the same time making you wonder whether by presenting such a brief sketch my aim is not one to illuminate but rather to confuse the issues which we have all come here to clarify.

The word motivation often evokes images of an endeavour of getting something or of getting somewhere; being pulled or driven towards a goal or an object of want or desire. An old folk proverb I know says that "There is no impassable road to the person you love". This proverb will, of course, be more readily understood in these regions of the world where roads are passable, more often as a result of the clemency of the weather than as an outcome of the 'concrete and tarmac' ingenuity of modern road architecture. No part of the symbolism of this proverb is however irrelevant to our subject under discussion and I will try to bring these points to your notice.

My choice of this proverb is determined by its main connotation of FEELING: implying that the object of an arduous journey is an object of love and affection - the equally proverbial love of study. I could, no doubt, have quoted another proverb often used in the context of motivation or striving: "Where there's a 'will' there's a way". But I shirked from it for what seems to me two important reasons. One, because the problem of 'will' has a connotation of power - a driving force rather than attraction. The second, because preoccupation with the problem of 'will', free or determined, indicates, in a clinical sense, a part of a syndrome of an authoritarian personality (Dicks 1950) where the tendency of thinking in terms of black and white dichotomies leads to a host of dualistic conceptualisations such as mind-body, nature-nurture, aptitude-ability. There is, in such a system, little room for the greatest part of human experiences consisting rather of a continuous and complex middle of deep or passing impressions, hurts, joys, regrets and longings which can be seldom categorised into any rigid framework. Here, I must, in parenthesis, mention that it is also my contention that many of our educational ills might be

an outcome of a too strong attachment to these rigid philosophical concepts. I am also inclined to hold the view that an exaggerated tendency to this kind of reasoning leads to a rather morbid outlook on education embodied, at its extreme, into a doctrine of an intellectual superman. Morbid, I say, because in any social group undue preoccupation with the selection of an elite betrays a deep sense of social deprivation and often leads to an outburst of group hatred, the fruits of which we have experienced twice in this century in Europe - the very home of the intellectual and technological elite. I submit that some of our young academics might also be susceptible to the same psychological vicissitudes of the 'disenchanted elect'. As one of the students in counselling therapy has told me: the more a person feels rejected the more he wants to be elected.

Having made my choice of proverbs I must stand by it in my endeavour to show its relevance to learning - particularly to a learning at the later stages of education and at University. The most powerful motive of learning is an attraction rather than a drive - an attraction to explore or perhaps even to exploit - but at all times to achieve the satisfaction of self-esteem or self-fulfilment. It is, in all senses of the word, a social fulfilment. We seem to learn in order to be appreciated and thus to attain that measure of comfort which enables us to live at peace with one another. A human being, according to such a view, can be considered a feeling rather than a thinking organism - and learning has a social purpose and this purpose is always included in an academic interest. The phrase of 'learning for learning's sake' seems, on this assumption, an empty phrase.

Returning to my proverb of the impassable roads - we must warn ourselves against thinking that our students march or drive in their search for knowledge along the well-surfaced roads like those to Watford or Reading. By thinking in terms of such conditions we cannot conceive the bewilderment of a young student in the roadless expanse of the academic fields of study, for we ourselves having got used to the comforts of our own beaten tracks, may often imagine that it is not necessary to aim at getting somewhere to get there, since the very road carried us to our goals. Neither can we sympathise with those who became lost because for us all roads lead home but for them it is very much an outward bound pilgrimage.

Our students are not, as yet, like ourselves; they are usually much younger and they seek knowledge or skills with the zest of an impatient but, at the same time, forlorn wanderer. Most struggle on manfully and bravely and in the end get there, but many turn back from their paths. Why do they abandon their quest? Is it because the achievement of a degree was not worth the effort of facing the endless and often uncharted paths of study? Was their love of study not strong enough to sustain them or was it because our struggling student displayed the ambivalent attitude of a person on the crossroads of life described so aptly by Conrad:

> 'I strain my mental eyesight only to discover that, as with the complexion of all our actions, the shade of difference was so delicate that it was impossible to say .. It might have been flight and it might have been a mode of combat".

2. SHORT AND LONG RANGE GOAL ORIENTATION AMONGST 'WEAK STUDENTS' and 'WITHDRAWALS'.

The University of Birmingham, with the financial support of the University Grants Committee, began in 1964 an investigation into the factors affecting the performance of undergraduate students. The survey team consists of three members of staff; an educational psychologist attached to the University School of Education, a psychiatrist from the Department of Psychiatry and attached part-time to the University Health Service, and the Records and Statistics Officer of the Registry. Two members of the team, the psychiatrist and the educational psychologist also provide psychiatric and educational counselling service for students in difficulties.

The team has conducted several investigations into factors contributing to the success and failure of students, the main scheme being a long-range investigation of a random sample of students whose progress has been followed since their admission in 1964.

Other shorter projects are concerned mainly with specific problems of difficulties in studies, weakness in academic performance, failure to pursue courses of study and attitudes of students to teaching and learning situations. An additional large-scale exercise has also been carried out in order to investigate problems of personality as related to the choice of subjects of study and to academic achievement; the sample involved in that enquiry consisted of all first year entrants for the session 1965/66 and 1966/67.

The data presented in this talk deals mainly with three short range investigations of students who were judged by their departments as weak academically or who failed and withdrew from the University.

(a) The Cohort Method of estimating wastage and withdrawal of students.

A large University is a very complex educational enterprise and Birmingham is no exception. The total full-time population of undergraduate and postgraduate students is at present 6484. The movement of students in and out of the University is considerable. Many students who drop out in any one year may return to a new course of study in the next or subsequent year. Thus the annual tables of withdrawals do not give a true reflection for that year of the lack of eventual success of students. It is for this reason that consideration must be given to finding a more permanent and positive measure of success and thus, indirectly, of wastage.

The only factor which can be considered permanent is the 'survival' of a student at the University. Even this can be sub-divided, for a student may survive 'on schedule' or merely 'survive' after having suffered some delay to his progress.

The cohort method of accounting for success and failure involves following the progress of each student throughout his academic career. This has been done for the cohort of undergraduates who entered the first year of a

three year course for the first time in October 1964. This limited definition has been drawn to exclude Medical and Dental students, students on four year courses and those who were about to repeat their first year.

TABLE 1.1. The 1964 Cohort and Random Sample: on schedule success in a 3 year course of study.

	Degree on Schedule	
	Cohort 1964 %	Random Sample 1964 %
Physical Sc.	84.0	83.7
Biological Sc.	86.8	80.0
Medical Sc.	90.3	100.0
Applied Sc.	78.3	85.7
Arts	88.4	95.9
Commerce & Social Sc.	82.4	88.5
Law	69.4	66.6

TABLE 1.2. The progress of the 1964 Cohort and Random Sample who entered for the 3 year course.

	Cohort 1964		Random Sample 1964	
	n	%	n	%
Entered	1244	100.0	185	100.0
Degree on schedule	1031	82.9	160	86.5
Surviving	83	6.7	11	6.0
Withdrawn	130	10.4	14	7.5
	1244	100.0	185	100.0
Withdrawals :				
(a) Academic	88	7.1	(a) 13	7.0
(b) Personal, Voluntary, Medical	42	3.3	(b) 1	.5
	130	10.4	14	7.5

A summary of the progress of the cohort and of the Random Sample drawn from the same cohort is shown in Tables 1.1 and 1.2. The close parallels in success and failure of these two groups give us confidence that our Random Sample is a reasonably good one. The total percentages of students who withdrew are well below the national average but should not, of course, put us in any jubilant mood; a loss of one in ten students is still an extremely high figure in terms of educational economics. In terms of human stress and confusion it is of course most regrettable and no efforts to reduce this figure should be considered too great.

Let us, from now on, take a glimpse of what happens to some of the 10% of our students when we take a look at their problems in the light of their aspirations.

(b) Some factors arising from the investigation of students who were weak academically or who withdrew from the University.

Any thorough investigation of students who fail presents great practical difficulties. The 'post factum' interviews are difficult to arrange, embarrassing to conduct and subject to severe 'sour grapes' effect. The response, on a voluntary basis is, in our experience, not much above 50%. We have done, however, one or two exercises in this line and the results are as follows:

(i) Small samples of 'withdrawals' and 'weak students'.

An investigation of 98 of the students who withdrew in 1964/65 showed that those who left University after failing sessional or final examinations were, in some respects, different from those who left earlier and before they sat examinations. Students who left after failing examinations were classed, more frequently as those who had academic difficulties (35.7%) and who lost interest (40.4%) than those who left before examinations where the figures were 16.6% and 16.6% respectively. Students who left before examinations had a higher incidence of medical (29.1%), psychiatric (29.1%), and personal difficulties (25.0%) than those who left after failing examinations (7.1%, 11.9% and 17.8% respectively).

Although this exercise could not, in any sense, be regarded as a controlled experiment, it has shown that 'Academic Difficulties' and 'Lack of Interest' were the most frequent, broad classification of reasons contributing to the lack of success in studies. The most obvious line of further enquiry was to find out how the students themselves regarded their problems of withdrawal and failure.

The exercise with the weak students was carried out during the 1965/66 session when the Survey Team tried to contact all students who showed signs of weakness in their studies in the first term of the session. Altogether 168 students were identified by their own departments as those who appeared to have experienced difficulties in their work. In addition, 15 very good students were included in this sample to disguise the nature of the exercise. The students were called for interviews as a small additional sample and it was only

during the interviews that they revealed their weakness or difficulties in academic work. The team interviewed only 102 students, i.e. (55.7%) of the total number of 183 who were asked to come for interview.

For the purpose of analysis this sample of students was divided into three main groups:

Weak Successful - students who were weak in their work but who passed their sessional examinations and were allowed to continue their studies.

Weak-Unsuccessful - students who were weak in their work and who failed their sessional examinations and were asked to withdraw.

Very Good - students who were regarded as very strong in their academic work and achievement.

As these students were formally unaware of their exact position and, as they were interviewed before they took their sessional examinations, their response to the questions asked by the Survey Team can be regarded as relatively free from the effects of disappointment. Several areas of discrepancies between these three groups of students emerged from the final analysis. These are given as follows:

(ii) Admission grades.

The weak students who failed their sessional examinations tended to have higher grade G.C.E.'s than those who passed. The Very Good Students, however, tended to have highest grades; 68% of the Weak-Unsuccessful Students held top grades as against 46% of the Weak-Successful ones. The differences between all groups in this respect are significant at $.01 > P > .005$. The significant difference arises mainly between the Very Good Students and the other two groups, though the difference between the Weak-Unsuccessful and the Weak-Successful reaches almost 5% level. Table 2.1 shows these differences.

TABLE 2.1. G.C.E. grades of the three groups of students in the sample

Group of Students	Combined Grades					
	UCCA Classification (1.3 + 2.3)		UCCA Classification (3.3 and others)		Totals	
	No.	%	No.	%	No.	%
Weak-Successful	31	(45.6)	37	(54.4)	68	(100)
Weak-Unsuccessful	13	(68.4)	6	(31.6)	19	(100)
Very good	13	(86.7)	2	(13.3)	15	(100)
Total	57		45		102	

$X^2 = 9.89$ $.01 > P > .005$**

(iii) Reasons for difficulties in studies as given by students themselves.

Students in the three groups differ in their statements about reasons for difficulties in studies. The Weak-Unsuccessful students yielded the largest group (52.6%) of students who found that they did not want to do their particular course; of the Weak-Successful 26.5% gave the same response, and of the Very Good ones none made this statement ($.05 > P > .025$). Difficulties in study are reported by 95.6% of the Weak-Successful students and by 100% of the Weak-Unsuccessful. The Very Good Students report these difficulties in 33.3% of cases ($P < .001$). Illness whilst at University has been reported more frequently by the Weak-Unsuccessful students (47.4%) than by the Weak-Successful (23.5%) and the Very Good students (13.3%) ($.05 > P > .025$). Difficulties in specific subjects were reported more frequently by the Weak-Unsuccessful students (68.4%) than by the Weak-Successful (25.0%) and the Very Good ones (6.0%) ($.025 > P > .01$).

(iv) Future orientation.

The influence of motivation was assessed by asking students about their plans for the future. One question asked about the short range vocational objectives and the other about the long range goals in the next ten years. The replies were classified as being Definite, Vague, and Unknown. The answers to these open-ended questions were assessed by one person who judged them by the following criteria:

The goals were classed as Definite when the nature of the intended professional work or activity was clearly indicated, e.g. "Teaching: French, Drama", "Car industry (Fords) design", "Electrical engineering - project in Uganda". They were classed as Vague when the nature of professional work or activity was stated in more general or conditional terms, e.g. "Work in petroleum", "Work in industry or possibly teach", "Do what interests me - arts and politics - sociology (literature)". The classification of Unknown was used when no indication was given about the nature of professional activity, e.g. "No objectives", "No goals as far as that", "No specific plans". "Don't know".

When the answers classified as indicating Definite goals were matched against those classed as Vague and Unknown, clear differences seem to have emerged between the statements of the two groups of students. Some of the students would not commit themselves to a definite statement and preferred to leave this question unanswered. Their reactions were treated as 'no response' - although they could have been included in the 'Vague - Unknown' category since they seemed not to have had definite goals. If this procedure was adopted the differences between responses of the successful and the unsuccessful students would have been significant at $P < .01$ in both Table 3.1 and 3.2.

The Weak-Successful students showed greater tendency to be more specific about their goals, both short and long range, giving between 45 - 59% positive responses whilst the Weak-Unsuccessful students were positive only between 17 - 19%. It should be recorded that in this exercise the Very Good

TABLE 3.1. The Weak-successful and the Weak-unsuccessful students and their responses to questions about short and long range goals

	Short Range Goals					
	Definite		Vague & Unknown		Total	
	N	%	N	%	N	%
Weak-Successful	29	(45.3)	35	(54.7)	64	(100.0)
Weak-Unsuccessful	2	(16.7)	10	(83.3)	12	(100.0)
Total	31		45		76*	
					+ 11	No response
					87	

* The same population as in Table 2.1 but 4 Weak-successful and 7 Weak-unsuccessful students gave no response to this part of questionnaire.

TABLE 3.2. The Weak-successful and the Weak-unsuccessful students and their responses to questions about short and long range goals

	Long Range Goals					
	Definite		Vague & Unknown		Total	
	N	%	N	%	N	%
Weak-Successful	38	(59.4)	26	(40.6)	64	(100.0)
Weak-Unsuccessful	3	(18.8)	13	(81.2)	16	(100.0)
Total	41		39		80*	
					+ 7	No response
					87	

$X^2 = 6.90$ $.01 > P > .005$**

* The same population as in Table 2.1 but 4 Weak-successful and 3 Weak-unsuccessful students gave no response to this part of questionnaire.

students were 100% definite about their short and long range goals, but their responses were not included in the calculation assessing differences between the other two groups of students in this sample.

Thus, our investigation of the weak students suggests that those in the Weak-Unsuccessful group, in spite of their high admission grades, are subject to difficulties in learning which seems to be related to problems of motivation. They are less specific about their professional objectives both in the more immediate and the more distant future. They are less happy about their choices of the courses of study. They are also subject to more frequent illness. From the total of 168 students who were regarded as weak, 36 (21.4%) withdrew after failing their sessional examination. This percentage is almost four times greater than the average first year failure rate in examinations. It seems that many weak students can be identified by tutors very early in their academic career and that they are four times as vulnerable with respect to examination failure as the general population of the undergraduates. An overall impression derived from the investigation of students who withdrew and who showed weakness in the first term of the 1964/65 session and of those who were weak in the 1965/66 session suggests that, amidst the host of possible individual reasons for academic failure, difficulties in studies and motivation could be regarded as major, operating influences.

(v) An additional enquiry.

An additional enquiry into reasons for withdrawal of 179 students was carried out by pooling all information available from the Health Service, Lodgings Warden, Welfare Officer, Departmental records, Registry and Educational Survey. The reasons for withdrawal of each student were discussed by the University Chief Medical Officer, the Lodgings Warden, the Records and Statistics Officer, and the Educational Survey Psychologist. Written notes from the Students' Welfare Officer and communications from Departments were taken into consideration. This exercise can be considered as another technique of investigating the problems of lack of success and failure in studies. It involved the pooling of information available from different sources and of weighing this evidence in discussion before a decision was reached about the possible contributory causes. The most important formal reasons for withdrawal of the 179 students who did not register by November 1967 were as follows:

(a)	Examination failure	126 students 68.5%
(b)	Voluntary withdrawal	31 students 16.8%
(c)	Medical and Psychiatric reason	16 students 8.7%

The most pronounced, possible contributory reasons which emerged from pooling information about students are as given below. The percentages are based on a total number of 110 out of 179 students about whom more information was available.

	n	%
Lack of interest	39	35.5
Persuaded to enter University	28	25.5
Difficulties in Studies	26	23.6
Difficulties at home	22	20.0
Personality difficulties	15	13.6
Emotional upsets	10	9.1

The percentages do not sum up to 100% as there are overlaps - the student being included in more than one category. These figures suggest that, just as in previous enquiries, difficulties in studies and motivation seem to play a vital part in the lack of success of students.

Factors related to admission were again checked and confirmed the previous findings that students who withdrew voluntarily and before examinations held significantly higher grades in G.C.E. A - levels than those who left as a result of failure in examination. The G.C.E. A - levels of students who failed in the first year did not, however, differ from the rest of the freshers in the same year. When 'lack of interest' was related to both 'voluntary withdrawal' before examination and 'withdrawal after examination', significant differences appeared. Amongst students who withdrew voluntarily before examination 61.3% were known to have reported a lack of interest, as against only 15.9% of those who withdrew after failing their examinations. This discrepancy could have very well arisen because students who left before their examinations made this statement when discussing their problems with a member of the University Staff.

One way of controlling this phenomenon would be to relate information about lack of interest with students' own statements about their decision to enter University. This has been done and Table 4.1, which includes all students about whom information was available in 1965/66, suggests a possible link between decision to enter University and interest in studies.

This table shows that 73% of students who entered University mainly as a result of their own wish seem to maintain their interest in studies whilst only 28.6% of those who were persuaded to enter showed continued interest in their work.

The statements of weak students about their decision to enter University were also related to their examination success and failure. In order to control for a possible 'sour grapes' effect, only those students were included in Table 4.2 who were asked about their decision to come to University during interviews long before they took examinations, i.e. when they were not fully aware of failure.

TABLE 4.1.

Decision to enter University	Lack of interest					
	Yes		No		Totals	
	N	%	N	%	N	%
Mainly persuaded	15	(71.4)	6	(28.6)	21	(100.0)
Mainly own wish	24	(27.0)	65	(73.0)	89	(100.0)
Total	39		71		100	

$X^2 = 12.79$ $P < .001$***

TABLE 4.2.

Decision to enter University	Weak-Unsuccessful (failed and withdrew)		Weak-Successful (passed and continued studies)		Totals	
	N	%	N	%	N	%
Mainly persuaded	28	(75.7)	9	(24.3)	37	(100.0)
Mainly own wish	50	(43.9)	64	(56.1)	114	(100.0)
Total	78		73		151	

$X^2 = 11.3$ $P < .001$***

Table 4.2 shows that of the weak students who were persuaded to come to University 75.7% were unsuccessful as against 24.3% who were successful. The figures for students who came to University as a result of their own wish show a reversed trend.

These differences were significant enough to justify further analysis of all data available to the Survey about the problem of difficulties in studies and decision to enter University and success and failure and withdrawal were related as shown in Table 4.3.

Table 4.3 shows that of the students who reported difficulties in studies and who were persuaded to enter University 80.6% were unsuccessful. This trend is reversed for those who entered as a result of their own wish. Success and failure in sustaining the courses of study, lack of interest and difficulties in

studies, appear to be affected by the decision to enter University.

TABLE 4.3.

Students reporting difficulties in studies						
Decision to enter	All Weak-Successful Students		Withdrawals and all Weak-Unsuccessful students		Totals	
	N	%	N	%	N	%
Persuaded	6	(19.4)	25	(80.6)	31	(100.0)
Own wish	49	(53.3)	43	(46.7)	92	(100.0)
Total	55		68		123	

$X^2 = 10.78$ $.005 > P > .001$**

The statements of 'weak' and withdrawing students who gave responses to questions about goals and decision to enter University were also compared. Table 4.4 shows that more students with Definite goals are in the 'own decision' category where the short range goals are considered. Additional analysis of this problem with the combined short and long range goals was carried out and this trend was confirmed (Table 4.5) with the significance at almost 5% level.

TABLE 4.4.

Short Range Goals						
Decision to enter University	Definite		Vague & Unknown		Totals	
	N	%	N	%	N	%
Own wish	54	(66.7)	27	(33.3)	81	(100.0)
Persuaded	6	(46.2)	7	(53.8)	13	(100.0)
Total	60		34		94	

TABLE 4.5

Short and long range goals combined						
Decision to enter University	Clearer Goals		Less Clear Goals		Totals	
	N	%	N	%	N	%
Own decision	67	(82.7)	14	(17.3)	81	(100.0)
Persuaded	8	(61.5)	5	(38.5)	13	(100.0)
Total	75		19		94	

Phi coefficient = .18 $X^2 = 3.0456$ $.10 > P > .05$

A further investigation was carried out to determine whether short and long-range motivation is related to success and failure of those students who reported difficulties in their studies. Analysis of all data available to the survey was carried out in this respect and Tables 4.6 and 4.7 show the results.

TABLE 4.6

	All students reporting difficulties in studies and their responses about short range goals					
	Definite		Vague & Unknown		Totals	
	N	%	N	%	N	%
All Weak-Successful, and those who withdrew but now returned and resumed studies	49	(70.0)	21	(30.0)	70	(100.0)
All Weak-Unsuccessful and those who withdrew altogether	6	(31.6)	13	(68.4)	19	(100.0)
Total	55		34		89	

$X^2 = 7.78$ $.01 > P > .005$**

TABLE 4.7.

	All students reporting difficulties in studies and their responses about long range goals					
	Definite		Vague & Unknown		Totals	
	N	%	N	%	N	%
All Weak-Successful and those who withdrew but returned and resumed studies	35	(50.0)	35	(50.0)	70	(100.0)
All Weak-Unsuccessful and those who withdrew altogether	4	(21.1)	15	(78.9)	19	(100.0)
Total	39		50		89	

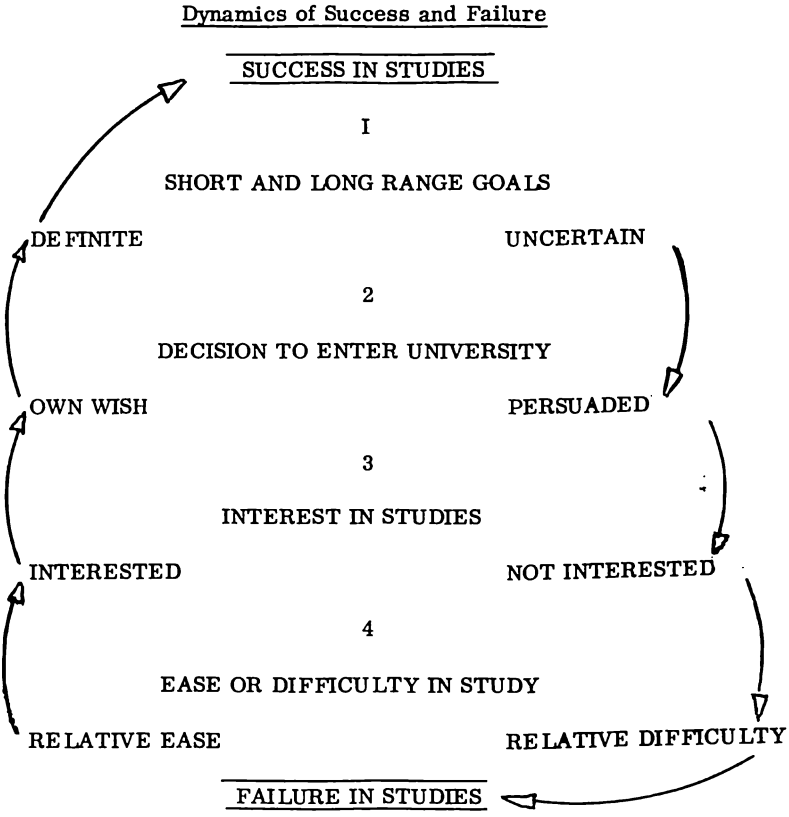
$X^2 = 3.97$ $.05 > P > .025$*

Tables 4.6 and 4.7 suggest that having a clearer goal is conducive to success in studies even when study difficulties are experienced by the students. This is particularly true of students who have definite short range goals.

(vi) Influences in success and failure.

The findings which emerge from these enquiries seem to be as follows: The four areas of influence contributing to failure can be named as uncertainty of the future goals, persuasion to enter University, lack of interest in the course and difficulties in studies. It seems axiomatic that four opposite influences would tend to contribute to success. This inference is strengthened by the fact that these influences seem to be significantly correlated. This inter-relatedness suggests that an improvement in one area might lead to improvement in the other two or three.

It might be helpful if these points, which emerge from the exercises carried out by the Survey Team, were supported by a diagrammatic representation of the 'blue-print for success or failure'.



FACTORS ON THE RIGHT TEND TO PULL TOWARDS FAILURE

The samples of students investigated by the Survey Team and described in this talk cannot be regarded as fully representative of all students who were weak and left University without success. It cannot be claimed that all these investigations carry the validity of the random sample. However, the data can be regarded as uniform as it was collected from interviews based on specially designed questionnaires and as such was suitable for statistical comparisons and analyses. The information obtained from analyses indicates some of the factors of motivation as expressed by students future goal orientation, decision to enter University and interest in subjects of study were sufficiently pronounced to warrant further investigation. The problem of the short and long range goals was investigated within the Random Sample of students and the results of this enquiry is described in the next point.

3. GOAL ORIENTATION AMONGST THE RANDOM SAMPLE OF STUDENTS

(a) Responses from the Random Sample

The responses shown by the Random Sample confirm that goal orientation is associated with achievement. The brevity of time allocated to this talk necessitates only a sketchy review of this tendency. I shall confine myself to presentation of tables and brief comments and inferences. All results pertain to a combined male and female population.

The distribution of responses of the Random Sample students to the questions about future goals is similar to those derived from a study at London University and quoted by Maddox. (Maddox 1967).

TABLE A.

	Definite Vocational Goals or Intellectual interests	Weak or Unsatisfactory motives
	%	%
Over-Achievers	88	12
Under-Achievers	57	43

Table 'A' shows that a substantially greater proportion (88%) of the 'over-achievers' had more definite goals. This is confirmed by the data obtained from our Random Sample. The analysis of the trends emerging from the correlation of achievement and goal orientation after the first and second year of studies showed that both short and long range goals are associated with achievement; the long range goals producing consistent but less pronounced associations. This inference has led me to adopt a new two-way classification of CLEARER and LESS CLEAR orientations. This classification was applied to an analysis of achievement of the Random Sample students after a three-year course of study and the results are shown in Table 5.1.

TABLE 5.1. Random Sample Analysis: Clearer and less clear goals of Male and Female Students and quality of degree and academic achievement after a three year course of study. (Combined short and long range goals).

Degree and attainments	Professional and Social Orientation					
	Clearer		Less Clear		Totals	
	N	%	N	%	N	%
Very High Achievers (Hons. Class I Class II div. 1)	54	(80.6)	13	(19.4)	67	(100.0)
Medium Achievers (Hons. Class II div. II)	53	(75.7)	17	(24.3)	70	(100.0)
Low Achievers (Hons. Class III and ordinary degree)	11	(55.0)	9	(45.0)	20	(100.0)
Setbacks to (Repeat Externally Repeat Internally changed courses)	10	(62.5)	6	(37.5)	16	(100.0)
Withdrawals	11	(64.7)	6	(35.3)	17	(100.0)
Total	139	(73.2)	51	(26.8)	190	(100.0)
Students in courses longer than 3 years duration	18	(94.7)	1	(5.3)	19	(100.0)
Total responding to questions on future goals	157	(75.1)	52	(24.9)	209	(100.0)

The very high achievers show closest association with clearer orientation; the general tendency is for the percentage of students with clearer goals to diminish with the lowering of achievement. Reverse tendency emerges with reference to the less clear goals. When the population of the three-year course students is divided between higher and lower achievers - those above III Class honours and those with III Class Pass, Ordinary, setbacks or withdrawals - the trend is statistically significant at $.025 > P > .01$. (Table 5.2).

TABLE 5.2. Random Sample Analysis: Clearer and less clear goals of Male and Female Students and higher and lower achievements after a three year course of study.

Degree and attainments	Professional and Social Orientation					
	Clearer		Less Clear		Totals	
	N	%	N	%	N	%
Higher Achievers (Hons. Class I. Class II div.I Class II div.II)	107	(78.1)	30	(21.9)	137	(100.0)
Lower Achievers (Hons. III and Non-Achievers (Setbacks and withdrawals)	32	(60.3)	21	(39.7)	53	(100.0)
Total	139		51		190	

$X^2 = 6.11$ $.025 > P > .01$*

TABLE 5.3. Random Sample Analysis: Clearer and less clear goals of Male and Female Students and quality of degree and attainment after a three year course of study.

Degree and attainment	Professional and Social Orientation					
	Clearer		Less Clear		Totals	
	N	%	N	%	N	%
Higher Achievers (Hons.I, II, div. I and II, div.4)	107	(78.1)	30	(21.9)	137	(100.0)
Lower Achievers (Hons. Class III and Ordinary degrees)	11	(55.0)	9	(45.0)	20	(100.0)
Non-Achievers Setbacks and Withdrawals	21	(63.6)	12	(36.4)	33	(100.0)
Total	139		51		190	

$X^2 = 6.587$ $.05 > P > .025$*

TABLE 5.4. Random Sample Analysis: Clearer and less clear goals and attainment after a three year course of study.

	Clearer		Less Clear		Totals	
	N	%	N	%	N	%
Higher Achievers (Hons. I, II div. I and II div. II)	100	(77.5)	29	(22.5)	129	(100.0)
Lower Achievers (Hons. III and ordinary)	9	(50.0)	9	(50.0)	18	(100.0)
Non-Achievers Setbacks and Withdrawals	13	(54.1)	11	(45.9)	24	(100.0)
Total	122		49		171(x)	

$X^2 = 9.88$ $.01 > P > .005$**

(x) This tabulation excludes Medical, Dental and Law Students.

A similar trend is confirmed by analyses shown in Tables 5.3 and 5.4. This last one excludes Medical, Dental and Law students who are known, from other analyses, to respond with a much greater frequency of definite statements about their careers; a feature which was completely out of proportion to the response of students in all other Faculties. These discrepancies arose from the method of classification of goals which was too generalised to discriminate between statements of students in faculties geared to a more clearly defined professional activity (Medicine, Dentistry, Law) and those of the students in faculties of Sciences or Arts which cater for a wider spectrum of professions. When these students are excluded from the calculations the significance of differences is increased to below 1% level. These analyses suggest that in spite of very crude parameters and low degree of predictability the factor of motivation as manifested by future goals, is a necessary concomitant of academic achievement.

We can, so far, agree with Gordon Allport who says: "The possession of Long-range goals distinguishes the human being from the animal, the adult from the child and in many cases the healthy personality from the sick. Striving, it is apparent, always has a future reference. People it seems are busy leading their lives into the future whereas psychology is busy tracing them into the past." (Allport 1955).

TABLE 6.1. Frequency distribution and mean Neuroticism Scores of Male Students in categories of achievement and future orientation after three years of study.

Achievement in Degrees	Goals									
	Clearer				Less Clear				Totals	
	n	%	$\bar{N}$	SD	n	%	$\bar{N}$	SD	n	%
Higher	68	(77.3)	10.9	4.35	20	(22.7)	12.0	4.08	88	(100.0)
Lower and Non-Achievement	15	(50.0)	12.2	4.31	15	(50.0)	11.8	4.94	30	(100.0)
Total	83				35				118	

Frequency distribution: $X^2 = 7.98$ $.005 > P > .001$**

TABLE 6.2. Frequency distribution and Mean Neuroticism Scores of Female Students in categories of achievement and future orientation after three years of study

Achievement in Degrees	Goals									
	Clearer				Less Clear				Totals	
	n	%	$\bar{N}$	SD	n	%	$\bar{N}$	SD	n	%
Higher	32	(78.0)	11.88(*)	3.41	9	(22.0)	8.89(*)	4.84	41 t=2.04 .05>P>.02*	(100.0)
Lower and Non-Achievers	7	(58.3)	15.14	4.32	5	(41.7)	11.00	6.32	12	(100.0)
Total	39				14				53	

Frequency distribution: X^2 = N.S.

(*) (*) significant difference between these means with 't' = 2.04 .05>P>.02*

(b) Goal orientation and personality

The responses of the Random Sample Students about clear and less clear goal orientation were related to Extraversion and Neuroticism as measured by Eysenck's Personality Inventory (Form B). For this purpose the male and female populations of students had to be treated separately, as females in our sample score very much higher on Neuroticism than the males.

Tables 6.1 and 6.2 show that male high achievers with clear goals tend towards stability and so do the female high achievers with less-clear goals. Female lower achievers and Non-achievers with clearer goals tend towards much higher neuroticism than the lower achievers with less clear goals. It is also noteworthy that differences between frequencies of achievers and non-achievers with clearer and less-clear goals are considerable within both populations. Higher Achievers with clearer goals show the highest percentage.

Tables 6.3 and 6.4 suggest that male higher achievers with less-clear goals tend rather towards introversion and the low achievers with less-clear goals tend towards extraversion. The low and non-achieving females with less clear goals show a directly opposite tendency. Female high achievers with less clear goals tend towards extraversion whilst the lower achievers with less clear goals tend towards introversion. We must thus assume that the goal orientation might be associated with personality dimensions, (Kogan and Wellock 1964); particularly because in both male and female populations the cells for low achievement and non-achievement and clearer goals tend to show higher scores on anxiety - especially where female students are concerned.

This brings us to another point about the relationship between achievement, goal orientation and stress which some students must be subject to when pursuing wrong courses or when they suffer from general disorientation with reference to their social or professional goals.

(c) The problem of stress

The problem of stress which might beset students who are too compulsive or too indefinite about their professional or social objectives can, to a certain extent, be assessed by analysing data pertaining to the attendance at the University Health Centre. (This problem has been elaborated in the full report on goal orientation in the Random Sample. Only the briefest summary is given here).

The general rationale behind this exercise can be briefly put as follows: A learning activity which seems pointless to an unplannful person or futile to a too-compulsive planner can be tolerated for some time by both such individuals who are trying to adjust to a new environment of study at University. It will not however, be tolerated for too long, and if the new approach to learning does not bring about a reduction of tension - if the student does not feel that his life at University is, in some way, contributing to his well being - the prospect of ever reducing the onset of anxiety seems remote or non-existent. An anxiety-inducing stimulus, be it learning or an unsatisfactory social life, must become an

TABLE 6.3. Frequency distributions and Mean Extraversion Scores for Male Students in categories of achievement and future orientation after three year courses of study.

Achievement in Degrees	Goals									
	Clearer				Less Clear				Totals	
	n	%	$\overline{E}$	SD	n	%	$\overline{E}$	SD	n	%
Higher	68	(77.3)	13.58	4.20	20	(22.7)	12.7	3.93	88	(100.0)
Lower and Non-Achievement	15	(50.0)	13.93	2.86	15	(50.0)	14.8	3.56	30	(100.0)

TABLE 6.4. Frequency distributions and Mean Extraversion Scores for Female Students in categories of achievement and future orientation after three year course of study.

Achievement in Degrees	Goals									
	Clearer				Less Clear				Totals	
	n	%	$\bar{E}$	SD	n	%	$\bar{E}$	SD	n	%
Higher	32	(78.0)	13.06	3.79	9	(22.0)	14.00	3.46	41	(100.0)
Lower and Non-Achievement	7	(58.3)	13.42	2.26	5	(41.7)	9.60	5.81	12	(100.0)

obnoxious object and if it cannot be avoided it might, in the end, lead to ill health or to a state of such misery that a visit to the doctors, the most obvious neutral agents at University, becomes a necessity.

The attendance of the Random Sample Students at the University Health Centre was of an order of 87% - only 29 students out of 217 did not visit University doctors during the three year course and 13 of those lived at home and were not registered with the University Health Centre. Tables 7.1 and 7.2 show frequencies of attendance in three and two classes of visits respectively. In view of some 46.5% of higher achievers visiting the doctors, I have decided to pursue this problem a bit further and to relate the frequency of visits to doctors to both personality and goals. The frequencies of visits of each student were transformed into a score and the averages of these scores served as an 'Index of Stress' for each group of achievers.

TABLE 7.1. Random Sample: Degree achievement and visits to University doctors

	No Visits or living at home		Some Visits 1 - 4		Frequent, Very frequent visits. 5 -15 + Psych. and Medical.		Totals	
	n	%	n	%	n	%	n	%
Higher Achievers	17	(13.2)	52	(40.3)	60	(46.5)	129	(100.0)
Lower and Non-Achievers	2	(4.8)	24	(57.1)	16	(38.1)	42	(100.0)
Total	19		76		76		171	

TABLE 7.2. Random Sample: Achievement and Visits to University Doctors

	Visits		No Visits or living at home		Totals	
	n	%	n	%	n	%
High Achievers	53	(84.1)	10	(15.9)	63	(100.0)
Medium Achievers	59	(89.4)	7	(10.6)	66	(100.0)
Low Achievers	17	(94.4)	1	(5.6)	18	(100.0)
Setbacks	11	(100.0)	0	(0)	11	(100.0)
Withdrawals	12	(92.3)	1	(7.7)	13	(100.0)
Total	152	(88.9)	19	(11.1)	171(x)	(100.0)

(x) Excluding Medical, Dental and Law Students.

Table 7.3 shows an average yearly attendance at the University Health Centre as an Index of Stress. Three features seem to be important in this analysis: the index rises with the lower degree of achievement, the vaguer goals seem to produce a somewhat lower index, the Pass and Ordinary degrees seem to produce the lowest Index of Stress.

The same phenomenon is shown by Table 7.4 where the Index of Stress is shown in two categories of clearer and less clear goals.

(d) Goals, personality and stress

It now remains to bring the factors of Achievement, goal orientation, extraversion and neuroticism and Index of Stress together. Table 7.5 shows the combined analysis indicating means of Extraversion and Neuroticism as plotted within the four quadrangles of personality dimensions. Correlations between Index of Stress and extraversion for the separate and combined male and female populations are neither large nor significant. Correlation between 'Index of Stress' and neuroticism is positive and significant for females with clear goals ($r = .32$, $.05 > P > .02$ Tables 7.6) suggesting that the more anxious females with clearer goals might show more stress as indicated by their visits to University Doctors. The combined male and female population with clearer goals show also a very small significant positive correlation between Index of Stress and neuroticism but this might be mainly due to correlations obtaining for the females.

TABLE 7.3. Random Sample: Degree Achievement, short range goals and Visits to University doctors (shown as an Index of Stress)

	Definite		Vague		Unknown		Totals	
	n	I/S	n	I/S	n	I/S	n	I/S
Hons. I	7	.8095	4	.5833	1	.6666	12	.7222
Hons. II I	28	.7500	14	.8095	9	.8888	51	.7908
Hons. II II	36	.8074	22	.8030	8	.8750	66	.8232
Hons. III	4	1.000	3	.6666	3	1.1111	10	.9333
Pass and Ordinary	3	.6666	2	.8333	3	.6666	8	.7083
Setbacks	5	.8666	1	.6666	5	1.1333	11	.9696
With-drawals	4	1.6250	5	1.1000	4	1.1250	13	1.2690

TABLE 7.4. Random Sample: Degree Achievement, future orientation and Index of Stress (Visits to University Doctors)

			Goals			
	n	I/S	n	I/S	n	I/S
Hons. I	10	.7400	2	.6667	12	.7200
Hons. II I	40	.7750	11	.8483	51	.7910
Hons. II II	50	.8200	16	.8543	66	.8283
Hons. III	5	.9333	5	.9333	10	.9333
Pass and Ordinary	4	.7500	4	.6667	8	.7083
Setbacks	5	.8667	6	.9444	11	.9090
Withdrawals	8	1.3750	5	1.1000	13	1.2690
	122	.8393	49	.8741	171	.8489

TABLE 7.5. Random Sample Analysis: Means in Extraversion and Neuroticism, 'Index of Stress' in classes of degrees and categories of clearer and less clear goals. (Means of E and N for each class of degree are plotted against the E and N co-ordinates).

ACHIEVEMENT in DEGREES	Goals									
	Clearer					Less Clear				
	n	$\bar{E}$	IND. OF STRESS	$\bar{N}$	PERSONALITY N / I — E / S	n	$\bar{E}$	IND. OF STRESS	$\bar{N}$	PERSONALITY N / I — E / S
Hons. I	10	11.79	.7400	9.39		2	12.50	.6667	10.50	
Hons. II I	40	13.57	.7750	11.07		11	11.39	.8438	11.91	
Hons. II II	50	13.62	.8200	11.70		16	12.38	.8543	10.50	
Hons. III	5	12.80	.9333	11.60		5	14.80	.9333	11.20	
Pass Ordin.	4	13.00	.7500	12.75		4	11.75	.6667	14.00	
Repeat Setback	5	12.39	.8667	15.79		6	13.67	.9444	14.50	
Withdrawals	8	15.63	1.3750	12.62		5	15.40	1.1000	10.00	

$\bar{E}_s$ = 13.91

$\bar{N}_s$ = 10.78

Random Sample means for combined M & F populations.

TABLE 7.6. Random Sample Analysis. Correlations between Index of Stress and Extraversion or Neuroticism amongst Male, Female and combined populations with clearer and less clear goals.

	Goals		
	Sex	Clearer Index of Stress r	Less Clear Index of Stress r
Extraversion	M	.139	- .248
	F	.109	.082
	B	.114	- .136
Neuroticism	M	.101	.011
	F	.320*	.171
	B	.191*	.121

* $.05 > P > .02$

This small but significant tendency for the females to suffer from a higher degree of anxiety and stress when possessing a clearer goal orientation might be partly due to the fears and conflicts about the future professional and family life. Firm indications of intentions for marriage and family life were classified as definite long range goals for the female students.

Generally speaking the breakdown in Table 7.5 does not suggest very clear links between these factors; it confirms our knowledge that the highest achievers who have the smallest Index of Stress tend towards stability and introversion. Higher achievers generally tend towards introversion and those below 1st class honours tend to be more anxious. Students with a pass and ordinary degree tend towards the neurotic introversion quarter suggesting that their acceptance of a 'lower flight' might be reinforced by their tendency to obey their rather more severe consciences. Withdrawals tend to be on the extraverted side of the continuum - those with clearer goals in the neurotic extraverted quarter and those with the less clear goals in the stable extraverted one. This trend of withdrawal being linked with extraversion is confirmed in our findings in the 3,000 student sample who took the personality test as a part of another exercise carried out at Birmingham.

Another summary of our analysis can be made by showing the relationship between Index of Stress, goal orientation and higher or lower achievement and non-achievement. This is presented in Tables 7.7 a,b,c. From our earlier results we have learnt that whilst the higher achievers usually show great discrepancy between clearer and less clear goals, the lower achievers and the non-achievers do not present such a clear cut division; the percentage frequency

amongst low achievers in most tables show a 50-50 trend. This point is well illustrated by table 7.7(a) and it is the feature of distribution and of mean tendency of the Index of Stress that seems to present an interesting point.

TABLES 7.7 (abc). Random Sample Analysis. Frequency distributions, means of Index of Stress, Extraversion and Neuroticism for male and female populations in categories of achievement and goal orientations. Frequencies of attendance at University Health Centre (The Index of Stress) calculated and adjusted to a 3 year basis of attendance.

TABLE 7.7(a)

		Goals and Index of Stress					
		Clearer Index of Stress		Less Clear Index of Stress		Totals	
		M & F	%	M & F	%	n	%
Higher Achievers Hons. I, II & II I II	n	100	(77.5)	29	(22.5)	129	(100.0)
	m	2.38		2.52			
	s	.846		.725			
Lower and Non-Achievers. Hons III Pass/ord. Setbacks & withdrawals	n	22	(52.4)	20	(47.6)	42	(100.0)
	m	3.14**		2.88**			
	s	1.63		1.09			
Total		122	(71.3)	49	(28.7)	171	(100.0)

Frequency distribution: $X^2 = 9.79$ $.005 > P > .001$**

difference between means: m = 3.14 versus rest of population 't' = 2.867 $.01 > P > .002$**

m = 3.14 versus m = 2.38 't' = 3.074 $.01 > P > .002$**

m = 2.88 versus m = 2.38 't' = 2.24 $.05 > P > .02$*

TABLE 7.7(b)

		Goals and Extraversion			
		Clearer		Less Clear	
		M	F	M	F
Higher Achievers	n	68	32	20	9
	m	13.59	13.06	12.70	14.00
	s	4.21	3.79	3.93	3.46
Lower and Non-Achievers	n	15	7	15	5
	m	13.93	13.43	14.80	9.60
	s	2.86	2.26	3.56	5.82

TABLE 7.7(c)

		Goals and Neuroticism			
		Clearer		Less Clear	
		M	F	M	F
Higher Achievers	n	68	32	20	9
	m	10.91	11.88	12.00	8.89
	s	4.36	3.41	4.09	4.84
Lower and Non-Achievers	n	15	7	15	5
	m	12.20	15.14	11.80	11.00
	s	4.31	4.32	4.94	6.32

Random Sample Means for Extraversion and Neuroticism are as follows:

	$\bar{E}$	S	$\bar{N}$	S
Males:	14.07	3.92	10.16	4.32
Females:	13.55	3.80	12.15	4.47

Whilst the frequency distribution in Table 7.7(a) shows a significant trend for the higher achievers to have clearer goals, (77.5% against 22.5%) the magnitude of the index of stress is greater in the clearer goal - low and non-achievement quarter. This phenomenon might be at least part of an explanation for the smaller discrepancy between clearer and less-clear goals amongst this part of the population. This trend of an apparent, strong motivation being an obstacle to learning is well known from experimental psychology (Broadhurst 1957) and it confirms the 'common sense' observation that trying too hard brings about less efficiency. It is also a well known fact that an increase in the intensity of motivation produces a curvilinear relationship between drive and performance. It is now possible to suggest that in university learning a too compulsive striving towards a goal - particularly in the changed conditions of tuition - induces an uncomfortable degree of apprehension which may, in many instances, lead to the seeking of help from the medical centre. The Tables also show the means of scores for extraversion and neuroticism of males and females in the four categories of achievement and goal orientation.

All these differences are of course only suggestive. It seems obvious that problems of achievement, anxiety and motivation do not easily lend themselves to cruder forms of analysis. But the constant handling and evaluation of data of these problems leads me to an inference that the questions of motivation in learning evolve around the situations and contingencies of chance, or of planned conditions of tuition. The influences of these situations cannot properly be estimated or measured, yet they are perhaps the most important aspects of the processes of human learning..

A study of motivation in learning must, because of the enormity of the subject, be pluralistic and integrative. Pluralistic, because the problem must be approached from many sides, and integrative because the study of the currents and tides of human emotions accompanying learning make sense only with reference to one integral point - the individual. A study of trends in the samples of students is useful in showing the more obvious consequences of individual responses to a common situation of tuition - they are never anything more than an outline which, like a shadow, depends as much on the intensity, angle and refraction of the beam of light as on the deployment and on the disposition of the observers. But even a shadow can be a useful guide in the art of learning to teach which, like other psychological studies (Murray 1964), must often be confined to fragments of knowledge rather than to ascertainable wholes. Even a shadow is a lead to the understanding of hates, loves, wishes and needs of the people who come to learn and fail - perhaps, more often than not, through our own professional ineptitude.

4. GOAL ORIENTATION AND SUCCESS AND FAILURE AMONGST THE FIRST YEAR INTAKE.

In order to check what will happen when questions about motivation are put not in a neutral interview situation but as a part of the registration routine during the first week at University all first year students were asked to fill in a brief questionnaire about motivation. This sample has given us nearly 95% response. The questionnaire was administered during the University medical

inspection. It was hypothesised that the response from such a procedure would not be as indicative of the true nature of goal orientation as the ones obtained from samples interviewed individually. The same questions as those given to the 'weak' students and to those in the Random Sample were used. The answers were coded by the same person who did previous classifications and according to the same principles. Table 8.1 shows that the percentage of Definite goals are higher than in the Ramdom Sample - but that the differences between successful and unsuccessful students after the first year at University were not at all significant. As a comparison Table 8.2 gives Random Sample responses for the successful and unsuccessful first year students. This exercise confirms the hypothesis and indicates quite clearly that any attempt of using the questions about motivation in any kind of selective procedure would be entirely wrong as far as the progress in the first year is concerned.

TABLE 8.1. Short Range goals of successful and unsuccessful 1st year students of the 1967/68 intake (response by questionnaire in mass testing

	Goals							
	Definite		Vague		Unknown		Totals	
	n	%	n	%	n	%	n	%
All successful students	1048	(74.7)	169	(12.0)	186	(13.3)	1403	(100.0)
All unsuccessful students	66	(73.3)	11	(12.2)	13	(14.5)	90	(100.0)
Total	1114	(74.6)	180	(12.1)	199	(13.3)	1493	(100.0)

TABLE 8.2. Short Range goals of successful and unsuccessful male and female Random Sample students after first year of study. (response by interview with a neutral person)

	Goals							
	Definite		Vague		Unknown		Totals	
	n	%	n	%	n	%	n	%
All successful students	111	(59.7)	46	(24.7)	29	(15.6)	186	(100.0)
All unsuccessful students (Withdrawals & Setbacks)	10	(43.5)	7	(30.4)	6	(26.1)	23	(100.0)
Total	121	(57.9)	53	(25.4)	35	(16.7)	209	(100.0)

This exercise also suggests that enquiries about matters pertaining to studies and such obviously related problems as professional goal orientation must be suspect unless they include elements of voluntary cooperation and a neutral or impartial observer who is not in any way connected with the competitive transactions involved in tuition.

Our Random Sample students were not subject to any pressure to respond, were guaranteed completely confidential procedure and were given plenty of explanations about the nature of the Survey. The total freshers sample were given a questionnaire to fill in during a routine registration with very little explanation - they did not know what use would be made of the information nor who were the people who administered the questionnaire; the conditions of such an administration could not be considered as similar to those used in our previous enquiries and the results obtained from this sample are not, strictly speaking, comparable though some of them are nevertheless very interesting.

5. SOME PROBLEMS OF GOAL ORIENTATION IN TUITION - SELECTION OR TEACHING TO LEARN

(a) Reflections

If, at the beginning of this description of the results of my studies in motivation, I have expressed an apprehension about the possibility of sowing confusion rather than illuminating the problem, I must now admit that my

object was indeed one of raising up a spectrum of an educational dilemma or of an educational paradox. Since however a disposition to tolerate a paradox is said to be the beginning of prudence let us for a moment consider if confusion is not, at times, an element of progress.

It is obvious that, for every 'factor' I have tried to separate from the tangle of influences bearing on students success or failure at University, any one could have raised a legion. For 'factors' of behaviour are in the mind and in the research tools of the observer, rather than in a subject acting out his role in any given situation. It seems that in learning it is the constancy of situations which contribute primarily to an emergence of factors rather than some exact qualities in the pupil. This is particularly clear from the observations of learners in higher education. The same people who, in the course of earlier tuition, have performed with efficiency and zest and who, on the basis of their superior qualities, were eventually selected for the courses leading to the supreme scholastic achievement, fail, in numbers which hardly justify the effort of the national structure of education. The qualities, if they were there, have, for some obscure reasons, melted away like the first winter snow. At the same time the rates of failure, even in each individual institution of higher education, remain constant as if each one of these institutions was destined to suppress in some students the positive qualities they possessed on entry and to evoke the negative ones which have, hitherto, been dormant. The 'mystery' of the disappearing scholastic abilities is always with us, and the last sixty years of educational research has failed utterly to solve it. The search, of course, goes on but it might perhaps be worth while to see if the problem cannot be approached from another standpoint.

The standpoint I propose to sketch is one of examining not what qualities there are in the learner but what the learning and the teaching does to the learner. How it acts upon him and how the learner himself FEELS about it as he goes through the carefully structured maze of educational conditioning. For the system of any education is essentially a system of conditioning - the moulding of the new generation to the patterns laid down by the older. These patterns can be more or less distinctly circumscribed; conceived and maintained with a view to providing a greater or smaller scale of degrees of freedom - but it is nevertheless a pattern imposed, it is said, for the benefit of the younger generation. The young individual going through these patterns responds to these conditions and soon discerns which responses are beneficial to him and which are hurtful. But he does not, at any time, simply submit to the conditioning from the outside world without a fight and tries, in turn, to condition the outside world without a fight and tries, in turn, to condition the outside agencies to the patterns of his own liking. He does it by operating on the conditioning process and always with an aim of working out for himself a reasonably bearable relationship with other people and with the image of other people within him - his conscience. Learning, spontaneous or formal, can be perceived as an extension of feeding - the first work the child has to do to obtain comforts from the outside world. School learning or school-work is, for the most part, taking advantage of the world; an advantage loving or hatful, keen or apathetic, rewarding or damaging, going towards or running away from things, ideas or people, but always working to a goal of mastering the art of living if only, in

the extreme, by an utter submission or an overt revolt.

Our educational system can, on this view, be regarded as an experimental maze of learning which is adjusted to a careful selection of those who initially submit to the conditions of teaching and who are then guided through a more strictly circumscribed routine. Early specialisation and stereotype teaching help inevitably to streamline production of our scholastic elite, and this process is usually very effective but only as long as it lasts i.e., as long as the conditions of approach, teaching, rewarding and punishing remain reasonably constant from school to school, from level to level. The efficiency of such a system of tuition is very impressive - but as with all systems it becomes too rigid and breeds its own germs of failure. It encourages, I submit, undue rigidity of attitude to the methods of teaching and learning, particularly amongst the more ductile pupils; it builds in false feelings of confidence and expectation of an automatic success in any condition of learning. It does, actually, breed an expectation that all teaching and learning must remain the same as in the VIth form, for is it not already the most perfect since it is used to teach the most promising scholars? Teachers themselves become complacent about the methods of tuition no less than pupils.

This image of a false "assumptive world" (Frank 1964) is of course, most readily structured within the mind of the less secure or the more anxious people for whom the success at school, the rewards of feeling wanted, good or superior, are perhaps more meaningful and satisfying than for the less anxious ones. Anxiety is known to induce rigidity, for any response that reduces anxiety becomes in effect a 'drug' - and any learning as an outcome of anxiety becomes an addiction. Addiction, in turn, reinforces rigidity of response and leads straight into the direction of the previously satisfying solution - which automatically rejects other possibilities of reducing tension. The vicious circle of scholastic anxiety, which at times leads to success, can be maintained by the see-saw of the rewards and admonishments at school where the known comforts from home and teachers are part of the system but it cannot be expected to survive in the condition of 'cool teaching' at the establishments of higher education. It is here that the breakdown occurs and it will presumably always occur until both the teachers and the students perceive, or are actually trained to perceive, that the momentum of previous success will dissipate its strength unless the new conditions of tuition bring in the same feelings of satisfaction as they did at an earlier stage of schooling. But such a situation, if it merely repeated the system of the previous stage, would hardly be satisfactory for the promotion of maturity and independence of judgement required for an advanced study and I could not, in any circumstances, advocate an increase of this tendency, for it would lead to educational inertia. The plain fact is that university learning requires intellectual courage, resourcefulness and versatility of approach to study and readiness to pursue learning under one's own steam; taking advantage of the facilities rather than expecting the repetition of the streamlined tuition known from school. Successes in previous learning, even if sealed by the certificates of attainment do not, to my mind, provide a guarantee of these skills. In fact they often hide an overdose of an inflated intellectual confidence derived from an undue dependence on teachers, rigidity and an unreasonable longing for the security of the well-paved courses of

learning.

It seems that for successful independent and mature learning the most useful ability is not one of fast learning - but one of fast unlearning of unprofitable ways. On this assumption the paradox of a saying that "a slow learner learns too fast" can be accepted as straightforward logic derived from an understanding of how people learn. It is not surprising that a future orientation - a goal beyond the discomforts of the new teaching situation at university - becomes a staying power in many cases though in some it might become just another obstacle.

(b) Conclusion

The conclusion derived from this review of some of our data and from my own approach to the problems of the difficulties of learning can to my mind be but one: the problem of student wastage is largely the problem of teaching. The complexity of 'factors' and influences which might make or mar progress of students no longer allow us to think that it is some quality in the learner that precludes achievement at the higher level of education.

The students who fail are not a class of people unto themselves but rather a part of the success-failure spectrum. To me it is even a more involved phenomenon. The students who fail seem like an array of electrons in the vortex of a nuclear system. They are part of the system and usually very much like other electrons round them but for reasons of some more obscure influences or forces inherent in the system - forces which are not so much an outcome of a design but of the contingency of balance, grown into inertia - they tend, at times, to oscillate towards a wider orbital course and become part of the fringe of our vortex of higher education. My present research and practice as a teacher and student counsellor seem to indicate that it is not always necessary for those 'looser electrons' to be shed into outer space. It seems that it is up to us - the teachers - the senior and therefore more experienced parties in the social transaction of tuition - to understand what can happen to our younger colleagues, particularly if we have ourselves, as teachers in schools, encouraged them to construct within themselves a grossly distorted assumption of an automatic success. We have either to learn more about learning ourselves or to help our students to unlearn their previous attitudes.

Both courses lead to more learning - learning for teachers and learning for students how to learn.

There is, of course, always an alternative in training used often in expeditionary forces; I have in mind an example of an arctic survival course. It is not beyond the bounds of probability that a 'University Survival Course' could be equally effective in reducing educational casualties. I sometimes wonder if such a course would not be more profitable than the proposed curricular extensions at the sixth form which again seem to be derived from an assumption that the existing, mysterious potential of academic ability will readily emerge from further sifting of young people through the new examinational grids.

The old addiction to 'teaching for testing' still very compelling amongst the older pedagogues and the 'teaching for learning' seems a far cry - in spite of the fact that it is, I submit, the most obvious course for technological survival. The sheer volume of learning facts and the increasingly expanding curricula may, in the near future, swamp the existing structures of education, and the societies which will be able to evolve tuition for versatile learning and unlearning will be the ones to flourish.

(c) Recommendations

With the inevitable expansion of higher education the problems of tuition will grow more and more complex requiring more skilled teachers to promote further advancement of knowledge. Such a situation will, in the end, require a greater degree of understanding of the learning processes on the part of teachers in higher education. At present this is still of a marginal interest but the post-bag of demands for a more satisfactory tuition is already bursting at the seams.

The inescapable need for advanced training for teachers at all levels of higher education must shortly be faced and academies for teachers will be the most logical solution. If, as I submit, it is going to come to that, why not think about it now?

Such academies, or even one Academy of Advanced Teaching, could become a vital centre for fruitful exchanges of ideas about higher education; a workshop for experiments and for an evolution in teaching and learning methodology. It would give another impetus to further developments of educational skills for which this country is, in many respects, most forward amongst the community of nations. It would, by the virtue of its existence, enhance the importance of teaching skills at universities and thus it might help to bridge the gap between the circumscribed approaches of the sixth forms and the trial-and-error methodology of the universities. The first problem, which an institution would do well to face, would be the question of the reconciliation between the activity of research and the activity of teaching.

It is beyond the scope of this paper to discuss this problem but it seems to me that every basic theory of learning shows quite clearly that these two activities are really complementary to the advancement of knowledge, and it is comparatively easy to see how a thoughtful combination of these two functions could transform the present methods of teaching into a more meaningful and therefore a more deeply satisfying process.

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SCHOLASTIC AND NON-SCHOLASTIC CORRELATES OF UNIVERSITY STUDENTS' ACADEMIC PERFORMANCE

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INTRODUCTION

The investigations I have been asked to report developed out of my own feelings of incompetence as a selector of students for a university course. Faced with the succession of applicants neatly groomed, nervously expecting difficult or unanswerable questions; in varying degrees of muteness or over-compensated logorrhoea or reduced to a quasi-supercilious disinterest in the procedure to which they were submitting, perhaps for the sixth time, I discovered that I didn't really know what questions to ask them. Evidently I was expected to inquire after the reasons for their interest in our particular subject. Whether they had read any of the books which we had recommended as a pre-interview 'indoctrination', and what they had thought of them. Naturally I was expected to elicit their entirely altruistic motives for wanting to come to university, their objective interest in scientific procedure and their abject willingness to assimilate the brand and amount of knowledge we were prepared to offer them. Conversely, I waited to be told that the applicant would turn down an offer from our department if he was acceptable to any of the five other departments which he had already visited, that a university was a place to go to sometimes 'for free', or virtually so, if you could think of nothing better to do, or that one could not easily obtain social status without participating in the degree-chasing process.

I must admit that at an early stage I gave up. Neither the questions nor the answers appeared to be relevant to the job I was supposed to do - to predict! But what are university selectors supposed to predict? Are we meant to say whether a young woman or man deserves what is now sometimes called their 'birthright'? Are we supposed to say whether an applicant is likely or unlikely to 'stay the course', will profit from his experience? Or are the implications of what are mainly 'conditional acceptances' that the 'chosen not so few' are likely to be awarded a good or at least reasonable degree.

One has been tempted to ask whether the actual prediction required has rather more to do with the attempted extrapolation of the applicant's future and social productive role in society. This point has been quite forcefully raised by recent Committees of Inquiry and Working Parties without, however, in my opinion, giving adequate credit to universities as institutions for the advancement of knowledge, or proffering alternatively an internally consistent revised philosophy of education. Yet it seems that this may well be one of our

over-riding needs, and essentially a major requirement for a meaningful process of prediction in relation to university entry. By omission I appear to be disparaging of the University Central Council for Admissions; that body does not need my praise for its ever-improving efficiency. Many universities are now finding the U. C. C. A. form information adequate for their selection procedures, and demand no further data from their applicants. I suggest, however, that it is one thing to be satisfied with the mechanics of a process, but quite another to accept the value of the information that is disseminated. If we leave philosophical questions aside and turn to practical aims, two low-level but utilitarian needs seem to operate in student selections, a) to fill what appear to be an inadequate number of vacancies and b) to use historical information on applicants. The studies with which I have been concerned have been objectively concerned with the latter, but, of course, have implications for the former. My experiences with the interview method have been reinforced by my own personal inability to handle the U. C. C. A. form information. This information is presented because of its presumed predictive validity; yet we have known for a number of years that O-level results do not correlate highly with A-level results, and particularly that A-level results have a very middling correlation with degree results. Considering only two studies, those of Himmelweit and Summerfield (1951), and Barnet and Lewis (1963), the positive correlations for various groups and sub-groups between A-level and degree result range from 0.14 to 0.45. With this degree of actuarial power all our insurance companies might well cease to operate in a relatively short time. Virtually no data exists on some of the other parameters on the U. C. C. A. form to assess their validity, but we are now in a position to produce some of these.

One wonders generally what use other selectors make of the kind of information that is encouraged to appear on this form. For example, what assumptions about the function of higher education are being made, and about who should benefit from it, by information about applicants' voluntary services rendered to the needy and the lonely, whether the applicants belong to church choirs, or cadet forces, or whether they collect model railway engines. Furthermore, I cannot believe that our headmistresses and headmasters really believe that a 'nice' boy or girl, or a popular one, or one who divides his study periods between pop-art and the history of religion, or those who are reliable prefects, or represent their school in sports, are thereby qualified for admission to university; and what I wonder is the relevance of parental occupation, and what are the sets of common criteria on which the referees of hundreds of schools base their judgments?

For the studies I am describing here, there was one major aim which, like all aims, is only partially achieved - to see how traditional selection criteria relate to examination performance, or drop-out, and to compare the predictive power of these criteria with that of sets of criteria aimed specifically at what I have termed non-scholastic variables. That is - scores on personality and motivational indices - largely, but not exclusively, obtained from self-administered questionnaires. There is, of course, nothing unusual in being interested in student applicants' behavioural characteristics and aspirations. The personal interview has used these criteria for centuries. What may arouse resistance is the possibility that this kind of material should be generally and

consistently employed in a standardized form to benefit the selective process, and used in conjunction with traditional predictors. In other words, in this study, we were trying to make out at least a pilot case for a more complex multi-variate method of prediction.

DESIGN AND METHOD

The Research Samples

The studies were carried out on a rather modest budget of £400 a year; and apart from other criticisms, are sensitive on the point of size of samples and sub-samples. Three groups have been studied during the last three years. Group 'A', consisting of 32 first-year students in the Faculty of Letters and assessed soon after they had sat for the first year University examination. In our sample 16 had passed and 16 had failed this examination at the first attempt in April. The two groups were matched for sex and subject combinations. Correlations between the variables and marks obtained in this first examination were calculated, and also for those 24 who proceeded to the final examination, further correlations between all variables that were assessed and degree class. Statistical analysis of the differences between the pass and fail groups on the variables were also carried out. Group 'B' contained 62 students in the Faculties of Letters and Science in the second term of their final year. Once again we have correlations between the variables assessed and the degree class obtained, as well as the results of statistical analyses of the differences between groups awarded different degree classes. Group 'C' contained 169 students in the Faculties of Letters and Science - the only group which was followed up from the first term at University to Finals. This group was assessed in the first term at University and we therefore have data on the relationship between our variables and performance in the first University examination, and the corresponding data for the final examination. 21 of these students are at present in their 4th year for a language degree and are therefore not yet available for analysis. In order to avoid ethical problems, we canvassed for volunteers only. This restriction inevitably reduced the number of students available who were registered for particular degree subjects, as well as the total number and the sizes of Faculty and Department by Sex sub-groups. We were aware that this might introduce a number of uncontrollable biases which one usually attempts to avoid. It was also clear from the start that the possibility of working from not fully representative samples might defeat our attempts to predict on the basis of the results obtained from one sample, the examination results of other samples. These imperfections can be overcome beyond the stage of a pilot investigation, and by a financially better endowed and more long term study.

Assessment Variables

Apart from the examination results, there were three groups of variables: scholastic, intelligence and non-scholastic variables, the latter containing the personality and motivational questionnaires. The scholastic variables were drawn from each student's U.C.C.A. application form. The information

used was the average A-level percent, A-level failure, S-level entered, S-level passed, the Head's recommendation, applicant's stated intellectual interest, and the presence or absence of special adverse circumstances in the personal history as shown on the form. This latter category was included because a pilot study had shown that a history of illness of the student or his parents, early death of a parent or parental separation differentiated in one of our samples significantly between two small matched groups of students who had respectively passed, or not passed, the first University examination. A-level failure, and S-level and special circumstances categories, were scored 0 or 1 irrespective of number of school subjects involved in the first two. The average A-level percent is the arithmetical mean of all subjects taken for the first time at this level, with appropriate and constant conversion of the numerical and alphabetical grades. Objective rating criteria were developed to quantify the Head's report and the student's interest variables. Reliability checks on the ratings gave us adequate co-efficients, for the time being, in the region of 0.80.

Seven-point ratings were assigned for the Head's Report and Interests, using 3 point criteria as a basis, sub-classifying into 9 categories, and finally combining adjoining categories in the 3 classes. This yielded a 7 point scale, where a rating of 7 was high and a rating of 1 was low.

For Interests the main criteria were as follows:-

High Rating: Evidence of a particularized, sustained activity in two of the following: serious reading, with authors and fields cited; music; drama; scientific hobbies; chess; membership of more than one intellectual school society.

Average: Here there had to be particularized evidence of at least one of the earlier mentioned activities, at least one intellectual school society, or one other activity pursued but not particularized, or at least three activities cited but not particularized.

Low: No mention of reading, or placing this low on the list, preceded by non-intellectual interests, or membership of non-intellectual school societies only.

For the Head's report the following criteria were used:-

High Rating: Prediction of very good or good honours degree based on very good or good O-level and/or A-level work, plus comments like scholar, potential scholar, excellent attitude to work, highly intelligent work, consistently good and insightful work.

Average: Predictions somewhat less high and qualified by, for example, "..... in spite of mediocre or disappointing O- and or A-level work..." or "while he or she seems to be passing through a difficult phase at present...." or statements that he or she should get a good degree, or is worthy of a good degree, or the sort of pupil who ought to go to University.

Low: No comment on academic potential, suitability, or intelligence, negative recommendations or comments, like "... a plodder who should make good", or "..... should be able to obtain a general degree..."

For intelligence the A.H.5 was used which was developed on university students and has a higher ceiling than most other tests. We used four indices, the Total score, the Verbal score and the Non-Verbal score, and a Ratio. The first three need no further comment, the last score was intended as a measure of speed versus accuracy, and was simply the number of errors divided by the number of items of the test completed, multiplied by 100.

The majority of variables were of the non-scholastic kind and were mainly sub-scales of two questionnaires: the Edwards' Personal Preference Schedule (Edwards 1954) and the Dynamic Personality Inventory (Grygier 1956). The Edwards questionnaire has been extensively used in North American studies and measures characteristics which, on a priori grounds, may be said to be relevant to occupational performance and achievement. Achievement, affiliation, dependence, a need for order, being or not being a deferent person or a dominant person, all these have been variously correlated with examination performance and have some predictive validity in respect of scholastic criteria. The Dynamic Personality Inventory is less well known, but recent investigations have shown that a considerable number of its sub-scales possess a reasonable degree of validity (Kline 1968). It was used here because I had a certain amount of experience with it, because it measured characteristics not otherwise amenable to measurement, and because some of the scales are aimed below a respondent's level of conscious awareness. In the event it was gratifying to find that appropriate sub-scales of the two questionnaires correlated comparatively well. The questionnaire scales are enumerated in the Appendix. All sub-scales of the questionnaires had to be used although some of them were clearly redundent in that no predictions concerning their relationship with the examination criterion were possible. Extraction of individual sub-scales might have affected responses to the other sub-scales unpredictably. As a consequence of the decision to maintain the integrity of the published questionnaires, the percentage of significant results obtained with them is sometimes spuriously low.

In addition to the personality/motivational parameters measured by questionnaire, it was decided to add further test situations in which some of these characteristics could express themselves in a less pre-structured form. One of the devices chosen was the so called autobiographical retrospective sketch used previously in investigations on school leavers (Veness 1962). For this task subjects are instructed to imagine that they have reached the age of 60 and that they are reviewing their life. They are invited to write about what happened to them occupationally, financially and socially, about their achievements, goals, and disappointments. In the present study, resulting stories were then rated on a 3-point scale initially, and then further on a 7-point scale, depending on the presence (or absence) of indicators of achievement motivation and ambitiousness. Examples of some autobiographical sketches are given in the Appendix, together with other relevant details concerning the

writers. **

The Academic Criterion: This included intention to do well at University, disappointment if unsuccessful, Second Class Honours or better, 'good degrees', proceeding to research and/or higher degree, publications.
Occupational: Search for specific jobs after graduation, a job or career giving opportunity for advancement, emphasis on success in job, disappointment if it was not achieved, advancement to more interesting and important work. For women, persistence in a good job after marriage, and/or a return to work in later life, ambition for husband's career, and also ambition for children.
Financial and Material: Relevant here were mention of good salaries for oneself, spouse and children, mention of more than one car, country house, travel abroad, labour-saving devices in the home, especially mentioned investments, and so on.

Under any of these three headings rated as positive indicators were those that mentioned leadership aspirations, renown or fame, and identification with prominent individuals in our society. In addition to scaling on the basis of these objective criteria, there was internal scaling between the three areas in that least weight was given to the last category.

The assessment of subjects was concluded with a specially designed persistence task, in which the time given to the task was the dependent variable. For a variety of reasons, which cannot be elaborated here, only few significant results were obtained and the variable was omitted from the consideration of the results.

The intelligence test and the autobiography were completed by subjects attending in small groups at one session. They were instructed in how to deal with the questionnaires which they took away with them: to complete each of the questionnaires in one sitting, and to answer them on successive days on their own and without discussing the topics or the answers. They were informed that they were participating in a University sponsored research project on student characteristics, and that the instructions and tasks had to be taken seriously in order that their own participation should not become a waste of time. Very few students failed to complete the questionnaires and very few had to be excluded from the sample on account of spoilt records.

RESULTS

On this occasion these can be presented in summary form only with the addition of selected details, mainly because of the mass of data that has accumulated. Greater detail has been incorporated in articles submitted to the Journals.

** I am indepted to Professor M. D. Vernon for her contribution to these criteria.

The aim in this study has been to obtain mainly three types of statistical data: correlations between examination performance and our scholastic and non-scholastic variables, tests of the reliability of differences on these variables between groups of the more successful and the less successful students, and thirdly multi-variable analyses to find sets of variables that would correlate with the examination criterion more significantly than any single variable in isolation, sets which might be used in predictive exercises. Two University examinations were involved: the First University Examination (F.U.E.) taken at the beginning of the first year, and the Final Degree Examination (Finals). For the F.U.E. two sets of examination data were used: the total of marks obtained in the three academic subjects of that examination, and the marks in that academic subject or subjects in which the students had registered on entry for the degree.

The Tables below are based on statistically significant data from all three research groups. Group A was the pilot sample and the variables assessed here differed in some respect from those assessed for groups B and C, i.e. a different intelligence test was used and there were no data on the autobiographical sketch and some of the sub-scales of the D.P.I. Furthermore, not all data are available as yet relating our assessments to performance in Finals for groups B and C. Parts of Tables 2 and 4, therefore, represent a not fully complete account.

Table 1 shows in summary form the results that were found in relation to the F.U.E. The column entitled Number of Statistical Comparisons gives the number of correlation matrices or between-sub-group comparisons which were worked out. They are accounted for by the break-down of the full sample into samples classified by Faculty, Sex, Faculty x Sex, Departments, and Departments x Sex, and different levels of examination performance. The columns headed % significant give the % significant results obtained from the total number of variables in each area of assessment used x the No. of statistical comparisons made. Table 2 gives the comparable data in relation to performance in Finals. The variations in the number of subjects are accounted for by the footnotes in the Tables.

In order to isolate the most discriminating variables emerging from the preceding analyses, a simple count of significant correlations and between-group differences in relation to the examination criterion was made. The results from data so far available are shown in Tables 3 and 4.

As a check on the comparability of groups B and C, factorial (component) analyses were carried out on the correlation matrices obtained from the two full samples. These analyses indicated that 36% and 40% respectively of the total variance was accounted for by the first 4 factors. In terms of the factor loadings, these components were in a number of respects very similar, more similar perhaps than could be expected from the non-random sampling procedures. This analysis had the additional aim of producing - as a preliminary step - sets of regression equations in which the terms were components rather than variables, which best fitted the (F.U.E.) examination results. This attempt to short-circuit more time-consuming procedures was

TABLE 1: Summary of significant results relating to the First University Examination

Area of Assessment				Intelligence			Scholastic (U.C.C.A. Form Data)			Non-Scholastic		
Research Sample	Statistic	N's	No. of Statistical Comparisons	No. of Variables	No. of Significant Results	% Significant	No. of Variables	No. of Significant Results	% Significant	No. of Variables	No. of Significant Results	% Significant
A	"r"	32	3	2	0	0	7	4	19.0	44	12	9.1
C	"r"	169	68	4	11	4.0	7	50	10.5	50	200*	5.9
A	"t"	32	3	2	0	0	7	1	4.8	44	13	9.8
C	"t"	169	37	4	7	4.7	7	33	12.7	50	84	4.5

* e.g. 200 significant correlations were obtained from the 50 variables in 68 matrices.

TABLE 2: Summary of significant results relating to the Final Degree Examination

Area of Assessment				Intelligence			Scholastic (U.C.C.A. Form Data)			Non-Scholastic		
Research Sample	Statistic	N's	No. of Statistical Comparisons	No. of Variables	No. of Significant Results	% Significant	No. of Variables	No. of Significant Results	% Significant	No. of Variables	No. of Significant Results	% Significant
A_1	"r"	31	3	2	0	0	7	2	9.5	44	4	3.0
B_2	"r"	57	20	4	1	1.3	3	6	10.0	50	52	5.2
C_3	"r"	130	42	4	9	5.4	7	16	5.4	50	102	4.9
A_1	"t"	31	12	2	0	0	7	9	10.7	44	36	6.8
B	"t"	62	32	4	7	5.5	3	19	19.8	50	93	5.8
C_4*	"t"	148	48	4	9	4.7	7	18	5.4	50	149	6.2

* Data incomplete

1: 1 student not yet completed degree
2: 5 General Degrees omitted

3: 20 students not yet completed degree. 13 pre-third year withdrawals. 1 Aegrotat and 5 General Degrees omitted.
4: 20 students not yet completed degree. 1 Aegrotat Degree omitted.

TABLE 3: Summary of the most discriminating variables in relation to the First University Examination

(Group A, F.U.E. Total, Group C, F.U.E. Total and Major)

No.	Average A-level %	As	Auto biography	Pi	Head's Report	S-level passed	Dom	Wp	Om	S	Interests
Significant "r"s	23	15	11	8	10	7	6	7	9	9	9
Significant "t"s	16	4	6	9	4	7	8	7	4	4	3
Total	39	19	17	17	14	14	14	14	13	13	12

TABLE 4: Summary of the most discriminating variables in relation to Final University Examination

(Groups A + B + C)

No.	Average A-level %	Head's Report	Pe	As	Ai	Def	Auto-biography	Chg	End	Oi	Dom
Significant "r"s	14	7	9	2	4	4	4	5	8	6	9
Significant "t"s	12	18	11	17	15	14	12	10	7	9	5
Total	26	25	20	19	19	18	16	15	15	15	14

unsuccessful and it was decided to return to discrete variables for subsequent prediction exercises.

A true forward prediction was precluded by the short term nature of the study and its shoe-string budget. Instead of this, two linked re-analyses of the data were undertaken. First a multi-variate analysis was carried out to discover regression equations which would best fit the available first University examination marks of the largest sample (C) of 169. Secondly, using this sample as a reference group, making for every regression equation obtained from this a prediction of the F.U.E. marks of the students in the second sample (B) of 62, where these marks were, of course, already available at that time, and then calculating the correlation between the obtained and predicted marks for each sub-set of predictor variables. For reasons of time and economy, subjective short cuts were introduced for the selection of the best variables. A simple count was made of the number of significant correlations and between-group differences obtained from 64 variables, and the 17 highest ranking were used in a step-wise procedure to obtain the best fitting - most highly correlating sub-sets. The significance level of these sub-sets was measured by an 'F' test on the proportion of variance accounted for by the sets. This constitutes somewhat of a departure in usual practice, because it gives the true significance level of a multiple correlation corrected for the number of variables which normally tend to inflate its size. The best fitting sub-sets that were obtained need not be the only best fitting ones that can be obtained from the data, but in virtually every case their correlation with the examination criterion was substantially more significant than that obtained with the A-level or the scholastic variable in one sub-set. For example: the correlation between A-level average mark and total F.U.E. marks was 0.325 ($p = 0.003$) for all Males and 0.444 ($p = 0.000017$) for all Females. The multiple correlation with sub-set variables A%, Wp, Om, Dom, Interests, S level passed applied to Males was 0.608 ($p = 0.000004$), that for Females with sub-set variables A%, Autobiography, Head's Report, As, Od, Ad, A-level failed, Pe, AH5 ratio, Pi was 0.691 ($p = 0.0000001$).

The attempt to predict retrospectively the F.U.E. results of group B, applying the regression equations developed from group C, was not generally successful. Blocks of significant positive correlations between empirical and predicted marks were obtained only for the Male, the Science and the Physics sub-groups. In all these cases the discriminatory power of the A-level variable was substantially enhanced by contributions from the non-scholastic variables.

DISCUSSION

Several factors emerged prominently from these studies: 1. the degree of statistical and actuarial inadequacy of the scholastic/historical material given in the U.C.C.A. form; 2. specifically the unreliability of the A-level results; 3. the relevance of personality and motivational or non-scholastic variables to the prediction of examination performance; 4. the differences in patterns of scholastic and non-scholastic variables related to examination performance depending on the groups or sub-groups examined for

such a relationship; 5. the difficulties in the way of improving the predictive selection process.

When considering the data from all groups and sub-groups there is no doubt that the last school examination emerges as the most discriminating single variable. At the same time it is clear that the relationship between the school and university examinations diminishes as the group under discussion becomes homogeneous with respect to Sex, Faculty and Department and a combination of all three. The selection decision, however, does not require a prediction concerning students in general, but an assessment of an applicant of definable sex wishing to read for a degree in a specified academic subject or subjects. In 7 out of 8 departmental sub-groups in research group C there were no significant correlations between A-level performance and total marks gained in the F.U.E., and in 4 of these departmental sub-groups, A-level performance could not discriminate reliably between students who respectively passed and did not pass this examination at the first attempt. The results for research group B in relation to Finals are comparable. The other scholastic variables were less useful than A-level results when considered on their own. This lack of predictive power is, of course, well-known to university selectors, some of whom, therefore, have retained the personal interview as an additional variable. Present university regulations, however, ensure that the A-level results remain the decisive data in selection. The unreliability of subjectively obtained and evaluated interview material is, of course, fully established, and it is doubtful whether this technique can remain in use with any marked increase in the number of applicants. Selecting for interview from all applications a pre-selected group of 'probables' on the basis of U.C.C.A. form data, would endow this material with a degree of predictive validity which it does not appear to possess.

The results obtained with the intelligence test do little to repair the situation. Tables 1 - 4 show that the four scoring categories employed here are rarely more useful than the non-scholastic variables, and are no improvement on the scholastic and historical material. This picture is surprising only on first inspection. On further consideration it is clear that many variables may operate to nullify the effect of high intelligence, while a variety of other, desirable personal characteristics can compensate for inadequacies in reasoning power in the preparation for and the taking of examinations. One implication of this lack of discriminating power is its bearing on the use of Scholastic Aptitude Tests in the selection of university students - and for that matter students applying for other kinds of higher education. Since Scholastic Aptitude Tests are closely related to intelligence tests (i.e. g, v:ed and k constitute the major factors), they are unlikely to improve present selection procedures if used on their own.

The correlational and between-sub-group analyses as well as the prediction attempts indicate that individual personality characteristics make a substantial contribution to examination performance. This is not a new discovery: the selection interview has been employed for centuries precisely - or rather imprecisely - for this reason; the present study differs from previous British and American work in that it has increased the number of personality

variables tapped, as well as the level at which the questionnaire items were aimed. The characteristics most frequently involved were: need for social aggression and social role playing; heterosexual interest; proneness to day dreaming; the balance in the need to be socially dominant and independent to the need to be submissive to authority and dependent on and supported by others; giving a socially accepted good impression of oneself; persistence; achievement motivation; being restless and impulsive - or their opposites and a need for neatness and organisation in ones personal life. As was mentioned earlier, the tabulation of the percentages of statistically significant results for the questionnaires probably contains an understatement of the real position through the introduction of irrelevant questionnaire sub-scales.

Criticism concerning the inconsistency of the findings may be raised because some of these motivational variables do not appear with great regularity in all the groups and sub-groups. It is perhaps a truism that people find themselves in different occupations because they possess different combinations of different characteristics in varying strengths. It does not seem to be a question of possessing or not possessing a particular trait or need, but rather a question of how much of the trait in combination or competition with which others that also vary on a continuum. For these and other reasons it is probably true that departments of Physics and History, of Languages or Sociology choose female applicants, say, that show demonstrable overt differences. Differences in styles of thinking, in attitudes, value systems and interests have been found by Hudson (1968) to differentiate between teenage grammar and public school children before they even enter university. The sub-groups in the present investigations are small for reasons mentioned earlier, and it is therefore impossible to guarantee the repeatability of the results with larger numbers of participants, but since the discussion has dealt only with data in respect of which the null-hypothesis has been rejected, it would follow that similar results have a good chance of being obtained from new and larger samples.

Demonstrations of co-variation by significant correlation or statistically significant between-group differences are one thing, successful forward prediction to minimize false positive or false negative decisions are quite another. A number of basic statistical assumptions have to be met by variables to be used in the prediction process, and the criterion towards which prediction is attempted must remain stable. The former is a problem for psychological test construction which could be met eventually. The latter is somewhat confounded by the ongoing process of change in the educational system itself. Total success in the prediction of events is largely precluded where we have a dynamically interacting system, because only the gross range of interactions and consequences can be anticipated. If the dynamics themselves fall within a predictable range, however, predictions of the single case again become more feasible. In the present context this means that the following criteria at least have to remain stable from year to year to provide a basis for successful prediction: - pass marks, boundary marks for degree classes, methods of teaching level of degree material, student-teacher interaction. At least one if not more is immediately preceived to be highly unstable, and only grossly predictable; so that perfect prediction of the individual case is unlikely. In any case this need not be the aim. The basic interest may lie in reducing failure rate, drop-out rate, and

conceivably in minimizing the number of Third Class and Pass Degrees, or demotions from Honours and Special Degrees to General Degrees. Because of the nature of the criteria towards which the prediction is made, it becomes even more important to find predictor variables which are sufficiently discrete as well as statistically robust. The multiple correlations indicate that it is possible to improve the power of individual predictors when they are taken in conjunction with others that are demonstrably relevant. The consequent reduction in numbers of students not proceeding to or achieving a degree will then be particularly marked in departments where the available places are substantially over-subscribed.

To sum up briefly and somewhat precipitately, the Reading investigations seem to suggest seven conclusions. Firstly, errors of inclusion and exclusion in the selection process can be reduced only as and when more powerful multivariate prediction is used. Secondly, objective data on personality and motivational characteristics will undoubtedly raise the predictive power of regression equations which might be employed for this purpose. Thirdly, the effects of improved techniques would be felt particularly in universities and departments where there is a substantial discrepancy between places and applicants. Fourthly, the information on the U. C. C. A. form is usually inadequate, often irrelevant, and because it is unstandardized, not directly amenable to objective manipulation. Fifthly, A-level results are an unsuitable criterion for selection for specific degree subjects. Sixthly, the term 'selection for university education' is a misnomer and misleading. The operative questions should be: What faculty? What sex? What subject? in this or any other order. The seventh point arises indirectly from the data. The experiences of North American universities and their published data and the present findings do not suggest that Scholastic Aptitude Tests are the answer to our selection problems, or that these techniques are a true alternative, or sets of alternatives, to current proceedures.

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APPENDIX I

Questionnaire Sub-Scales

A. Edwards' Personal Preference Schedule

Ach Achievement: to do one's best, to be successful, to accomplish tasks requiring skill and effort, to be a recognised authority, to accomplish something of great significance, to do a difficult job well, to solve difficult problems and puzzles, to be able to do things better than others, to write a great novel or play.

Def Deference: to get suggestions from others, to find out what others think, to follow instructions and to do what is expected, to praise others, to tell others that they have done a good job, to accept leadership of others, to read about great men, to conform to custom and avoid the unconventional, to let others make decisions.

Ord Order: to have written work neat and organised, to make plans before starting on a difficult task, to have things organised, to keep things neat and orderly, to make plans when taking a trip, to organise details of work, to keep letters and files according to some system, to have meals organised and a definite time for eating, to have things arranged so that they run smoothly without change.

Exh Exhibition: To say witty and clever things, to tell amusing jokes and stories, to talk about personal adventures and experiences, to have others notice and comment upon one's appearance, to say things just to see what effect it will have on others, to talk about personal achievements, to be the centre of attention, to use words that others do not know the meaning of, to ask questions others cannot answer.

Aut Autonomy: to be able to come and go as desired, to say what one thinks about things, to be independent of others in making decisions, to feel free to do what one wants, to do things that are unconventional, to avoid situations where one is expected to conform, to do things without regard to what others may think, to criticize those in a position of authority, to avoid responsibilities and obligations.

Aff Affiliation: to be loyal to friends, to participate in friendly groups, to do things for friends, to form new friendships, to make as many friends as possible, to do things with friends rather than alone, to form strong attachments, to write letters to friends.

Int Intraception: to analyse one's motives and feelings, to observe others, to understand how others feel, about problems, to put one's self in another's place, to judge people by why they do things rather than by what they do, to analyse the behaviour of others, to analyse the motives of others, to predict how others will act.

Suc Succorance: to have others provide help when in trouble, to seek encouragement from others, to have others be kindly, to have others be sympathetic and understanding about personal problems, to receive a great deal of affection from others, to have others do favours cheerfully, to be helped by others when depressed, to have others feel sorry when one is sick, to have a fuss made over one when hurt.

Dom Dominance: to argue for one's point of view, to be a leader in groups in which one belongs, to be regarded by others as a leader, to be elected or appointed chairman of committees, to make group decisions, to settle arguments and disputes between others, to persuade and influence others to do what one wants, to supervise and direct the actions of others, to tell others how to do their jobs.

Aba Abasement: to feel guilty when one does something wrong, to accept blame when things do not turn out right, to feel that personal pain and misery suffered does more good than harm, to feel the need for punishment for wrong doing, to feel better when giving in and avoiding a fight than when having one's own way, to feel the need for confession of errors, to feel depressed by inability to handle situations, to feel timid in the presence of superiors, to feel inferior to others in most respects.

Nur Nurturance: to help friends when they are in trouble, to assist others less fortunate, to treat others with kindness and sympathy, to forgive others, to do small favours for others, to be generous with others, to sympathise with others who are hurt or sick, to show a great deal of affection towards others, to have others confide in one about personal problems.

Chg Change: to do new and different things, to travel, to meet new people, to experience novelty and change in the daily routine, to experiment and try new things, to eat in new and different places, to try new and different jobs, to move about the country and live in different places, to participate in new fads and fashions.

End Endurance: to keep at a job until it is finished, to complete any job undertaken, to work hard at a task, to keep at a puzzle or problem until it is solved, to work at a single job before taking on others, to stay up late in order to get a job done, to put in long hours of work without distraction, to stick at a problem even though it may seem as if no progress is being made, to avoid being interrupted while at work.

Het Heterosexuality: to go out with members of the opposite sex, to engage in social activities with the opposite sex, to be in love with someone of the opposite sex, to kiss those of the opposite sex, to be regarded as physically attractive by those of the opposite sex, to participate in discussions about sex, to read books and plays involving sex, to listen or to tell jokes involving sex, to become sexually excited.

Agg Aggression: to attack contrary points of view, to tell others what one thinks about them, to criticize others publicly, to make fun of others, to tell

others off when disagreeing with them, to get revenge for insults, to become angry, to blame others when things go wrong, to read newspaper accounts of violence.

B. Dynamic Personality Inventory (legends adapted from Grygier, 1956)

Description of Variables

H Hypocrisy: tendency to give a good account of oneself in terms of social values.

Wp Passivity, need for comfort, warmth and support.

Ws Need for seclusion and introspection.

O Orality in terms of interest in food and a liking for milky, creamy and sweet foods.

OA Oral aggression: high scores indicate strong oral aggressive drives in terms of pleasure in biting and crunching and a liking for strong drinks and savoury foods. Subjects scoring high tend to be anxious to control their aggression owing to fears of rejection and isolation.

Od Oral Dependence, especially dependence on parents and parental substitutes and a need for support, guidance and reassurance. Very low scores indicate difficulty in forming warm personal relationships at a deeper level.

Om Reaction formation against oral dependent needs in terms of a need for independence and for freedom of movement. Very low scores with high Od suggests that struggle for independence has been abandoned.

Ov Verbally and/or intellectually aggressive and self assertive behaviour. Low scores show either inability to express aggression verbally or lack of awareness of one's own aggression.

Oi Impulsiveness and changeability, spontaneity, speed of reaction, emotional expressiveness, extravagance, very low scores suggest fear of one's own impulses and are frequent among people who have sudden emotional outbursts.

Ou Unconventionality of outlook (not necessarily of behaviour). Low scores suggest lack of originality and individuality, and dependence on accepted social customs.

Ah Hoarding behaviour: high scores indicate stubborn, clinging persistence, anxious possessiveness and a tendency to hoard objects and to save money. Low scores indicate lack of concern with material possessions.

Ad Attention to details: orderliness, conscientiousness and perfectionism. Low scores indicate an easy-going attitude to precision and details.

Ac Rigid conservatism, lack of flexibility and a tendency to stick to routine and convention. Very low scores suggest rejection of old-established customs and social institutions.

Aa Submission to authority and order vs. rebelliousness against all aspects of authority.

As Punitive and disciplinarian attitudes. Low scores suggest professed tolerant outlook.

Ai Insularity: exclusion of foreign objects and misfits; suspiciousness and mistrust, social and racial prejudices. Low scores show sensitivity to all forms of social discrimination and liberal outlook.

P Interest in Phallic symbols.

Ph Narcissism: consciousness of clothes and appearance; subjects scoring high have a need to be aesthetically perfect and enjoy luxury in a sensuous way.

Pe Exhibitionism: a tendency to enjoy attention and admiration and to seek prominence; a very low score suggests a reaction formation and a self-effacing attitude.

Pa Activity drive, high scores appear to be associated with drive for achievement and a tendency to seek approval for one's efforts.

Ph Fascination by height, space and distance. High Ph associated with a low score on Pa scale suggests that the level of aspiration is high, but that the subject lacks the necessary drive to make an effort and to achieve his objective.

Pf Fascination by fire, wind, storms and explosions. High scores indicate perceptiveness of sensual impressions which may lead to vivid and creative imagination. A low score may indicate phobic features and rejection of sensuality.

Pi Phantasy and adventure. Subjects scoring low on Pa, Ph and Pf but high on Pi tend to confine their adventures to fantasy.

S Sexuality: acceptance of sexual impulses vs. their suppression. Very low scores indicate prudishness and avoidance of sexual activities, including talking and thinking about sex.

TI Enjoyment of tactile impressions possibly leading to creative or artistic activities, interest in handicraft and manipulation of objects.

CI Artistic and creative interests.

M Masculinity: the tendency to adopt masculine social roles and patterns of interests and attitudes.

F Femininity: the tendency to adopt feminine social roles, interests and attitudes.

MF This is the M + F scales scores. It measures the tendency to seek social roles irrespective of their masculine or feminine characteristics.

SA Social Activities: high scores show responsiveness to stimuli from without and interest in superficial social contacts and social activities. Low scores indicate social introversion.

C Interest in children. A tendency to be interested in and give affection to children.

EP Ego-defensive persistence: high scores indicate a tendency to counteract with renewed effort in face of difficulties or opposition; they do not necessarily imply the ability to concentrate on a boring task.

EI Initiative, self-reliance and leadership vs. passivity, indecision and lack of self confidence.

APPENDIX II

Samples of Autobiographical Sketches

(Each sketch is followed by some of the details relating to the writer drawn from the variables on which each was assessed.)

1. "After leaving school I went to university to study mathematics. I went because my maths mistress said she thought with work I might be capable of getting a degree and she didn't see why I shouldn't try, although I myself was not so certain of my capabilities. I tried to do my best and I don't see that it matters whether I passed or failed. After leaving the university I entered the teaching profession although I had not had any previous ambition to do so. I suppose my only real desire was to marry and have a family and I would have been disappointed if this had not come about, but again I know that if God had not intended this for me then it would not have been important.

I wanted to have many friends and I felt that material welfare did not matter so much and I didn't want to be particularly well off financially."

The writer was female, had registered for a degree in Mathematics and belonged to sample C. She failed her F.U.E. twice and withdrew. She had superior intelligence, did not fail any A-level subjects and obtained D D E in that exam. The Head's recommendation was poor. Her intellectual interests were low average, her achievement orientation rated from the sketch was 1/7. She scored high on Def., Aff., Int., Nur., End., H, Wp, Om, Ad, As, Pi, and all social role playing scales.

2. "Looking back over my life from the age of sixty it is difficult to remember any but the important events and deep experiences and emotions, although at the time the most petty event (in hindsight) probably loomed large.

To begin.

After leaving school, I went, as is the custom among the reasonably intelligent and lazy, to university; there, deciding I would like to continue working in my chosen subject, I worked, reasonably well, I think, and obtained a good degree. At this time combined with the work, or rather carried on in spite of it, there existed the social life. Anyway, to cut a long story 15 min. short, I obtained a good degree and carried on research. I did not particularly wish for wealth (although, no doubt, I could have achieved it - or so I comfort myself). Life was pleasant on the whole with the usual mixture of joy and sorrow, I suppose, but if one is lucky, one may achieve an existence of reasonable happiness. I think I did this socially, I was in what one may call a small group of friends, family etc., but there is in such a circumstance no cause for despair that one is not famous or a magistrate or some such social position."

The writer was male, had registered for a degree in Psychology and belonged to sample C. He passed his F.U.E. easily and went on to obtain a 1st Class Honours Degree. He had superior verbal intelligence, but his total score was below that of the previous example. His first set of A-level results were C C D, he had failed none and improved his grades at the second attempt. He had entered for two S-level papers but had not taken them. The Head's Report was good average, as were his intellectual interests; his rating for the sketch was 3/7. He scored high on Ord., Int., Agg., Ov., Ou., Ad., and low on Def., Dom., Om., As, Pi and role taking.

3. "I can look back now upon a very happy life. I left school when I was eighteen and entered university. This was, of course, a very important stage in my life. I spent three years there learning about life, people, problems and about my subject. I was disappointed that I had neither the time nor the energy to learn more of other subjects and to obtain a wider education.

Socially I mixed with people from different backgrounds and areas than myself and felt that this was very helpful with my job in industry, which I took up after I gained my degree. The chance I had at university to meet these people helped me to aid people in their problems.

Occupationally I was very happy and pleased that my great achievement at obtaining a degree had helped me to use my life fully to the best of my ability.

At the age of twenty one I married and settled down to a family life. I carried on with my work until I had my first child two years later. I never regretted my marriage at any time in my life and felt that the security and comfort I obtained from it was a great help to my somewhat shy nature.

My husband, who had also had a university education, spurred me on to continue studying in my spare time, that is to carry on reading around my

subject and others too - in fact to gain a wider knowledge than I had hitherto been able to find time for. My husband has many intellectual and influential friends of his own who he invites round to the house quite often. In spite of our wide circle of friends we never forget our old friends and family who we see quite regularly.

We have never been terribly well off but we do live quite comfortably and one of our biggest thrills was being able to buy our house at last. We have two children a boy and a girl. We brought them up in the best way we thought possible and were delighted when they married and had children themselves.

My life has been quite fortunate in that I have had a good education, a rewarding job and good home and family. My achievements may not have been great but they have been enough. Of course I have had disappointments and have broken down - the loss of a job or the failure to afford buying something badly needed, but I have been able to overcome these difficulties. Now I have reached the age of sixty I can look back on a good and well filled life and I can look forward to a happy retirement and old age in the knowledge that I have tried to achieve the best results in everything I have done."

The writer was female, had registered for a degree in Sociology, but changed to History, and belonged to sample C. She failed the F.U.E. at the first attempt and went on to 3rd Class Honours in History. She was of average intelligence for university students, but rather lower in verbal reasoning. She had passed her A-level subjects C B D, failed none and passed one paper at the S-level. She had obtained an above average recommendation from her school, her interests were low average, and her sketch was rated 3/7. She scored high on Def., Ord., Exh., Nur., Het., Wp, Od, Ad, Ac, As, Pu, Pa, Ph, and on all social role playing scales.

4. "I am now aged 60, and looking back I find it easier to appreciate the significant changes that have occurred in the world (or should I say solar system) than in myself. Little did I know when I left university with an average sort of degree that I would be enjoying myself intellectually so much now. I felt sure at the time that the days of quiet academic life were over, and indeed they were for the first few years. I went straight into industry and the rat-race as it was then called, and although I did not distinguish myself above others, I had some moderate successes. This was mainly due to the fact that I was interested in the work that I was doing. Nowadays though everyone is interested in what they are doing, but I think in getting a degree I had a head start.

As soon as I started earning money, I also started to consider what I should do with it, which I had not seriously considered before. But later this turned out to be the least of my worries, for I never seemed to have enough money. First there was the house, and later the rearing of a family. While at school and university I didn't really think I should ever get married, but somehow (I still do not know how) I did, with some success. Throughout this time I was well content with my life and did not in any way suffer from lack of material welfare. However, mixing with people has always been a problem with me, although now I don't consider it a problem anymore.

I had no great disappointments, although I often felt that my laziness would one day lead to some. My only true sorrow came when my parents died. But this too, although I did not think 40 years ago I would ever fully recover from this, I overcame in time. Although I feel I have had an enjoyable life and one which I had hoped I would always have, although if asked if I was to live my life over again would I do the same again, I think I would choose a different course".

The writer was male, had registered for a Special Degree in Physics, and belonged to sample B. He passed his F.U.E. easily and was awarded a Pass Degree in Finals. His A-level passes were B D D and he failed none. His school's recommendation received a very low rating as did his interests, but his autobiography was rated 5/7. He scored high on Ach., Ord., Aut., Chg., Ph and Pi, and low on Nur., Aff., Od, Om, As, Pe and role playing.

5. "After I left school with a State Scholarship and had a variety of boring jobs, subsequently became very disillusioned both about the state of society and also myself this being occasioned by the loss of a very important boyfriend who unfortunately got someone else pregnant and had to marry her. At university cynicism and depression increased, and I continued to write poetry and loathed my fellow students, concentrated academically and graduated with a first class degree. At the age of 21 I became a Christian, which caused a great deal of difficulty as it was entirely against my naturally sensual and lazy tendencies. However the Christianity increased as the sensuality lessened with age. I did three years post-graduate study during which time I married a Cambridge student called Andrew Robinson and for two years continued a part-time lectureship at Cambridge. However, my poetic and intellectual tendencies were very like my husband's, this consequently caused chaos and resulted in (to me) a very disappointing loss of my poetic ability and dynamism as an individual; also at the same time I became pregnant and was annoyed. Socially so far I had achieved what I wanted, an academic life and also materially, viz. an untidy house which did not particularly conform to accepted standards. Unfortunately, my general lack of ability as a wife and mother caused a temporary rift: however I returned, I had 2 more children in 6 years and at the age of 30 retired to lecturing and had some articles published. I continued to write poetry but did not become particularly famous or influential, which disappointed me and neither did my husband which disappointed me even more, we both continued the academic life until our children left home and finished university, at which time we left England and went to live in Italy, still burdened with an overpowering sense of inadequacy at coping with practical details. Becoming bored with academic life, I concentrated more on creative writing which achieved a small margin of success. I suspect I harboured a grudge against my husband for having confined what might at one time have been a fairly extensive gift.

The chief milestones in my life were my degree, my marriage, my children and every publication of poetry or prose. I shall die with a distinct feeling of annoyance."

The writer was female, was taking an Honours Degree in English, and

belonged to sample B. She passed well in the F.U.E. and achieved Upper Second Class Honours in her Degree. On the intelligence test she was low average compared with a student population. She had passed her A-level subjects A A B and had also passed in two S-level papers. The school's recommendation, her interests and autobiographical sketch received maximum ratings. She scored high on Ach., Exh., Aut., Agg., Wp, Om, On, Pu, Pa, Ph, Pf, Pi and low on Def., Ord., Int., Ac, As, Pe and social role playing.

STATISTICS OF HIGHER EDUCATION - I

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INTRODUCTION

Before I begin, let me just get one negative observation out of the way. That is this. I am neither authorized nor competent to speak for the Department of Education and Science, much less for the University Grants Committee or the Universities Central Council on Admissions. I have, however, the authority to speak for myself - and, having worked for all three, I have some knowledge of what is statistically done by these three bodies. The broad framework I shall try to construct must include reference to, and may sometimes go beyond, what my fellow-speakers have to say. My main purpose, however, will be to display some of the Department's statistical wares and indicate what developments are under way or in contemplation. My theme will be integration, both of our own and other educationists' statistical activities, always against the background of what use the facts will be in the determination of educational policy and development. My knowledge is neither exhaustive nor my solutions to problems definitive. What I have to say is much more likely to evoke - even, conceivably, provoke - reaction than it is to inform and instruct a gathering so expert as this.

FIELDS OF INTEREST

As I see it, education is an integrated and continuous process stretching from the womb to the grave, or perhaps beyond. The individual paths that fifty-two million people may follow in traversing this course may teach one a great deal about both the educational opportunities unfolding before them and the individual's capacity to take and profit from those opportunities. That is, always provided it is possible to measure in any meaningful sense what in fact happens - which is what we statisticians are in business for.

The spectrum is so immense that one needs to determine and define those parts of it that justly fall within one's own sphere of responsibility. For those of us who work in what is called Education, the field of activity is conveniently enough defined, at least initially, as the period of formal education that extends from say the age of 4 or 5 to, at the most, the ages of say 21 to 24. Within this stretch of years, only the last six or seven at most may be regarded as the age of higher education but there is little value in confining analytical attention to that short span when what has gone before so pre-determines what follows thereafter. It is these pathways of development that hold the greatest potential analytical value, the movement from one stage in this progressive development to the next and the ones beyond.

Yet we who are statisticians in education, in common with our fellow professionals in other walks of life, traditionally measure the static state rather than the dynamic movement. And we measure it in the aggregate, not in terms of what is happening to the individual. Our only analytical expression of movement is in tables showing the distribution of a given number of people - say, school-leavers by their next destination - universities, further education institutions, colleges of education, etc. Most of our tables are cross-analyses of current statistical facts, implying no movement - such as student by type of school, by age or sex. This is not to decry the value of the facts that we do know, simply to recognise their limitations.

I personally see no point at all in collecting facts for their own sake. It is the use that can be made of them that alone justifies the employment of numbers of highly paid people in their collection, presentation, analysis, and interpretation. Any Department of State is concerned with policy making and the measurement of policy achievement and it is to this end that my colleagues and I are properly devoted. The value of knowing the number and the age of pupils that there are in schools and of those leaving schools is as a guide to knowing what provision of places in universities and other institutions of higher education needs to be made for them and of the facilities in terms of accommodation and teaching capacity accordingly needing to be provided.

DEPARTMENT OF EDUCATION AND SCIENCE

The Statistics Division of the Department of Education and Science (DES) is a Division of the Planning Branch, which has joint Heads at Under Secretary level, one an Administrator and one a Statistician. The Branch comprises Administrators, Economists, Automatic Data Processors (ADP) and Statisticians, supported by Executive and Clerical Staff. Its functions are:

1. To examine the quantitative implications of long term educational developments in terms of money, manpower and other scarce resources.

2. To examine the inter-relationships between various elements of policy which are the responsibility of other branches of the Department concerned with education and to draw conclusions.

3. To be responsible for the Department's statistical and ADP services, for its research programme, and for local government questions (including liaison with the Royal Commission).

4. To review the product of the educational system in the light of known national needs.

Statistics Division numbers about 80. The number of professional statisticians working for the Department accounts for only 8 of the 80: a Director of Statistics, two Chief Statisticians, four Statisticians and one Assistant Statistician.

The Director of Statistics is Joint Head of Planning Branch. One Chief Statistician is responsible for most of the Department's bread-and-butter statistics, apart from Teachers, and for the development of an individualised system of educational statistics, of which more later; two Statisticians work with him. Among the other Chief Statistician's main functions are the responsibility for developing an educational model, developing and extending the statistics of qualified manpower and Teachers' statistics, including teacher supply and demand.

AVAILABLE STATISTICS

In terms of head-counting, a substantial series of publications under the general titles Statistics of Education is now issued annually from the Department of Education and Science. For convenience, separate volumes appear for separate defined sectors of the educational field: Volume 1, Schools; Volume 2, School leavers; Volume 3, Further Education; Volume 4, Teachers; Volume 5, Finance and Awards; and shortly, Volume 6, Universities, produced by the University Grants Committee (UGC) with the co-operation of the Department of Education and Science. A further volume prepared jointly by the DES and the Ministry of Technology appears as Statistics of Science and Technology and certain volumes in a special series are now beginning to appear, including recently, for instance, a survey of the curriculum and deployment of teachers, shortly to be followed by a companion volume derived from the same survey. These volumes contain aggregate numbers of students at their various stages of education, analysed, typically, by type of school or establishment, age, sex, examination achievement, subject, region, qualification and award aimed for, method of study and, where flows are measured, destination. Similar analyses for educational staff are also published, whilst the finance volume contains a substantial amount of information about expenditure and income in the various educational fields.

SCHOOL LEAVERS

The school leavers' returns currently published in Part 2 are, of course, the starting point for statistical analyses in the field of Higher Education. They are also among the most valuable of our regular series of statistics for, although based only on a '1 in 10 sample', they throw considerable light, in some depth, on the attainments of school leavers and on their next destinations. The sample is in fact taken for all pupils born on the 5, 15 or 25 of any month. Grossing-up factors are calculated for each sex, year of birth, type of school and region stratum by dividing the number of leavers in that stratum in the check 'census' figures (giving each leaver's sex and date of birth) by the corresponding number in the sample. Sampling errors are calculated and tables showing the standard error applicable to a random sample of the same size as that obtained in the leavers' survey are shown in the publication. Projections of the estimated output both from schools and grant-aided Further Education establishments are also published up to about the year 1987. All the statistics, including the projections, are computer-calculated and liaison with the Automatic Data Processing Unit of the department is inevitably close. It may be worth adding that the projections published in recent years of pupils with given numbers of A-

level passes have proved reasonably close to the actuals when these have become known. These projections have been an important starting point for many of the forward looks into other more advanced spheres of education and have themselves been linked, of course, to similar projections of the school population as a whole.

In the last few years the school leavers statistics have been developed to include characteristics not hitherto collected or analysed. The combination of subjects in which A-level passes have been acquired, together with the quality of those passes as measured by grades A to E, have been cross-analysed with the chosen discipline of those going on to university. Much of this work was originally undertaken to feed the Dainton and Swann committees who were concerned with the supply of qualified scientists and technologists. Now that these committees have reported, the work on this side not only continues to keep up to date with the trends in the scientific fields, but is expanding to service other work being undertaken in the Department on the supply of equally qualified manpower generally, not just in science and technology. The swing away from science which Dainton and Swann exposed caused some concern and a close watch is being kept on the future movement. It may be worth adding that, overall Robbins' estimates of those considered to be qualified for higher education, i.e. those with two or more A-levels, have been greatly exceeded. Expected to increase by little over 30 per cent over the past five years, the numbers have increased by nearer 60 per cent to almost 80 thousand in 1966/67.

FURTHER EDUCATION

There are some 850 major institutions engaged in providing Further Education and many of these are providing Higher Education for their students. In November 1967, there were, in fact, close on 13,800 students studying for university first degrees and a further 10,200 doing Council for National Academic Awards (CNAA) degrees in Further Education institutions. This number of students is sufficient to represent several decent-sized universities and is equivalent to 17 per cent of the number studying for first degrees in the universities of England and Wales. Most of the Further Education degree work is on full-time or sandwich courses.

In the field of Further Education, it is probably fair to say that relatively less is currently known than about other educational sectors, certainly by me. This is not perhaps surprising, since it is so widely spread a field in the number and variety both of institutions and of subjects and levels of courses. The standard FE volume in fact contains a similar number of tables to the number in the school leavers volume but, in general, the diffuse nature of Further Education demands such copious statistical documentation that, under present methods, it is almost impossible to do more than present a static picture. A recent experiment with a '1 in 30' sample (students born on the 15 of any month) should enable us to derive some first analyses on a more varied and dynamic statistical basis. This will tell us something about student progress, at least in terms of the number of years needed to complete a course, but little about drop-out rates. Analysis of wastage must await better and subsequent samples or, better still, a fully individualised system by which the flow of students through the system

can be measured. Although a little is known about the switching of some university applicants to institutions of Further Education - and, indeed, Colleges of Education - a full mapping-out of the routes of educational opportunity must await a fully-fledged individualised system.

When the statistics available on Further Education are compared with those currently available on universities, some of the deficiencies and dissimilarities can be seen. In my view, the great deficiency in Further Education Statistics in this context is the unavailability of any information on candidates for Further Education institutions, as distinct from accepted students. The value of knowing the inclinations of individuals for a particular educational development, epitomised in the university statistics available to the Universities Central Council on Admissions (UCCA), is considerable. It is an interesting speculation whether some such central body as UCCA should be established as the channel through which all or most of the applicants for further educational institutions within the sphere of higher education could be routed. If Higher Education is really to be seen as a whole, within which courses of study may appear as alternative complementary or supplementary to one another within their respective institutions, there would clearly be great value in being able to measure these variants in some common statistical way within some common definitional pattern. This is not a plea to make life easy for the statistician, but simply a possible way by which educational opportunities may be made more clearly visible to the human-being who would like to further his own education.

UNIVERSITIES

University Statistics have for many years appeared under the auspices of the University Grants Committee in their annual White Paper Returns from Universities and University Colleges in receipt of Exchequer Grants. I should not wish to steal the next speaker's thunder by elaborating at any length on the nature of the statistics. I should say, however, that, because the Department of Education and Science's own published statistics were short of facts about this highly important sector of Higher Education, it was thought a year or two ago that the Department should itself include some summary tables on universities. In Statistics of Education Part 3, 1965 published last year, through the co-operation of the University Grants Committee it was possible to publish some summary tables of university statistics. This co-operation was extended very considerably this year and culminated in an agreement by the University Grants Committee to publish their own basic annual statistics in the same standard format as the existing volumes published by the Department of Education and Science in their Statistics of Education series. The resulting volume, prepared by the UGC with the Department's co-operation, is due to appear within the next few weeks as Volume 6 of the 1966 Statistics of Education series. The UGC will accordingly cease to publish their annual statistics in their previous White Paper form, although, of course, their Annual Report will continue to appear in its established form.

The bread-and-butter work, embodied in the Department's Statistics of Education series and now established with the aid of computers on a fairly comprehensive scale, was originally initiated on an essentially separatist

principle: that is to say, the documentation of each individual sector of education developed with the speed and the priority that individual circumstances then dictated. During the past four or five years in particular, however, conscious efforts have simultaneously been made to integrate the whole analytical picture more rigorously in a movement towards what might be called a national framework of analytical approach. This has necessitated considerable attention to the definition and common classification of the statistical components entering into the tabulations, not only within the Department of Education and Science but in close collaboration with other educational bodies. This has happened notably in the field of higher education not only with the University Grants Committee and the Universities Central Council on Admissions but with the associations concerned with further education institutions. So far as university statistics are concerned, a very considerable measure of identity of treatment has now been reached and it is beginning to become more and more possible to blend figures from the various sources together to form coherent pictures of this part of the educational spectrum.

The DES's span of knowledge inevitably has its gaps. For instance, there is no place in their assembly of information - which, it is well to remember, derives entirely from the willingness and ability of the educational institutions to provide it - for the measurement of candidature for university places. The DES does know how many school leavers in fact go to university but does not know how many - and how many others who are not school leavers - would like to. The UCCA does, and thereby provides a statistical link between one set of facts and another that is invaluable in enabling some increased measure of this continuous flow from one sector of education to another. Without common definition and comparable analyses of recognisable information derived from such different sources, there are obviously severe limitations to what can professionally be done to build up an integrated picture of the university scene. With all the good will in the world it is often not possible to find time or resources to recast our material in a form that is convenient to our fellow workers. It is much more often inability than unwillingness that makes us refuse help to those working in the same field.

UCCA STATISTICS

A word of amplification on the material available through UCCA might well be of interest to this assembly. In their annual reports around the turn of the year and in their statistical supplements elaborating this information some 9 or 10 months later, the UCCA publish material about university applicants and admissions in a form that nowadays is closely comparable with corresponding material published by the UGC and my own department. Analyses by sex, home or overseas origin, subject of intended or actual study, GCE or other examination performance and, where appropriate, by university institution, is all now on a basis that, whilst not completely common, is sufficiently so as to enable valid pictures to be drawn. Many of the definitions, classifications, and indeed computer codings, that the DES have adopted have been taken over by the UGC and UCCA as they stand. Conversely, conventions that the UCCA have established, such as the way of measuring A-level grade combinations and, indeed, their course code numbering system, have either been, or are likely to be,

incorporated in one way or another into the system by which the DES and UGC prepare their own material.

By the nature of their business, which is to act as a post office for university application, selection and acceptance, UCCA operate in a narrow field. In any year, little over 100, 000 people are the concern of UCCA. But in quoting mere numbers one can get too statistical. As R. A. Butler said in The Times a few weeks ago:

> "If you look on students as the type of capital investment which will accrue with every year, then you see the enormous value of the investment."

In their knowledge of the candidates for university entry, UCCA have, if incidentally to their main raison d'être, unique knowledge about a large part of our young academic élite and what happens to them. This is a deep vein of relevant knowledge, some of which has been mined already and brought to the light of day. But beneath the surface there are even deeper riches available. The degree of detail available for both O-and A-level achievement is considerable: basically both subject and grade are given. It is therefore possible to bring oneself pretty fully up-to-date on a candidate's educational background and by analysis within the data, to learn, for instance, how resitting A-levels has improved a candidate's attainments and hence his chances. His inclinations, as expressed in his declared intentions, also appear on the application form, in terms both of the course of study and the university he would most like to go on to (allowing up to six choices for each). It is clearly, therefore, possible statistically to extend one's understanding further: to derive analyses in depth of previous attainment against intention and ultimately against university achievement, with appreciable refinement of understanding by levels of quality and fields of interest. Many analyses have been produced on this basis and, for the serious research worker, there is much food for thought even in the published analyses in UCCA's reports and statistical supplements.

Regional information, too, is available at UCCA, throwing considerable light on cross-traffic between regions in terms both of inclination and actual satisfaction of it. Some, at least, of the aspects of students' residence that have engaged policy interest and attention in a number of educational bodies may thereby be illuminated.

Because UCCA information is, by definition, derived from individualised data, the flow of individuals through one part of the educational system may be discerned with some precision. One published UCCA analysis has been taken to the point of measurement of degree achievement, so that the full pathway of educational development through school to O-and A-level, to university, to degree achievement has been opened up. The possibility of extending such an analysis to first employment and beyond clearly need not be ruled out. Such analyses could, at least be useful lead-ins to flow statistics on an individualised basis, for facts already exist and can be strung together from one source for a longer sequence of educational progression than we habitually measure now. It is of course limited in a number of ways: the starting-point is, after all, a

figure of students who are only a proportionately small part of the total number of school leavers in any given year. It is only by extending linkage backwards to encompass the full range of school leavers, and forward to the stage of qualified manpower and subsequent employment - in fact, right into the Department of Employment and Productivity's field - that the full development of an integrated, progressive and dynamic pattern of educational advancement takes form.

There is, of course, danger in exhaustive analytical concentration on examination achievement at school and in particular on A-level achievement. Despite the close correlation between the quality of A-level grade combinations and the proportion accepted at university, A-levels are certainly not the sole criterion of selectors else no AAAs would be rejected and no EEs admitted and there would be a cut-off point. Apart from the interview, which not all candidates have, the other important criterion of a candidate's eligibility appearing on the UCCA application form, namely the Head's report, is non-quantitative in its nature. I myself believe that it is not impossible to set figures to it, on some acceptable basis of quantitative assessment of qualitative judgment, and some thought has been given to ways of doing this by the people who have been concerned with the recent experiments in ability testing as a supplement or alternative to the A-level assessment. If this, and indeed the interview, can in some way be expressed in a form the computer can handle, we may add still further to our capacity to understand and evaluate what the candidate has to offer and what the university selector gives weight to.

My own belief is that, at the least, UCCA statistics provide an invaluable means of confirming and of quantifying conclusions drawn from educational experience. At their highest reckoning, they provide a vital bridge across one of the gaps in governmental educational statistics and, indeed, throw a full and revealing light upon the very entrance to the university sector.

COMMON CLASSIFICATIONS

Then again, national statistics which have hitherto been, for so many educational purposes, confined to statistics of England and Wales have been extended, enabling broad comparability so far as different educational needs and systems allow, to include Scotland and thus provide figures for Great Britain. More recently, Northern Ireland, too, has been added, enabling a UK figure to be constructed, at least for many current analyses. This development will be reflected in a volume of UK statistics to be issued, we hope, early in the New Year. We are anxious to extend this whole theme of integrated effort, by encouraging other workers in this field to participate with us in this common solution to our professional problems. By that I do not mean that the DES wants to impose its own definitions and requirements on everyone else - and indeed it can be demonstrated that we have ourselves absorbed into our own statistical structure what other active workers in this field have done. But I think all concerned should at least be made aware of the direction in which we are trying to move and the steps we have so far made in that direction. We are all currently plotting our course into a relatively uncharted field, for, despite the great strides of the past 7 or 8 years, there is still a long way to go. But it is of the

utmost importance that we go, if not on the same road, then on converging or at least parallel roads, rather than on roads that are going to diverge.

DES DEVELOPMENTS

We cannot of course ignore the practical and processing difficulties of measurement on such a vast and intricate scale. The DES has no educational information of its own but only what the educational institutions are willing and able to give them. One of the deepest concerns of the Department is accordingly to keep to a minimum what it asks for. The principle it follows may be summed up as being essentially to ask for what the educational institutions have, and need to have, for their own sakes, whilst at the same time standardising wherever possible, so as to avoid the need for recasting the same basic information in a variety of different forms for different purposes. All people working in this field are acutely aware of the dangers of extending needs for knowledge to the point of imposition on busy people and it is our hope that, however much we may in fact ask for, it may be made to serve - in an ideal world - everyone's purposes rather than be one more goad among the many. Even internally, the processing pyramid on which published tabulations inevitably rest is immense and, however far we have currently advanced in transferring the main load on to machines such as electronic computers, there is still a lot of tedious back-breaking work for human-beings in any department or organisation engaged in these activities. This has a double consequence, of course: it can become soul-destroying for all concerned and it does become immensely time-consuming and delay the issue and availability of the resulting information. We must beware of getting into the situation of the man who, when asked for today's Country Life now, produces W. H. Smith's book stall in six months' time. We need to do more to release figures for early internal use and not wait until they are ready for publication. There are managerial and administrative problems to solve and, as so much of this must appear to intelligent people as a tedious chore, there is a real danger of failing to come to grips with this sort of detail. There is a human tendency to mask, under the throw-away description 'delegation', one's own unwillingness or incapacity to work one's administrative way through to simple, logical and understandable ways of processing and working. We are trying to grasp the nettle: there is still some way to go. Fortunately, the supporting executive staff working with the relatively few professional statisticians are, generally speaking, people of considerable and extensive experience within the Department and, indeed, often outside it, too.

We in the DES have two great needs immediately upon us: whilst we are, by established statistical criteria, now very well and very accurately documented we are still too slow at getting the material out. This is no criticism of our predecessors, for the development in, and use of, computers has been truly staggering in the problems it has brought and without them we could never have laid on such a mass of material. But the fact remains that it is no use knowing all this, unless you can put it to real policy use whilst it is still sufficiently a reflection of what is actually happening for it to help determine policy. Rigorous examination is accordingly going forward to analyse every stage of the preparation, production, and presentation of our national educational statistics to see where, and in what way, each such stage can be speeded up.

However voluminous and intricate the facts we collect may be, they need to be available for general use at worst within a year of the period to which they relate and we have not yet generally reached that target. The second and much more fundamental need that we are now facing up to is, whilst preserving our static picture, to begin to explore the possibilities of flow statistics, the dynamic picture of what is really happening to individuals passing through the educational system. This is now known as I.D. - Individualised Data - and it is to this future, but now imminent, prospect that I finally turn some attention, no doubt leading in to what Alan Croxford will later be saying.

INDIVIDUALISED DATA

The object of collecting individualised data is not to discover what happens to the individual and then assume that is what happens to individuals en-masse. What is wanted is a professional aggregation of what happens to each individual in such a way as to measure, over time, the different channels by which groups of individuals trace their course from one milestone in life, past others, to some recognisable destination. Such analysis may reveal a great deal about the realities of the various alternatives open to the individuals in our society and which of these channels are relatively more productive than others in terms of some stated end.

When you get down to the detail of this, it requires some unaccustomed ways of thinking. The nature of this mental change may perhaps be most simply indicated by remarking that, if the measurement of the passage of individuals through some years of active life is stretched far enough over time, it may not be long before the complete sequence of development for any particular individual is unique to him. There may be no others to share precisely that extended sequence of events in any aggregate statistical sense. Unless, therefore the life sequence of 52, 000, 000 individuals is to be separately examined, which is no task for a statistician, selectivity must be exercised in defining the events in an individual's life by which he may be statistically identified. These significant events, statistically speaking, may be stretched over a short or a long period. With selectivity, however, it clearly becomes possible at some stage so to localise the elements in individuals' lives as to find some who may legitimately be grouped together as having followed essentially the same sequence to development as one another. The techniques of doing this in any simplified and meaningful sense must require some pretty deep thought. It is one thing to construct a model, as necessarily a dynamic model of human progress over time, that may be explainable and understandable to the minds of fellow-professionals. But it is another thing to decide how segments of this model shall be presented on two-dimensional paper in such a way as to enable ordinary intelligent people to understand the patterns of development through which cohorts of individuals have passed, with what results. This is an intellectually stimulating and, I am sure, possible challenge to face but we have not yet met it by our present methods with individualised data. These start, certainly, with data about individuals but produce, in our final analyses, equally static pictures to those which it is our tradition to produce by the simple collection of pre-arranged data. By this approach, one comes up at intervals with consistent enough tables but containing different human beings in each of the aggregate pictures that

successively appear. We have a new type of problem to solve if we are successfully to show in an analytical sense what has happened over sustained periods of time to the groups of specific individuals with whom we are statistically concerned.

CONCLUSION

Some may feel that any survey of the statistics of higher education, however brief, that makes virtually no mention of Robbins has gone off true. They may feel, too, that such recent reports as the Dainton and Swann reports into the flow of candidates into and out of higher education deserve much more than a passing mention. Had I been trying to put over a statistical paper, rather than a paper about developments in statistics, I would entirely agree. But I was asked, and wished, to treat it this way, for others more experienced than I have statistically explored this field and some no doubt will be speaking this afternoon. If what they have to say may be seen with greater advantage against the backcloth I have tried to display, I shall have served my purpose.

STATISTICS OF HIGHER EDUCATION - II

A. A. CROXFORD
(University Grants Committee)

The previous speaker began by giving the terms of reference under which the Planning Branch of the Department of Education and Science operates. Perhaps I cannot do better than to begin by quoting the much simpler terms of reference of the University Grants Committee as far as statistics are concerned; these are "to collect, examine and make available information relating to university education throughout the United Kingdom".

The state in which we find ourselves at the moment is one in which there are more needs for analysing the data, and more ideas as to how to do so, than the present data will stand. We are therefore in a gradual process of transition from the collection of facts en masse to the collection of facts about individuals. Such individualised data will be referred to in this paper as I. D.

In order to show the expected benefits of this new form of collection it will be necessary to run very quickly over the present system of data collection.

I ought to explain at the outset that I will be restricting myself to the statistics of staff and students in universities - that is, people, as opposed to financial or building statistics, both of which are important but which cannot be covered here. We are interested not only in the number of people in a given situation at a moment in time (whom we call 'stock'), but also in the movement of people from one situation to another, which we call 'flow'. The present statistical network used at the University Grants Committee provides a great deal of both stock and flow information. This information is obtained by a mixture of the traditional methods, that is of collecting facts about staff and students in bulk, with in several cases the use of individualised data. I have warned you of this mixture at the start in order that you can recognise the types as I mention them.

There is no attempt made at present to collect information about the stock of staff and students, at a given date each year, by anything of an individualised data basis. Instead, there is an annual performance in which we send to each university a separate return for staff and students. These are quite simply named Form 1 and Form 2, but these names are misnomers. The combined thickness of Form 1 and Form 2 approaches an inch, and if the need for more detailed information were to grow any more they should be renamed books. The form for students, for example, consists of a number of tables each of which analyses students according to two or more of their characteristics.

The same returns provide a certain amount of flow information. Some

of the tables are specifically restricted to "students entering the university for the first time". This means that we, in effect, ask the universities to look out for flow information, and to render it to us in analysed form. These figures of new entrants provide an early warning system of the likely numbers in the universities in subsequent years. These new entrants represent flow into the universities. Flow out of the universities consists of two different types, one of which is recorded intermittently and the other continuously.

The intermittent exercise is that of collecting information about students who flow out of university before their course is complete. This is usually referred to as wastage but since the most recent exercise on this point enquired into the progress of all students, and therefore consisted mainly of students who succeeded, a more apt title was considered to be An Enquiry into Student Progress. (And the odds are about 6 or 7 to 1 that this was the correct title, since only 13.3% of students were found to fail their course or withdraw for any reason.) This Report was published in August and is still the source of a good deal of comparative investigation.

I referred to this as an intermittent exercise. The universities are asked to provide the analyses about once every three or four years, once again entering their students in the cells of tables in a form which is about an inch thick. This is the second time I have mentioned the thickness of the form, because it is this trivial measurement which most easily gives an estimate of the complexity of the forms. (The most recent exercise was also almost certainly the last, as I will explain when I come to the I.D. system.)

The final flow to be measured in the student process is that of graduates into the outside world. Here we are fortunate in having the co-operation of the University Appointments Officers, who provide detailed accounts of the first employment, or further study, of the graduates at their university. The method of data transmission is that of anonymous individualised data. The fact that the data is for individuals means that it is capable, if required, of being cross-analysed in a variety of different ways. The fact that the data is anonymous is not too much of a drawback since the Appointments Officers supply all the principal facts that are required, and linking with other data about the same individuals is not necessary.

A general point worth making here is that it has been shown time and again that wherever possible statistics should be obtained as a by-product of an existing administrative process. The information will then have been subjected to scrutiny for other than statistical reasons, and is much more likely to be correct than information which is collected for statistical purposes alone. It is also probably cheaper to obtain. The logical outcome of this is that the gathering of statistics is as diversified as the administrative processes which produce them with the unfortunate result already mentioned that the field of higher education is mapped by a series of different agencies, all of whom quite naturally applied their own brands of classification and definition to their own part of the field. It has now been recognised that it is sensible to adopt standard definitions, even where these definitions do not suit all tastes, but it may be a year or two before the last oddities of definition have grown out of the system.

To return to the Appointments Officers. This intermediate brand of anonymous I. D. is not peculiar to them alone - the flow of academic staff into and out of the university system is recorded in the same way, as is also the flow of schoolchildren leaving school. In each case, a set of facts pertaining to unnamed individuals is sent to the appropriate department (U. G. C. & D. E. S.).

It is not impossible to continue to gather all the information which is required on a bulk return basis, or on an anonymous I. D. basis. Not impossible, but extremely expensive and irritating to all concerned.

If on a bulk return, (and by this I mean one where a university is asked to enter its own students in the appropriate places in a table) we subsequently find that there is a need for a further cross-analysis, we have lost the chance once we pass the stage of having the forms printed.

Each new characteristic to be analysed in conjunction with the others adds a new dimension to the return - in fact it has a multiplicative effect. For example the last new characteristic to be added to the analysis of the stock of students (Form 2) was the "subject studied". Since there are 76 categories of subject studied this multiplied the size of much of the form by a factor of 76.

It can be seen that each such annual bulk return is completely unrelatable to those of adjacent years - there is no way of recognising how many students changed their subject of study, to be replaced in total by other students, nor can we see how many left entirely. Which is why there is a need to mount an enquiry into student progress every so often.

This brings us to the I. D. scheme. The basic need for I. D. is to enable cross-analysis to be made easy. The need for identifable I. D. is more complicated.

It is theoretically possible to do without named I. D., if each student could be persuaded to complete annually a form which gave his life history to date, and if the labour could be found to code (and recode in subsequent years quite independently) the information.

Apart from finding the labour to do this, there would be a natural irritation of our anonymous student ("I gave you all this information last year") and also an inevitable severe loss in accuracy which is suffered by a statistical enquiry which is not associated with an administrative function. (In the medical world, where I. D. and record linkage is also under large scale trials, there is of course the additional factor that even if patients recalled the name of their previous complaint, they would probably not know the name of their treatment or drug).

With I. D. proper, in which individuals are in some way recognisable, it is possible to collect each item of information once only, and add it to an accumulating record at the centre. This is of course done at present by each individual university for its own purposes, either by hand or by computer, but centrally the optimum method would clearly be to use a computer.

From what has been said so far it will be clear that most of us who are concerned with this problem are in favour of adopting the I. D. approach to the collection of staff and student statistics.

In fact, a great deal of progress has been made towards this goal.

A natural starting point for an I. D. system has existed for some time in the offices of U. C. C. A. (The Universities Central Council for Admissions). There they had the application forms, containing a good deal of the personal detail and academic history, of applicants for university places, and at the end of their annual admissions exercise they knew which applicants had been accepted at each university. The basic information about each applicant was on their computer, while additional information was available, although uncoded, on the original application forms. One such item is parental occupation - this has (or should have) no bearing on the admissions procedure itself, but enables the important effects of 'social class' upon admission and success rates to be measured in retrospect.

U. C. C. A. also has the advantage of being an agent of the universities themselves, and so could dispel some of the fears that private information was going to a government agency which might then be tempted to use the information for other than statistical purposes.

In the course of the last year agreement has been reached that U. C. C. A. should act as the I. D. centre for universities, that its activities should be closely regulated by a policy committee on which the universities' representatives formed a majority and that a start be made on forming an I. D. record.

More recently (in the last 2 weeks) a series of meetings was held at the U. C. C. A. offices in Cheltenham to discuss with representatives of university administrations and registraries how the scheme would be put into effect.

When it is operating, the I. D. scheme will take over the functions of all the U. G. C. returns which I have mentioned, and provide far more besides. Not only will an annual wastage analysis be possible, but for the first time the flow of students between courses will be discernible.

I will leave a discussion of the benefits of these analyses to the next speaker, but before I hand over to her I will mention two longer-term benefits, not entirely of a statistical nature (although it is difficult to draw a line).

Firstly, the introduction of a standard coding system for subjects taken in the G. C. E. examinations, which is essential for I. D., might eventually enable U. C. C. A. to obtain G. C. E. information direct from the examining boards instead of via the individual candidates, and secondly it ought to be possible for U. C. C. A., with its concentration of expertise and information, to send analyses and individual information to universities who would otherwise not have had the capacity (in terms of office staff) to obtain the information for themselves.

But these are only by-products. For the main uses to which this analytical tool can be put I hand you over to the next speaker.

STATISTICS OF HIGHER EDUCATION - III MODEL BUILDING

C. M. PHILLIPS
(London School of Economics and Political Science)

The object of this paper is to give an indication of the relevance of statistics on higher education, and other areas of the educational system, to projections and policy making at the higher education level. A major method currently in use on such questions is by using model-building techniques. Using a model of the educational system it is hoped not merely to project trends at any one stage of education but also to take into account underlying influencing factors at different points of the system. At the same time, the effects of different policy decisions at one part of the system on others can be followed through.

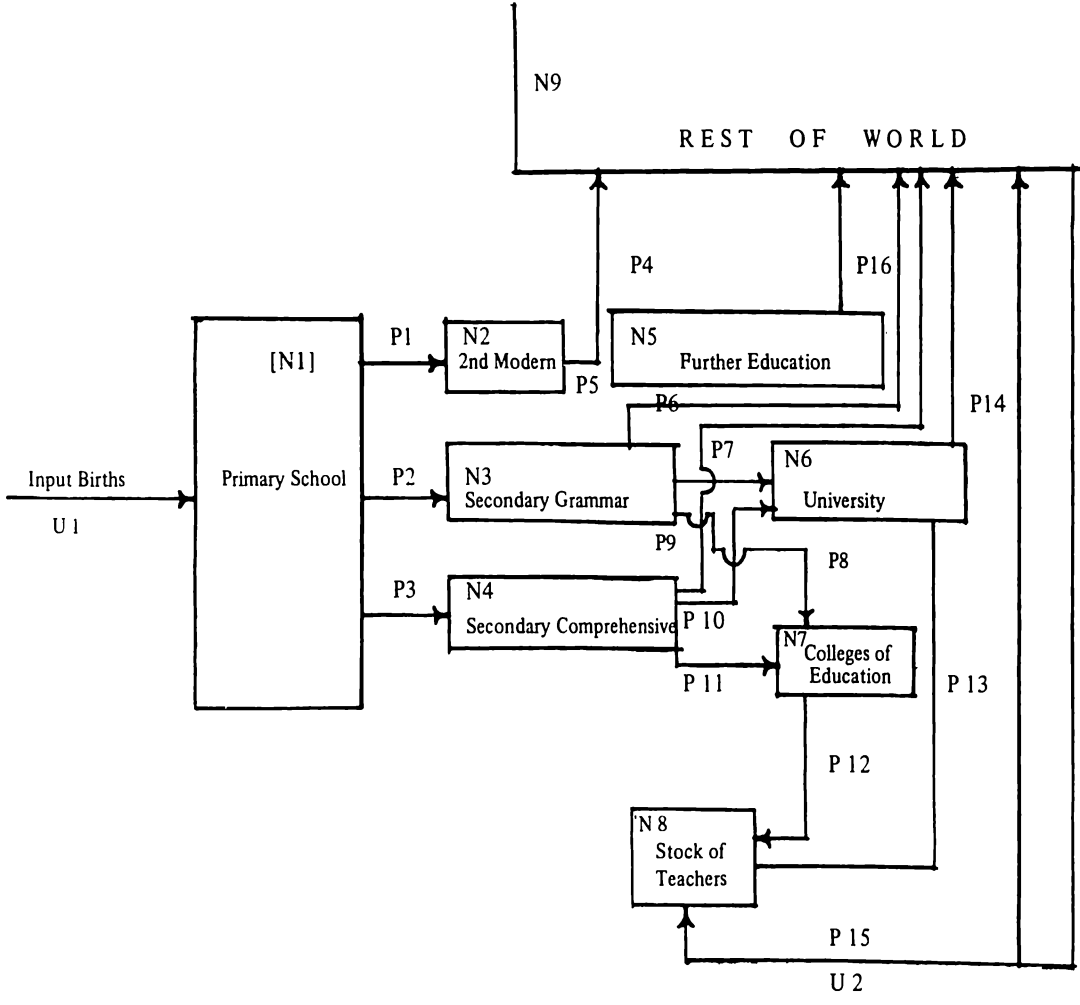
Such work is being done by the model project of the Higher Education Research Unit under the auspices of the Department of Education and Science. There are three main areas for which data is needed. Firstly, the effect of total pupil flows on the number of children entering work in higher education is being considered. Then, more specifically, work is being done on the movement of children from school to higher education and a consideration is being made of the main points where decisions take place. Thirdly, we are also trying to assess actual flows through the higher education system after entry.

The basic model, which considers all the main flows through the educational system, is shown on Diagram I. Flows go from input, when the child is aged five through primary school, secondary school, and on to forms of further education with the rest of the world as a residual category. The diagram can be further broken down to include teachers at the various institutions named and divisions in manpower. Such a model is important for judging and making explicit the kind of effects a policy decision operating on one part of the system will have on another part; for example the effects of increases in comprehensive schools on staying-on rates and hence entry to university can be estimated.

To operate this model we need data on the number of people in different categories in each year of education, preferably the figures of those moving on to another category in the following year. In fact, the data used for this model are mainly stock figures for each year, with implied flows. The crude model without these subdivisions can be expressed in the equation system shown with Diagram I and the use of age subdivisions within the institutional categories leads to its expression as the Moser-Redfern model.[1] Diagram 2 shows the

[1] See C.A. Moser and P. Redfern Education and Manpower: some current research in Models for Decision, English Universities Press, 1965.

DIAGRAM 1. Basic Flows in an Educational Model of England and Wales



N = Stock of persons in Educational or other activity

P = Number of persons moving from one activity to another as proportion of number of persons in originating activity

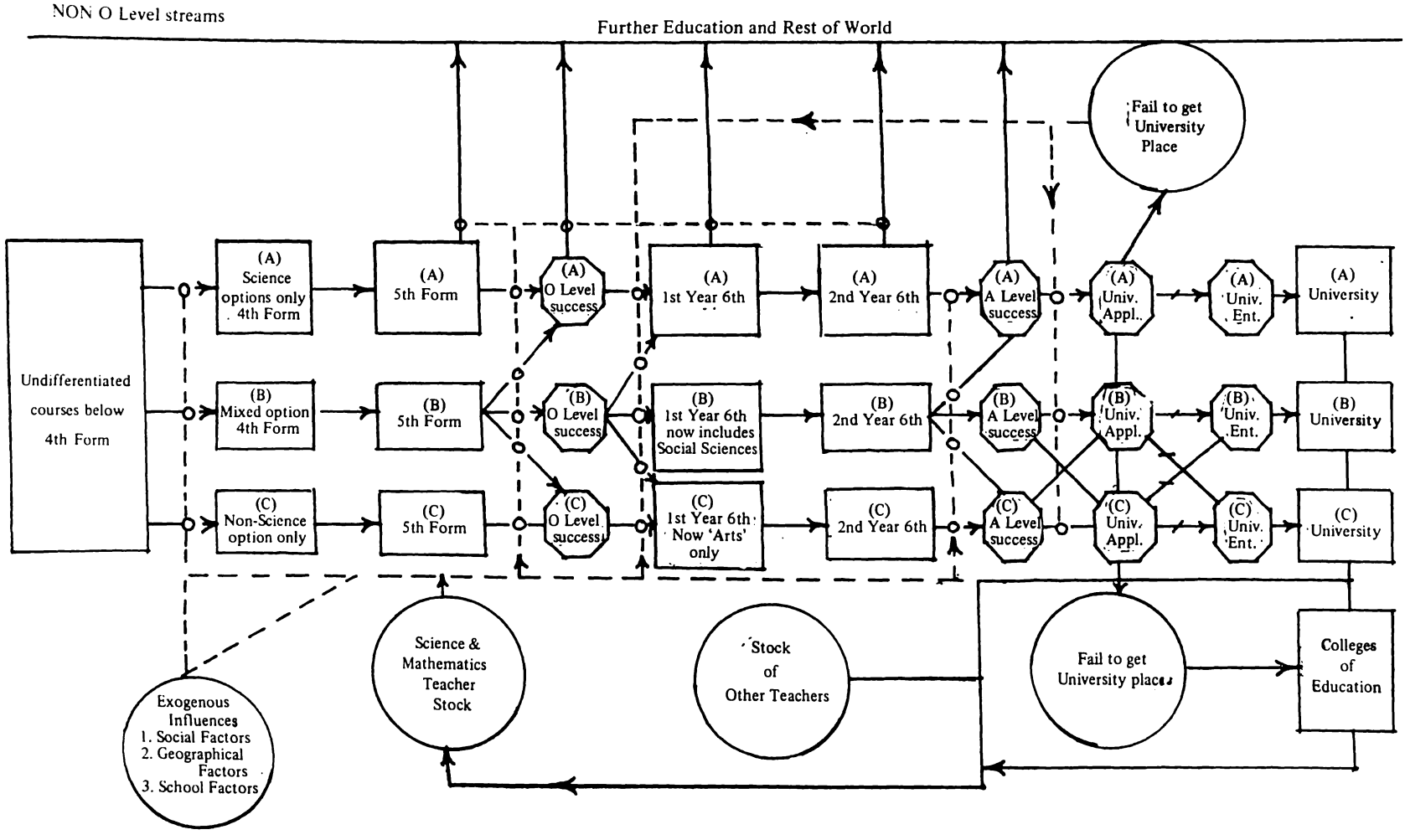
Note: To simplify the diagram all the likely flows are not shown

Equation System

(1) $N1(t+1) = (1 - P1 - P2 - P3)N1(t) + U1(t)$
(2) $N2(t+1) = (1 - P4 - P5)N2(t) + P1.N1(t)$
(3) $N3(t+1) = (1 - P6 - P7 - P8)N3(t) + P2.N1(t)$
(4) $N4(t+1) = (1 - P9 - P10 - P11)N4(t) + P3.N1(t)$
(5) $N5(t+1) = (1 - P16)N5(t) + P5.N2(t)$
(6) $N6(t+1) = 1 - P13 - P14)N6(t) + P7.N3(t) + P10.N4(t)$
(7) $N7(t+1) = (1 - P12)N7(t) + P8.N3(t) + P11.N4(t)$
(8) $N8(t+1) = (1 - P15)N8(t) + P12.N7(t) + P13.N6(t) + U2(t)$

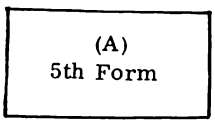
(where t = time factor)

DIAGRAM 2. Pupil Flows up to University Entry



Key to Diagram 2

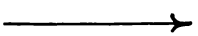
Flows of Students in Upper Secondary Education



= Courses of Study

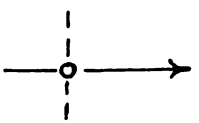
= Other Student Activities

= Influences on Student Choice



= Flows of Persons

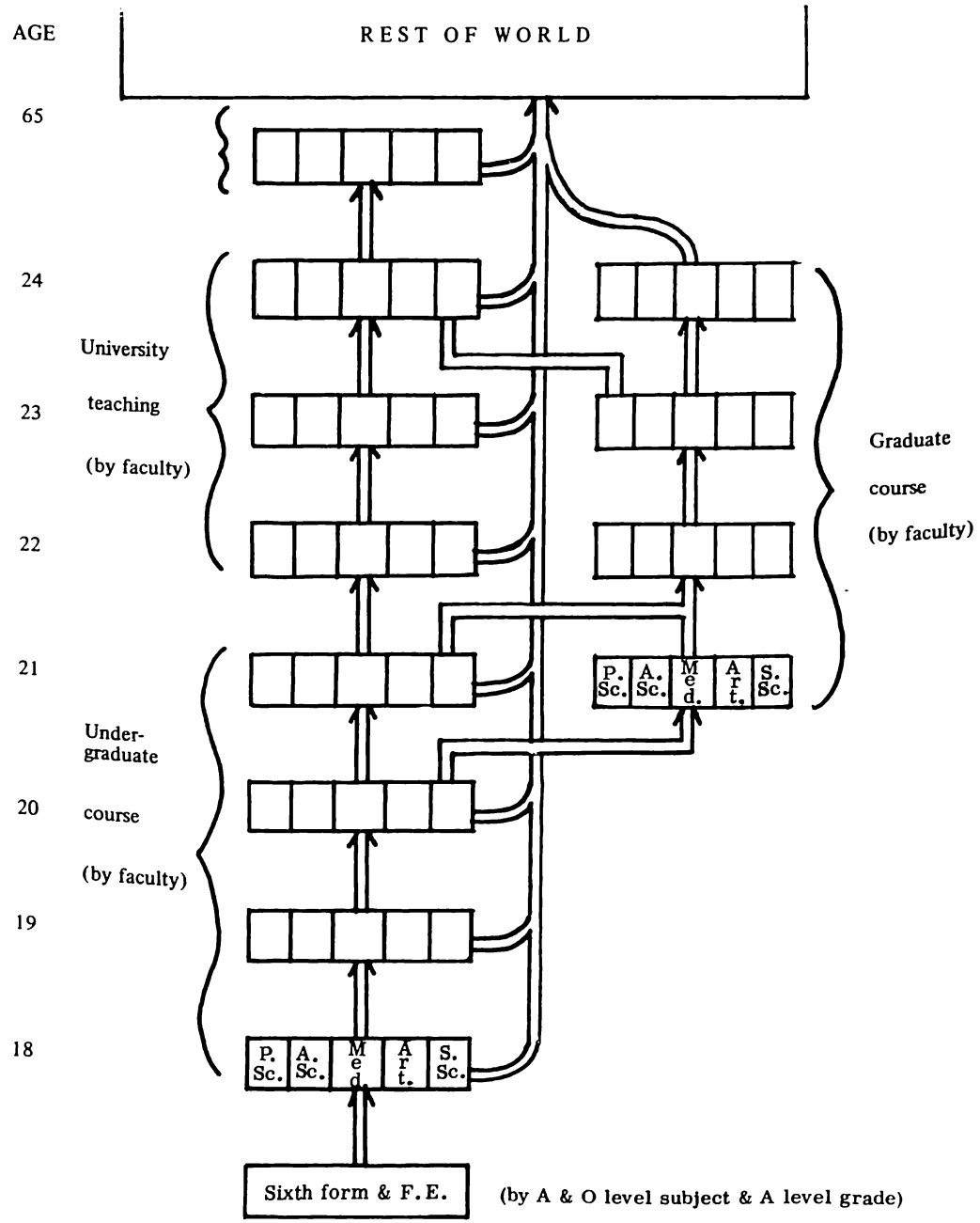
= Flows of Information



= Decision Points

= "Bottlenecks", Selection Procedures

DIAGRAM 3. Student and Teacher Flows Within the University System



P.Sc. Pure Science
A.Sc. Applied Science
Med. Medicine
Art Arts
S.Sc. Social Science

kind of flows used for a sub-model of university entrants. The approximate flow of pupils, between the age of 15 and 18, is considered beginning from a two year O-level course with different subject options. Pupil flows continue via O-level success, to sixth form entry, again broken down by subjects, and eventual A-level success and university application and entry.

Various official data sources can be used for such a sub-model. The School Leavers survey gives figures on O-level and A-level success in specific subjects and leaving destination including faculty of university entrants. There are problems associated with the analysis of such material; for example the current figures supplied do not give the years in which examinations were taken but only the year of school leaving, and only certain subject combinations can be specified. Nevertheless, the figures are extremely helpful to the sub-model. Children can be divided at O-level by their possible sixth form orientation. Of school leavers in 1966/67 for example, 90% of children with 6+ O-levels of which 3 or more were in science went on to pass science subject combinations at A-level. At sixth form level, divisions are even more clear cut - nearly 90% of university entrants have A-levels either in all science or all arts subjects.

The School Leavers survey figures, of course, are on children's actual entry to university, their applications can not be considered. U.C.C.A. gives interesting figures on applications since 1963 which increasingly supply useful figures. For their earlier years however, it is difficult to reconcile these data with the school leavers figures. One obvious deficiency, at a time when the School Leavers Survey was only giving A-level subject and leaving destination without university faculty being specified, was that U.C.C.A. gave figures on applications to faculties by grade of A-level but not subject combinations. This kind of problem is gradually being ironed out so that increasingly we have a fairly comprehensive set of data to fit into the sub-model.

The sub-model does, however, only consider a limited number of factors influencing flow, and work that has been done on an independent longitudinal survey shows the other factors we might like to consider. The Douglas survey[2] gives results on a sample of children born in 1946. As would be expected, certain factors like social class and school area have an effect on the probability of university entry but they also affect the flows through the subject groups outlined above. Working-class boys, for example, are less likely to take O-level science-biased courses than their middle-class contemporaries but if they stay in the sixth form they are more likely to take science at both sixth form and university level.

Other institutional variables, such as size of school and pupil-teacher ratio, also have an effect on these flows and make us realise how careful we must be when judging policy effects through our present, crude, model. Eventually, with the coming of individualised data it will be possible to study

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2 Run under the auspices of the Medical Research Council. For reports on the Survey see J.W.B. Douglas et al. Children Under Five, The Home and the School, and All Our Future.

such problems in detail and get better guides as to the principal factors influencing movements at this level.

One further difficulty at this stage could be avoided if individualised data were available. It will be noted that in Diagram 2 only entrants direct from school sixth forms are identified. At present in fact between 7 and 10 per cent of home university entrants come from the further education sector. This figure will include children from secondary modern schools, fifth form leavers, and sixth form leavers who began their degree course outside the university sector.

The actual pressure on university places also needs to be assessed; training college figures do show that girls in arts subjects frequently apply to colleges of education rather than universities and some, on being turned down, then accepted university places. Surveys of motivation at this stage similar to that undertaken by Professor Barnard of the University of Essex in conjunction with the Royal Statistical Society, need to be made.

The third stage of the model, flows through the higher education system, should theoretically be easier but yearly figures on the numbers in university are inadequate for our purposes. Diagram 3 shows a basic approach to a sub-model of this stage of the educational system. At present even stock figures for each group are not available, for the U.G.C. figures and implied figures are deduced from knowledge of length of course and total numbers at university. Problems of drop-out and faculty choice cannot therefore be considered using these data.

At all stages then, individualised data would help for such on-flows through the system and the influence of different variables on the flows. A further point which applied to all stages of the model and not just those appertaining to further education is the question of feedback relationships. Individualised data and the data bank associated with it would have very important implications when studying the effects of pupil-teacher feedbacks and other such factors on output at different stages. Before the model, in all its aspects of projection bases and reactions to policy making, can be used effectively such data sources will need to be available.

This and associated questions are discussed in Changes in Subject Choice at School and University by C.M. Phillips to be published in July 1969 by Weidenfeld and Nicolson.

A STUDY OF THE ROLE OF THE BRITISH UNIVERSITY TEACHER*

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> "The life of a well-established, middle-aged professor in the Arts faculty of a modern university can, if he likes to make it so, be one of the softest jobs to be found on the earth's surface. He may live ten, twenty, or sometimes even fifty miles from his work, and come in for only two or three days a week; he may have a cottage in the country and run down to it at irregular intervals for two or three days at a stretch; or he may even have his house and family at the distant seaside, go home on Friday afternoons for long weekends, return on Tuesday evenings, and spend the rest of the week between bachelor flat, lodgings, or club and the University."
>
> Bruce Truscott.

> "As professorships in so small a country are not numerous, the inducement to enter academic life is not powerful. But there is fortunately an academic way of life - simple, dignified, unworldly, so that, especially in the professorial grade, the amenities of life are not lacking and reliance on industry for additional income is distinctly 'bad form' - and, in consequence, very unusual."
>
> Abraham Flexner.

Writing by sociologists about social stratification is so voluminous that laymen may be forgiven for thinking sometimes that sociology is about nothing else. Yet we cannot escape a direct discussion of the status of the university teacher unless we are to ignore an important aspect of our general thesis that the self-conception of the academic man is predominantly gentlemanly in tradition and is changing, in Britain with more reluctance than rapidity, under modern conditions.

The typical life earnings of University teachers in Britain, in a context of diminishing differentials between professional and manual incomes, remains securely on the comfortable side of middle class privilege. But neither class nor status are completely described or solely determined by income. The material conditions of the University teacher have to be interpreted in a context of historical development from varied and tenuously related local determination to an

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* This paper appears in A. H. Halsey and M. Trow British Academics. Faber and Faber, forthcoming.

emerging national bureaucracy strongly influenced by conceptions of guild unity and of 'fair comparison' with other professions, especially the higher classes of the Civil Service. Another approach to all this is to be found in the various elements of status.

Status, as Max Weber distinguished it, refers to "every typical component of the life fate of men that is determined by a specific, positive, or negative, social estimation of honour... Status honour is normally expressed by the fact that above all else a specific style of life can be expected from all those who wish to belong to the circle." (1) Thus in describing the status of the university teacher we must first try to identify his general prestige as expressed by the typical degree of deference or respect accorded to academics by laymen: and, second, we must describe the content of the particular style of life which is expected of those who belong to the academic community. Neither task is simple. The 'social honour' or prestige of academic life has changed with the expanded functions of universities since the second half of the nineteenth century; like academic income, it may have undergone relative decline and has certainly become more differentiated. Expansion and specialization have produced status divisions within the academic style of life. In England especially there is a characteristic tension between the gentlemanly style with its centre in the traditional idealized pattern of life of the Oxford arts don and the newer professional style with technocratic and 'classless' overtones which are associated with applied science and redbrick.

Nor do the difficulties end here. Though Weber distinguished between class and status fundamentally on the basis of economic interest as opposed to social honour, the distinction is in fact ambiguous. Although status often takes the form of a claim against market determination of life chances, there is always some transferability of status into market claims, as well as the more obvious long-run dependence of status on successful maintenance of market opportunities. This is especially so in a modern industrial society in which occupational roles are at once the basis for economic interests and the major reference in social evaluation. Certainly life chances are determined by both status and class factors but the process is one of continuous interaction. The N.I.C. (National Incomes Commission) enquiry into academic salaries, or the revision made by its successor, the P.I.B. (Prices and Incomes Board) illustrates this interaction process - a complex compromise between prestige and market evaluations of the value and price of intellectual labour.

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(1) Gerth, H. & Mills, C.W. From Max Weber: Essays in Sociology, Kegan Paul 1947, p. 187.
Weber's definition of class is "the typical chance for a supply of goods, external living conditions and personal life experiences in so far as this chance is determined by the amount and kind of power, or lack of such, to dispose of goods or skills for the sake of income in a given economic order." (p. 181).

Prestige

That the British university teacher enjoys high prestige can be deduced from the high value put upon occupational achievement in industrial countries with their characteristic tendency towards open competition for entry into a hierarchy of professions and trades arranged according to skill and tested by formal qualifications. The university, as Professor Talcott Parsons puts it, is now "the keystone of the professional arch". Underlying the prestige of intellectual disciplines is a generalised value of the cultural system of the modern world to which Parsons gives the label "cognitive rationality". (2).

Thus in occupational prestige scales based on popular surveys (3) the university teacher always appears alongside the major professions in the top-most group. But this is the crudest of truths. It does not identify the special quality of academic as against other professional prestige: it obscures the differences in relative prestige of British compared with, say, German or American academics; and it throws no light on the question of whether, as many fear, academic prestige has declined in this century. To answer such questions it is necessary to see how the prestige enjoyed by an occupational group in a particular country at a particular time reflects the class and status factors which have determined its composition, its functions, its autonomy and its remuneration.

Three particular aspects of academic status may be noted which give it a different quality from that of the other professions. First, the academic most directly represents the central criterion of achievement on which occupational prestige is based. Occupational selection in modern society takes place for the most part through educational selection and university teachers are not only themselves selected from those with the highest educational attainments but are also the custodians of the selection process itself. Moreover, as the link between education and occupation tightens in modern society, as education is expanded and qualifications to enter an increasingly wide range of employment are formalized, so the teacher generally and the university teacher especially

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(2) Talcott Parsons and Gerald M. Platt, The American Academic Profession: A Pilot Study (duplicated for private circulation) March 1968. See page 1-3. "The American academic system has institutionalized a high level of primacy of one set of cultural values and interests, those in cognitive rationality. It is from the institutionalization of this value that the resulting importance of systematic knowledge, for its own sake and for the practical benefits, has developed as the principal standard for evaluation and for orienting action in academia. Most immediately, this refers to a rather special branch of the culture we call the 'intellectual disciplines'. There has been a long and complex history of their differentiation from religion, the arts, and in certain respects other evaluative aspects of culture."

(3) For example the British "Hall-Jones" or the American N.O.R.C. (National Opinion Research Centre) scales which produce remarkably similar rankings in all industrial countries.

becomes a more significant figure in the evaluations made by individuals of their own worth. In this sense, therefore, the prestige of the university teacher tends to be strengthened by his increasing role in determining the life chances of others.

This coin however has its other side. The custodian is necessarily set apart from the 'real' participants. The university teacher is a somewhat ambiguous figure - one who could have entered the competition for outstanding success in the professions or in industry but has not actually done so. He tends to be seen, as all teachers are seen, as sheltered from the rigours of the real world, as a 'theoretical' rather than a practical man, as in some way not a serious man. He is to ordinary men also a vaguely threatening figure, a reproach to the educational failures and intellectual shortcomings of their own youth; one who may be a source of embarrassment because of his knowledge yet one who at the same time has never been put to the harsh test of 'doing a real job.'

On the other hand the separation from practising professions which modify academic prestige must be distinguished from the tradition of 'apart-ness' which is part of the history of the scholar. In the modern world as knowledge is secular rather than sacred, intellectual institutions open rather than closed, the university teacher has lost his affinity with the priest and become more involved with the world of practical actions. This development has profound implications for the style of life of the university teacher in recent times as well as for his role as a teacher and scholar. (4) His assimilation to the life patterns of professional people in industry and public service has proceeded pari passu with the erosion of clearly demarcated functions between universities, government departments, industrial research bodies and other organizations in which intellectual or professional activity is pursued. The significant consequence of these two different trends in the development of the academic role is the differing social prestige of research as opposed to teaching and of subjects having a visible utility or relevance to the practical spheres of technology, politics, war or industry as opposed to those subjects which are pursued 'for their own sake'.

It is obvious that in the twentieth century the boundaries of academic and non-academic life have faded, not only through the connection with the liberal professions, for which the universities have traditionally offered a preparation, but also through the involvement of academics in the machinery of government, and above all through the vast expansion of research activity having practical applications in industry, administration or government. Broadly this has raised the prestige of the scientist and the research man whose functions are rewarded not only as an expression of the fundamental values of the academic community but also in society generally. This is partly a matter of market opportunities and access to power and in this way status is reinforced by the other two main elements of the complex stratification systems of an advanced industrial society. In the case of academics this pattern partially integrates the status of individuals within the academic community with their more general status in society.

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(4) See next page.

(4) The trends are expressed by A.N. L. Munby as follows:-

Remote and ineffectual Don,
Where have you gone, where have you gone?
Don in scarlet, Don in tails,
Don advertising Daily Mails,
Don in Office, Don in power,
Don talking on the Woman's Hour,
Don knocking up a constitution,
Don with ideas on prostitution,
Don who is permanently plussed,
Don floating an Investment Trust,
Don judging jive at barbecue,
Don dressing down the E.T.U.,
Don architecturally brash,
Don not afraid to have a bash,
Don with Bentley, Don with Rolls,
Don organising Gallup Polls,
Don back from Russia, off to Rome,
Don on the Third, the Light, the Home,
Don recently ennobled Peer,
Don Minister, Don Brigadier,
Don brassy, Don belligerent,
Don tipping off for ten per cent,
Don christian-naming with the Stars,
Don talking loud in public bars,
Remote and ineffectual Don,
Where have you gone, where have you gone?

Thoughts on re-reading Belloc's famous lines on Dons.

A.H. L. Munby.

Camford Observed by Jasper Rose & John Ziman, Victor Gollancz, 1964 p. 216.

Nevertheless, it is only a partial integration in that status discrepancies may arise between a man's internal and external role. This is further complicated by the existence of prestige markets other than those connected directly with excellence in research - for example, popularity or notoriety as an expositor in the mass media. Professor C.E.M. Joad would perhaps be the archetypal case here. In Oxford and Cambridge especially there is something paradoxical in that participation in the 'entertainment' industry is numerically concentrated among the dons at these universities and at the same time is almost defined as a demonstration of academic inferiority within the same universities. Nevertheless, connection with these sources of economic gain or popular prestige outside the universities remains an important differentiating element between university teachers.

The third aspect of academic prestige is its connection with aristocratic and élite status. This has special significance in Britain because of the unique place held historically by Oxford and Cambridge in the education of the British upper classes and the career connections of Oxford and Cambridge men with the centres of power in Whitehall, the Church, the Courts and the boardrooms of major industrial concerns. The British university teacher everywhere carried with him something of the dignity of the gentleman but again this is an important differentiating factor - in this case especially as between Oxford and Cambridge dons and the academic staff of the modern universities. This distinctive element in the prestige of British academics with its divisive effects within the university system is reinforced in the daily experience of newspaper readers, in the model of educational achievement held up to ambitious schoolboys, in novels about university life, among which those by C. P. Snow are only the most recent of a long-standing genre (5) and in the biographies and memoirs of eminent persons.(6) The 'magic' of Oxford and Cambridge is an essential part of the status symbolism of British élites.

American academic visitors commonly remark on the relatively higher prestige of University teachers in European countries compared with their own. The legendary respect accorded to the professor in pre-Nazi Germany was only the extreme example of a generally invidious comparison of academic status in the old and the new world. Oxford and Cambridge have long been the symbol of the most desirable social position of the academic man. Abraham Flexner, writing in 1930, offers an eloquent expression of this view: "I as an American profoundly envy them. Only the foreigner who has grown up in the glare and newness of a new world, be it America or Australia, can do full justice to the charm and educative value of the quiet quadrangles, the college libraries, the Bodleian rich in treasures and associations, the fellows' gardens - the strange intermingling of democracy and traditions, of asceticism and dignified luxury.

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(5) See Mortimer R. Proctor The English University Novel, University of California Press, Berkeley and Los Angeles, 1957.

(6) Two recently published examples are John Sparrow Mark Pattison and the Idea of a University, Cambridge University Press, 1967.
C.M. Bowra Memories 1895 - 1939, Weidenfield & Nicholson, 1966.

No American or German institution of any kind enjoys, as do Oxford and Cambridge, the inestimable advantage of possessing ample means of associating in worthy scholarly fashion with men of learning and distinction - not only an amenity but a source of profound spiritual stimulus. However modest the means of the Oxford or Cambridge scholar, he can without effort or sacrifice be host to a Minister of State, a great scientist or philosopher." (7)

These three aspects of academic status and style of life - its competitive achievement, its assimilation to non-academic professionalism and its connection with the leisurely dignity of aristocracy - are changing with the expansion of higher education. We must therefore explore the extent to which recent developments have encouraged different ways of life among the different faculties and at different levels in the hierarchy of institutions and career stages.

Academics as Achievers

The university teacher is and is seen as a clever man. He is not only a graduate, but typically with good class honours and a higher degree. Moreover, if he had wanted more money or more technical or secretarial assistance he might well have been able to find them in business or medicine or the Civil Service or America. The survey of university teachers conducted by the Robbins Committee in the spring of 1962 (8) and published as Appendix III of their report showed that 81% of the graduate university teachers held an honours degree from a British University; 16% has pass or ordinary degrees, but more than half of these were in medical subjects, where honours are not usually awarded except as a mark of distinction Higher degrees had also been taken by 60%; 40% having Doctoral and 13% Masters degrees.

But it is a serious question how far this high scholarly calibre can be maintained into the expanded system of higher education which is now developing. At first glance the recent trends revealed in the 1962 survey of the universities, as then constituted, were alarming. Of honours graduates recruited between 1959 and 1961, 52% had taken first-class degrees compared with 61% of the recruits in earlier years. The authors of the Robbins study offer two reassurances of these statistics - that wastage is heavy among young recruits and perhaps the worst are squeezed out, and that degree standards may have risen since before the war. However, the most recent statistics which are shown in Table 1 do not reinforce these assurances. It is clear from Table 1 that recent recruits have relatively fewer among them who have first class degrees compared with the general body of university teachers in 1961-62. Moreover, in the arts subjects, the biological sciences, engineering, technology and pre-clinical medicine they are less well

(7) Abraham Flexner, Universities: American, English, German, New York, Oxford University Press, 1930. p.288.

(8) Committee on Higher Education Report Appendix III, 1963, Cmnd. 2154-III.

TABLE 1: Quality of University Teachers: Recruits and Leavers 1965-66, compared with all staff in 1961-62

	Percentage of those with Honours Degree with First Class			Percentage with Higher Degree		
	1965-66		1961-62	1965-66		1961-62
	Recruits	Leavers	All Staff	Recruits	Leavers	All Staff
Arts	44	58	68	48	56	48
Social Studies	32	31	47	38	39	44
Phys. Science	57	46)	63	80	69)	79
Biol. Science	30	48)		84	86)	
Engineering	45	55)	56	48	44)	62
Other Technology	25	28)		59	73)	
Preclinical	24	33)	39	39	38)	57
Clinical	24	14)		25	37)	

Source: National Board for Prices and Incomes Report No. 98. Cmnd. 3866.

qualified in this respect than those leaving in the same year. (9) On the other hand there is no serious evidence of deterioration on the criterion of the percentage holding higher degrees. The differences between those recruited in 1965-66 and the total body of university staff in 1961-62 are small, and indeed the newly recruited scientists had proportionately more higher degrees. Moreover, it is reasonable to suppose that 1965-66 recruits are more likely to obtain higher degrees in post than the general body of university teachers who are, of course, older people.

Another way of looking at the problem is to note that the (relatively low calibre) 1959-61 intake accounted for 22% of home graduates with firsts or upper seconds. On the Robbins expansion plan this proportion will have to rise to 34%. Looking at teachers in higher education as a whole the comparable slice of high honours graduates was 28% and had to rise to 39% for the period 1963-67. Admittedly later in the sixties the proportionate demand of this 'ploughing back' of high talent into the educational system has slackened and the demands of colleges and universities for a share in their own total output of graduates will not, in the long run, rise. However, two important qualifications to this forecast have to be made in the light of more recent events and discussion. First, the calculation by the Robbins Committee of the probable future demand for university teachers was based on a percentage of all graduates three years before the demand arose, and also on an estimate of the probable future number of students qualified for university entrance which was deliberately determined on minimum assumptions at the time and which now has to be revised upwards by perhaps 20%. (10) But if the second qualification is ignored and the figures are taken as they stand but re-stated, as the A.U.T. insists, as a proportion of the top quarter of all graduates, it then appears that even on a minimum estimate for the period 1967-72, during which university expansion has been held back, it will be necessary to recruit into the universities fifteen to twenty per cent of the top graduates of each year.

If this is so, then the important question for the prestige of academic men arises as to how quality will be distributed institutionally in the expanding system of higher education. Perhaps the most dramatic findings in Appendix III were those relating to the difference in the quality of staff between the institutions

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(9) It should be borne in mind that these figures (supplied by the U.G.C. to the P.I.B.) ignore those who were previously students, research assistants, etc. and hence include only about half of the total number of recruits in 1965-66. If the excluded recruits were included the deterioration in quality might be reduced but would not be removed.

(10) On these two points see Association of University Teachers Memorandum on Salaries in Universities, submitted to the National Board for Prices and incomes 1967, page 3, and Committee of Vice-Chancellors and Principals, Quinquennial memorandum to the Secretary of State for Education and Science, 24th February, 1967. Also see the summary of recent statistics in New Society, 18th May 1967, page 729.

TABLE 2 : Quality of Teaching Staff at Various Institutions of Higher Education 1961/62

	Oxford and Cambridge %	London %	Redbrick %	C. A. T. %	Teachers Training College %
(a) Proportion of all full-time teachers who are graduates	<...	100-95	....>	81	58
(b) Proportion of (a) with 1st class honours	76	54	52.59	33	17
(c) Proportion of relevant staff who are Fellows of the Royal Society	11.6	3.7	1.8	-	-
(d) Proportion of relevant staff who are Fellows of the British Academy	8.9	3.5	0.2	-	-
(e) Proportion of staff with senior posts	40+*	40	27.23		
(f) Percentage contribution of this group's graduates to teaching staff of other groups	23.7	14.2	10.7		

Source: Appendix III of Robbins Report.

* Senior posts include Professorships, Readerships and Senior Lectureships. It seems reasonable to regard Oxford and Cambridge staff with both university posts and college fellowships at at least the equivalent of Senior Lectureships elsewhere. On this basis the proportion of senior posts is at Cambridge 45 per cent and at Oxford 55 per cent.

of higher education already in existence. Some of them are put together in Table 2. Of course, no one ever imagined that the staffs of non-university institutions were comparable in calibre with the university teachers. But the assembled evidence of a steep descent in average quality within the university system from Oxford down through London and the Redbricks to the C.A.T.'s (Colleges of Advanced Technology) is more impressive than most readers will have anticipated. It certainly would not have been predicted from the accepted traditions of national salary scales, equal treatment from the U.G.C. and open competition for jobs nationally advertised. Moreover it seems clear that past expansion had already had the effect of lengthening the hierarchy of staff quality. Thus the outstanding exceptions to the evidence that the quality of recent recruits had declined were Oxford and Cambridge where the proportion of newcomers with firsts actually rose from 76% to 78% in 1959-61, while the national proportion fell from 61% to 52%.

Robbins' conception of future development widened the definition of university institutions but continued to acknowledge the distinction between university and other forms of higher education. The plan envisaged a wide field of higher education in which "there is a need for a variety of institutions whose functions differ."(11) Institutions with the same functions were to have the same titles, but again even within the same category, differences of eminence were likely to emerge from competition. "Where famous intellectual exploits take place, there should develop some concentration of staff and students especially interested in the subjects concerned. Moreover such concentrations are not only probable but also desirable. What is important is that what differences there are should rest clearly on differences of function on the one hand, and on acknowledged excellence in the discharge of functions on the other. There should be no freezing of institutions into established hierarchies". (12)

All this was most encouraging. It evoked the image of sturdy struggle for places in an informal league table of the kind that has always given life and promise to the American colleges. It resuscitated the hopes for escape from provincial nonentity for which the Victorian foundations temporarily and unsuccessfully fought at the turn of the century. (13) But would it work?

Clearly competitive advantages were most unequally divided between, say, Churchill College, Cambridge and the Birmingham C.A.T., and something more than the granting of university status to the latter institution as the University of Aston will be required to redress the balance. The Robbins Committee looks for especially generous capital grants from the state to new and expanding institutions. Nevertheless their advocacy of a competitive system fell far short of American practice. For example, they interpreted the evidence of the A.U.T. survey reported in Appendix III to mean that Oxford and Cambridge dons were paid more than people in comparable posts elsewhere which they thought 'unjust',

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(11) Report p. 8.

(12) Report p. 9.

(13) cf. the discussion of 'The Popularity of Oxford and Cambridge' in Universities Quarterly, Vol. 15 No. 4, September 1961.

and led to too great a concentration of talent there. (14)

This must mean that they regarded their earlier principle of competition for excellence as subordinate to the principle of equal pay for equal work. (15) But supposing the equality principle is being violated at Oxford (and the Franks Committee argued that the evidence on staff quality and hours worked invalidates the assumption that the work is 'equal') it must also be noted that the same principle would restrict a new foundation from using financial inducements to build up a strong team in a particular branch of learning by the market methods which are taken for granted between American universities. Indeed it is difficult to see how equality principles in relation to staff salaries can do anything but protect the competitive advantages of the ancient universities. Similarly the widening of contacts between ancient colleges and state schools advocated elsewhere in the Report, and especially the entry of the former into the national clearing house scheme which subsequently took place will further raise the quality of their undergraduates and hence their attractiveness to the most able university teachers.

The conclusion seems to be inescapable that competition for excellence in the wider system of higher education proposed by the Robbins Committee will take place only within strata of the stable pyramid of institutions which has already emerged in Britain. The career patterns of university teachers and the distribution of quality may be expected to reflect this hierarchical structure. Some see this as a desirable result - a spur to individual competition and a recognition of different educational functions within the university system. Others seek ways to realize the declared aims of the Report - equality and fluidity. The hierarchy might be flattened by great generosity in salary scales, senior posts and capital grants to Redbrick coupled with drastic meanness to Oxford and Cambridge. The Robbins proposals pointed very mildly in this direction. Alternatively mobility could be maximized by the development of an academic market place of the American type. The current search for staff tends to move in this direction within the constraints of the national salary scales and 'U.G.C. rules'. But neither tendency seems sufficiently strong to move the system from its half-way house of a stable institutional hierarchy, and the prestige of academic posts is increasingly and accordingly graded.

The Oxford and Cambridge Connection

It emerges, then, that connection with aristocratic and élite circles, institutionally associated with Oxford and Cambridge, is an outstanding feature of the internal differentiation of status and prestige among British academics. Writing just before the second war, Bruce Truscott (in reality a professor of

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(14) Report p. 178.

(15) The principle of equal pay for equal work was avoided by the medical fraternity. No possible interpretation of the evidence in Appendix III could attribute the medical differentials to merit. Yet oddly enough the Committee let this go unremarked.

languages in the University of Liverpool) wrote wryly as follows:

> "For to Oxbridge all the best people continually gravitate, whereas to Redbrick no one, if he can help it, ever comes at all .... If a learned society is looking for persons on whom to bestow one of its coveted fellowships, it may perfectly well ignore Redbrick altogether, but it will certainly begin by asking: 'Well, now, first of all, who is there at Oxford and Cambridge?' A Cabinet Minister may need an educationist for a Royal Commission; a foreign statesman may want to recommend some English scholar for a decoration; an Eastern potentate may be seeking a temporary home for his son. Each of these, except for some rare and particular reason, will look first to Oxbridge and as likely as not there will be no need to look farther." (16)

In the same vein, in 1955, Edward Shils referred to the Oxford - Cambridge - London axis to denote an inner circle of prestigious connections between the ancient universities and higher officialdom in London. His article merits extended quotation.

> "The movement towards London in the twenties and thirties was not merely a demographic fact. It was associated with the assertion of the cultural supremacy of London society - and with it, of Oxford and Cambridge - over the provincial centres.
>
> The aristocratic-gentry culture has now come back into the saddle, and little to dispute its dominion. The twenties and thirties which did it so much damage, did even more damage to the provincial bourgeois culture. The rebellion of the intellectuals was rather against bourgeois culture than against the aristocratic-gentry culture. The latter never abdicated. Some of its offspring might revolt against it, but they could not find anything to substitute for it except Bohemianism and an utterly spurious proletarianism, both completely unviable. Bourgeois culture on the other hand, as soon as it came freely into contact with aristocratic-gentry culture, lost its self-esteem and its spiritual autonomy. It could not win the youth, even those brought up in its own atmosphere. It seemed paltry and mean alongside aristocratic-gentry culture.
>
> This is not relevant solely to the description of the class structure of contemporary Britain. It has the most significant consequences for the development of the British intellectuals because the change in the status and self-esteem of the classes was paralleled by changes in the status and self-esteem of the cultural institutions patronised by the classes. I shall illustrate with reference to the relations between the ancient and the modern universities.

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(16) Truscott, B. Redbrick University, p. 44.

The modern British universities, which in scholarship and science take second place to none in the world, have - despite efforts of the University Grants Committee and many worthy men who have loved them - been belittled in their own eyes. They have never had a place in that image of the right life which has evolved from the aristocratic, squirearchal, and higher official culture. To those who accept this image, modern universities are facts but not realities. They would not deny that Manchester, Liverpool, Birmingham, and the other urban universities actually exist and yet they do not easily admit them to their minds. Oxford and Cambridge are thought of spontaneously when universities are mentioned. If a young man, talking to an educated stranger, refers to his university studies, he is asked "Oxford or Cambridge?" And if he says Aberystwyth or Nottingham, there is disappointment on the one side and embarrassment on the other. It has always been that way.

True, very many more persons are now factually aware of the modern universities than, say, thirty years ago. They have established themselves as bulwarks of research in science and scholarship, and without them Great Britain would be poorer in every respect. Nonetheless, fundamentally, the situation has scarcely improved. It has perhaps become even worse. The deterioration is revealed in the diminution in self-esteem which these universities have undergone among their own staff, graduates, and patrons.

The modern universities have by no means declined in relative intellectual stature. On the contrary, in some subjects the modern universities now take the lead. The differences in prestige, however, have probably been accentuated. There is less contentment now in being in a modern university than there used to be. It is becoming more difficult to get first class younger men to leave Oxford and Cambridge - and London - for professorships in the provincial universities, however superior the traditions of the chair to be filled. It is more difficult to keep young men in the provinces; they are less contented with the prospect of a career in one of the great provincial universities, and look on them instead as jumping-off places, as places where they can keep alive and await until something better comes along. They are moreover even quite open in disclosing their motives, as if that were and always had been quite the normal thing. And the writers of the present day who are setting out to show the humanity and vitality of provincial life - particularly Mr. William Cooper, Mr. Kingsley Amis, and Mr. John Wain - do not their heroes, on their different levels of talent, find their appropriate salvation in Oxford and London? Does not Dr. C. P. Snow's chronicle of the world of Lewis Eliot move southward and reach its plateau in the professional class in London and Cambridge,

where over sunlit polished tables on which stand old silver milk jugs, few appear to do any hard work and all live graciously and spaciously?" (17)

From our own studies we can add four quantitative indications of the status differences between Oxford and Cambridge and the other British universities. The first concerns the social origins of university teachers which are set out in Table 3. Oxford and Cambridge are marked off from the rest as being more heavily recruited from the professional, managerial and white collar classes. Second, as is shown in Table 4, Oxford and Cambridge dons are more likely to have been educated in public schools. Indeed a majority of them come from the public and direct grant schools compared with less than a third in London, Scotland and the minor redbricks and a quarter in the major redbricks and Wales. Under a third of the Oxford and Cambridge dons have been educated at the maintained grammar schools whereas at other universities a clear majority are ex-grammar school boys. Our survey also showed that whereas fourteen per cent of the Oxford and Cambridge staff have fathers who themselves had attended either Oxford or Cambridge the proportions are negligible in all the other university groups.

Third, and a more direct indicator of élite connections, is the distribution of fellowships of the Royal Society and the British Academy. These appear in Tables 5 and 6. They show that well over a third of the Fellows of the Royal Society in 1960 were at Oxford or Cambridge and that this high proportion has been stable throughout the century despite the very marked diminution in the proportion of all scientists who are employed in these two universities. In this connection it is worth remembering that, while the balance between humanities and pure science was much the same in each group of universities before the changes initiated by the Robbins Report the place of Oxford and Cambridge in numerical terms has declined throughout the century. (18) The pattern for fellowships of the British Academy is even more accentuated. Oxford and Cambridge held no less than 63% of all such fellowships in 1961-62. However, over the course of the century there has been a tendency for London University to take an increased share in this particular system of honorific awards. Meanwhile, Scotland seems to have received a decreasing share of Royal Society and British Academy fellowships.

But Oxford and Cambridge influences are not confined within the walls of their colleges. A Third of all British university teachers have at some time studied or taught in the two universities. It may therefore carry us further to look at differences between those with varying degrees of contact with Oxford and Cambridge at some point in their student or teaching career, and those who have none. Let us look at some status characteristics of the following six groups.

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(17) Encounter, April 1955.

(18) The Robbins Report, Cmnd 2154 - II, Table 2, p. 18 shows that whereas the ancient English universities accounted for 22% of the students in Great Britain in 1938-39, by 1963-64 they had dropped to 14%.

TABLE 3: Social Origins of University Teachers

Father's Occupation	University Group						All
	Oxford and Cambridge	London	Scotland	Major Redbrick	Minor Redbrick	Wales	
	%	%	%	%	%	%	%
I Professional	29	21	19	18	20	15	20
II Lower Professional and White Collar	43	47	40	38	34	38	40
III Skilled Manual	23	26	34	34	37	38	32
IV and V Semi Skilled and Unskilled manual	2	4	8	8	7	9	6
Others	4	3	0	2	2	0	2
Total	100	100	100	100	100	100	100
(N)	(161)	(238)	(247)	(469)	(160)	(117)	(1392)

Source: 1964 Survey.

TABLE 4: Educational Origins of University Teachers

Father's Occupation	University Group						All
	Oxford and Cambridge	London	Scotland	Major Redbrick	Minor Redbrick	Wales	
	%	%	%	%	%	%	%
Public Schools	85	25	18	15	17	17	21
Direct Grant Schools	9	8	13	11	11	5	10
Grammar Schools	29	49	53	63	59	72	55
Other	18	18	15	11	13	6	14
Total	100	100	100	100	100	100	100
(N)	(161)	(233)	(245)	(467)	(160)	(118)	(1384)

TABLE 5: Fellows of the Royal Society 1900-1960

	Numbers by University Group						
	1900	1910	1920	1930	1940	1950	1960
	%	%	%	%	%	%	%
Oxford & Cambridge	35.6	37.6	37	37	34	36	39
London	31.8	31.7	33	30	34	21	26
Civic	16	15.6	15	20	21	25	25
Scotland	14.6	13.6	14	11	9	11	8
Wales	2	1.5	1	2	2	2	2
Total	100	100	100	100	100	100	100
(N)	445	464	463	447	463	504	594

From Year Books of the Royal Society.

Note: Physicians, Consulting Physicians etc. attached to hospitals associated with the University of London have been counted with London. Those who gave an Oxford or Cambridge college or departmental address, although no university post was specified, have been counted with Oxford and Cambridge. Those described as Fellows of Colleges or a University have been counted with that college or university only if no other position either in another university or elsewhere was specified. Honorary Professors and Professors Emeriti have been counted.

TABLE 6: Fellows of the British Academy

Numbers by University Group			
	1910	1930	1961/62
	%	%	%
Oxford & Cambridge	74	62	63
London	8	16	24
Civic	6	7	3
Scotland	12	11	7
Wales	0	4	2
Total	100	100	100
(N)	(99)	(133)	230

From the Proceedings of the British Academy and Who's Who

I. Those who presently teach at Oxford or Cambridge and had also studied there as undergraduates (118 cases or 8% of the sample).

II. Those presently teaching at Oxford or Cambridge who had not studied there as undergraduates (43 cases or 3% of the sample).

III. Those who now teach elsewhere but who had both studied and taught at Oxford or Cambridge in the past (70 cases or 5% of the sample).

IV. Those teaching elsewhere who had studied at Oxford or Cambridge but never taught there (226 cases or 16% of the sample).

V. Those teaching elsewhere who had not studied at Oxford or Cambridge but had taught there in the past (45 cases or 3% of the sample).

VI. Those teaching elsewhere who had never had any contact with Oxford or Cambridge at any point in their student or teaching careers (891 cases or 63% of the sample).

The class origins of these six categories are shown in Table 7. It can be seen that members of groups one and four come more frequently from middle

class backgrounds, with nearly three-quarters of their fathers having held white collar jobs. These are the two main groups of those who have studied at Oxford or Cambridge and this distribution is similar to that of many national studies showing that Oxford and Cambridge students come from a somewhat higher social background than students at other universities.

The secondary schools attended by the six groups are shown in Table 8. The proportion of grammar school boys rises in each group from one to six. Similarly the proportion who attended public schools decreases from half of group one to one-seventh of group six, with the exception of those in group two (who did not study at Oxford or Cambridge but teach there now) of whom over a quarter attended other (mostly foreign) secondary schools.

TABLE 7: Class Origins (Father's Occupation) of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford & Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Ox. or Camb. III	Have studied, never taught at Ox. or Camb. IV	Have taught, never studied at Ox. or Camb. V	No contact with Ox. or Camb. VI
	%	%	%	%	%	%
Professional	30)	26)	25)	24)	9)	17)
	)76	)60	)61	)71	)56	)55
Intermediate	46)	35)	35)	46)	47)	38)
Skilled	20	33	35	23	36	36
Semi-skilled	1)	5)	3)	3)	4)	7)
	)1	)5	)3	)3	)8	)9
Manual	0)	0)	0)	0)	4)	2)
Forces	4	2	3	3	0	1
TOTAL	100	100	100	100	100	100
(N)	(118)	(43)	(70)	(226)	(45)	(891)

TABLE 8: Secondary Schooling of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Cambridge III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Grammar	26	37	41	48	59	63
Direct Grant	8	9	13	16	2	9
Public	52	26	38	31	16	14
Other	13	28	9	5	23	14
None	1	0	0	0	0	1
TOTAL	100	100	100	100	100	100
(N)	(118)	(43)	(70)	(226)	(45)	(891)

In Table 9 we turn from secondary education, which is, of course, closely related to social origins, to the question of degree quality. Here a somewhat different pattern emerges. The group with the highest proportion of firsts is group one - those who both took their undergraduate degrees and now teach at Oxford or Cambridge. Of these nearly three-quarters gained firsts. Next comes three other groups who have taught at Oxford or Cambridge at some time (groups two, three and five) each of which includes 58% to 60% who hold firsts. Those who have never had any contact with the ancient universities (group six) come next, with almost half who have firsts. And the last group is those who began in Oxford or Cambridge as students but have never taught there (group four): of these 41% have firsts. Thus the pattern is that Oxford and Cambridge have considerable attractive power for the most able university teachers as measured by this criterion and they are particularly successful in keeping their own best graduates. But the low proportion in group four is also interesting: it suggests that graduates without a first class degree stand a somewhat better chance of

employment as university teachers if they come from Oxford or Cambridge than if they come from one of the other universities.

TABLE 9: Class of Degree of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Cambridge III	Have studied, never taught at Oxford or Camb. IV	Have taught never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
1st class honours	70	60	59	41	58	47

Superficially the pattern of higher degree qualifications is rather different (Table 10). As before, the group with lowest proportion of Ph.D.s (and the highest proportion with no higher degree) is group four which suggests that this group may consist in part of men who gained moderate degrees at the ancient universities and then retired to other universities, perhaps to teach, without so much interest in research or in further mobility. We shall explore this question later. The next group, however, is group one, of whom roughly half did not take higher degrees. This may be explained by the custom, especially at Oxford and Cambridge, of appointing a university's or college's own best students to fill teaching positions and fellowships immediately or soon after the bachelor's degree without requiring further academic certification. Next comes group three, those who have both studied and taught at Oxford or Cambridge but now teach elsewhere. About half of them hold Ph.D.s as do those in group six; but in group six sixteen per cent hold M.A.s. Groups two and five show the highest percentages with Ph.D.s (56% and 54% respectively): group two represents those who gained their undergraduate degrees elsewhere but now teach at Oxford and Cambridge and it seems that the Ph.D. may be a useful passport for entry for those who are, so to speak, not natives of either of the two universities: The doctorate also seems to be especially useful to those who have been doubly mobile, group five, who have both moved into and then out of the Oxford and Cambridge world.

TABLE 10. Higher Degrees Obtained by Various Groups of University Teachers

	Oxford & Cambridge		Non-Oxford and Cambridge			
	Studied at Oxford and Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Ph.D.	40	56	47	33	64	49
M.A. only	8	12	4	8	11	16
None	53	33	49	58	24	36
TOTAL	100	100	100	100	100	100
(N)	(118)	(43)	(70)	(226)	(45)	(891)

Table 11 shows the distribution of ranks. The structure of university ranks at Oxford and Cambridge is rather different from that at other universities, with no senior lecturer grade; and the proportion of those in 'senior grades' (professor, reader, senior lecturer) is much smaller for both groups one and two than the average of 38% for the whole sample. These groups therefore should not be compared with the other four; but there is a notable internal difference between the two: a considerably higher proportion of those who took their undergraduate degrees at Oxford or Cambridge are Professors or Readers, while over one quarter of those who were undergraduates elsewhere are to be found in the 'other' grade, which includes Assistant Lecturers, Demonstrators, etc. But before drawing conclusions from this discovery it will be as well to control for age, since any marked age difference between the categories would of course affect the distribution of senior ranks. Similarly in the rest of the table, those who have ever had any contact with Oxford or Cambridge seem to be markedly more likely to become Professors, and especially so in the case of group III, those who have both studied and taught at one or other of the two universities but then moved out, of whom no less than a third are Professors, and half are in the Senior grades. These men are, among those who do not now teach at Oxford or Cambridge, the ones who have had most contact in the past,

and could therefore be seen as the most significant members of a colonising force. If they have succeeded in establishing themselves in Professorships to such a large extent then colonisation is more than a phase. But again we must control for age, since the proportions of students educated by other universities has been steadily increasing for the past hundred years; and Oxford and Cambridge graduates in our sample may therefore very well have the advantage of greater age.

TABLE 11: Academic rank of various groups of university teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Professor	12	5	33	20	24	11
Reader	10	7	6	8	18	9
Senior Lecturer	0	2	11	14	7	20
Lecturer	67	58	43	53	47	53
Others	11	28	7	6	4	7
TOTAL	100	100	100	100	100	100
(N)	(118)	(43)	(70)	(226)	(45)	(891)

If we do this (Table 12) the picture is more, not less striking - though some of the sample numbers are very small, and should be taken as showing rather general tendencies. Among those presently teaching at Oxford or Cambridge the proportions of Professors at each age are less than the national average for our sample - but this is the result of the actual proportions at these two universities. In any event there now seems to be no appreciable differences between groups I and II. It is in the other groups that the large differences

appear. Those in group III, the colonial spearhead, are remarkably successful at gaining professorships: over half of those between 40 and 49 are already Professors, and for those of 50 or over more than four-fifths are Professors. The only other group with even nearly half its members Professors is the over-50 section of group IV. Both groups IV and V also show a high percentage of Professors, higher at least than group VI; and in general it is clear that any contact with Oxford or Cambridge improves the chances of reaching the highest academic rank elsewhere.

TABLE 12: Academic Rank by Age of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied and taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
Age	%	%	%	%	%	%
Under 40	0	0	7	3	12	3
40 - 49	19	18	54	33	31	19
50 and over	25	*	81	47	*	31
TOTAL	100	100	100	100	100	100
(N)	(118)	(43)	(70)	(226)	(45)	(891)

There were two other questions in the survey which may shed light on aspects of the university teacher's family life which could well vary according to whether a man has had contact with Oxford and Cambridge or not. The first of these concerns the women university teachers marry; and despite the notorious inbalance of the sexes at Oxford and Cambridge, it might be thought that dons there, who lead a collegiate life in small university towns, a life moreover which is more clearly seen as academic, would be more inclined to marry graduates. (Table 13). Although the differences are not large, it turns out that those groups who studied at the two universities are most likely to have graduate wives,

followed by and overlapping the groups teaching there now. Those with no contact with Oxford or Cambridge, group VI, have the lowest proportion of graduate wives. The other question was about childrens' education, looking at the education of their sons (Table 14) we see that about a third of groups IV and VI send their sons to private schools, compared with nearly two-thirds of group I. It is possible, however, that this reflects not so much a philosophical or educational difference as differences in the availability of good state schools. But in Table 15 we show attitudes towards the introduction of comprehensive schools and it is clear that those presently teaching at Oxford and Cambridge are most likely to favour the status quo in state secondary education.

TABLE 13: Graduate Status of Wives of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge	Did not study at Oxford or Cambridge	Have studied and taught at Oxford or Camb.	Have studied, never taught at Oxford or Camb.	Have taught, never studied at Oxford or Camb.	No contact with Oxford or Cambridge
	I	II	III	IV	V	VI
	%	%	%	%	%	%
Graduate wife	50	48	55	45	45	40

TABLE 14: Secondary Education of Sons of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Private School	59	*	*	35	*	36

TABLE 15: Attitude to Comprehensive Schools of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Favour comprehensive schools	43	51	63	55	62	58

Finally we may return to the theme of experience of and preferences for service in the different university groups. Our survey respondents were asked if there were any other British universities in which they would prefer to work (Table 16). The relative satisfaction of the Oxford and Cambridge dons with their own positions is remarkable. Less than a tenth would prefer another place compared with upwards of a third in the other groups and over half of those who began as students but never had teaching posts in the two ancient universities. Moreover, of would-be-movers, most named Oxford or Cambridge as the university to which they wanted to move. Again the Oxford and Cambridge dons are much more likely to think of themselves as permanently settled - three-quarters compared with half in the other groups (Table 17). And; this is not, apparently, reflected by expectations of promotion to a chair at the respondent's own university. Expectations of a professorship are highest among the mobile groups III and V. They are low among those who are Oxford and Cambridge 'natives' who also show least inclination to move. They are at the same time low among those who studied but have never taught at these two universities, a group which also has the highest proportion of would-be-movers. (Table 18).

TABLE 16: Preference for another University by Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge	Did not study at Oxford or Cambridge	Have studied & taught at Oxford & Camb.	Have studied, never taught at Oxford or Camb.	Have taught, never studied at Oxford or Camb.	No contact with Oxford or Cambridge
	I	II	III	IV	V	VI
	%	%	%	%	%	%
Would prefer to be elsewhere	8	9	44	52	44	33
At Oxford or Cambridge	*	*	77	61	65	35

TABLE 17: Expectation of Permanence in Present Post by Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
Expect to remain in present post until retirement	76	74	46	54	46	54

TABLE 18: Promotion Expectations of Various Groups of University Teachers

	Oxford & Cambridge Teachers		Non-Oxford and Cambridge Teachers			
	Studied at Oxford or Cambridge I	Did not study at Oxford or Cambridge II	Have studied & taught at Oxford or Camb. III	Have studied, never taught at Oxford or Camb. IV	Have taught, never studied at Oxford or Camb. V	No contact with Oxford or Cambridge VI
	%	%	%	%	%	%
More likely than others of similar age and rank to be offered a Chair in own university	18	25	30	18	22	17

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