

Memorandum for Cabinet by Minister of Education, Culture  
and Tourism on Engineering Courses at MCAST.

The question as to whether the Engineering Courses leading to a degree should be run by the Royal University of Malta or by the Malta College of Arts, Science and Technology has long been engaging the attention of the Education Authorities in Malta.

Expert advice from highly qualified persons from U.K. was also sought.

As a result of the discussions held and after mature consideration by all concerned, memoranda on the subject were submitted by:

1. Professor R.E.D. Bishop of the University of London;
2. The Rector, Royal University of Malta;
3. The Director of Education;
4. The Principal, Malta College of Arts, Science and Technology.

Copies are being attached as Ref A, B, C, D.

These memoranda have been discussed at length between the interested parties; the Minister of Education, Culture and Tourism has come to the conclusion that the best course to adopt would be to transfer the degree courses to the Royal University of Malta with facilities for the use, by students, of the up-to-date laboratories at M.C.A.S.T.

Ministers are kindly requested to state whether they concur with this recommendation.

M.E.C.T.

7/1/67.

A

MEMORANDUM TO THE HON. MINISTER OF EDUCATION

on

UNDERGRADUATE ENGINEERING COURSES ON THE ISLAND

L-ARKIVJI NAZZJONALI TA' MALTA

By

R.E.D. Bishop, M.A.(Cantab.)  
M.S., Ph.D.(Stanford), D.SC.(Eng)(Lond)  
M.I.Mech.E., A.P.R.Ae.S.

Kennedy Professor of Mechanical  
Engineering in the University  
of London

## INTRODUCTION

Such is the present state of things, it is clear that something must be done about the Engineering Courses in MCAST. The problem breaks more or less cleanly into two:

- (a) the immediate short-term question of how Malta can meet her moral obligations to students already in the course;
- (b) the long-term problem of whether or not Malta should devise an Engineering degree course which attracts recognition by the British Engineering Institutions. If it should, how can a viable course be constructed and where should it be given?

These two matters will be dealt with separately in what follows.

As regard the short-term, I can do little more than state the facts as they relate to one of the three departments and suggest an approach which might succeed.

This document is largely concerned with the long-term problem and a main purpose is to set down the sort of questions which must, I think, be answered before any headway can be made in solving it. These questions relate to alternative courses of action that are open to the Maltese authorities, and an attempt is made to outline the main arguments for and against each.

### The Short-Term

The short-term problem concerning the Mechanical Engineering degree course is far more difficult than might at first appear to be the case. There are clear signs that even in the session 1965/66 all was not well at the Part I level. Thus

- (a) the Drawing paper had to be re-set at my insistence;
- (b) the results of the Thermodynamics paper were far from reassuring;
- (c) some major revisions of syllabus are urgently needed.

Obviously the present staff is not capable of covering Part II successfully and completely and both the Head and his Second-in-Command are leaving.

It is not possible for me to guarantee any help, but I am willing to see what can be done. At least the three senior members of my department in University College London are willing to try to help. But in the first place we shall need the agreement of our College Committee and secondly we cannot carry a heavy extra load and waste time with a lot of detailed explanations.

To get through the coming session (assuming that my colleagues and I are able to help at all) it is necessary EITHER that:

- (a) Mr. Rimmer should be induced to stay in Malta and

.... /given a



given a measure of authority; and

(b) £1500 be made readily available.

OR, alternatively, the Part II students could perhaps be put into Part I of the UCL degree course.

But the first of these alternatives for 1966/67, by itself, is not entirely satisfactory. By helping, the London Department will become morally bound to put the students through a Part III Course as well as Part II. This might well impose an impossible burden on UCL so that the London College will have to reserve the right to take Part III (in 1967/68) into its own Part II (in 1967/68), so that the Maltese students receive a four-year course at the expense of the Maltese Government.

It is Part III which poses the most difficult problem. The matter now needs quick action; but any action must necessarily be subject to the agreement of the University College London College Committee.

### The Long-Term

Where the long-term problems of Engineering Degree teaching in Malta are concerned, it is apparent that certain questions must soon be answered. Remembering the nature of the problem - the necessity to decide on whether or not degree teaching should go on and, if so, to decide where and in what form - it is helpful to consider the five propositions set out below:

#### Proposition I

Cease to attempt to train engineers to the professional level on the Island and send all potential engineering graduates on scholarships to the U.K.

##### Arguments for:

(i) This is almost certainly the cheapest approach for the next few years. It must be remembered that the supply of good entrants and good teachers is by no means assured; nor are the likely demands for different sorts of graduate engineer known;

(ii) This would remove a considerable weight of responsibility from administrators who are already heavily burdened and who have no first hand experience of engineering education;

(iii) This would clear the decks for what obviously is necessary, namely the training of technicians and higher technicians;

##### Arguments against:

(i) At this stage adoption of this proposition would carry the stigma of 'giving in'. After all the Malta Government did decide to seek help to train engineers of recognised standing and the UNESCO staff has shown that success is possible and some excellent facilities now exist. Quite apart from Government prestige it has to be noted that professional prestige and morale are also at stake to some extent;

(ii) Whether or not this proposition is adopted it is vital to the future well-being of Malta that the 'A' level output be improved and increased. But if this is done Engineering will probably benefit more than most.

(iv) The UNESCO staff has been the backbone of the teaching so far and is now being withdrawn;

(v) To go on will not be cheap even with an annual student intake of 30 (which is still nowhere in sight);

(vi) The decision to seek Institution recognition could well turn into a constant source of worry.

(iii) There is merit in educating lawyers, doctors, etc. alongside engineers, as it is common for engineering students to be the life and soul of a student body.

(iv) If there is any intention of having Engineering undergraduates on the Island one day, it would be better not to stop now as the revival of a defunct course is likely to be difficult;

(It is not irrelevant that a realistic investigation of Malta's technological potential will have to be made one day.)

(v) The present set up in MCAST is not the only one possible and something a little less expensive can be envisaged;

(vi) The original plan to produce engineering graduates of recognized standing was partly determined by a wish to 'educate for export'. Nothing has occurred which invalidates or removes this desire;

(vii) It is all very well to refer to the U.K. in this proposition, but the question of where the undergraduates will be sent will depend on the prevailing political climate, with the result that a heterogeneous profession might emerge.

Proposition II

Cease, temporarily, to seek recognition of the engineering graduates by the Institutions.

Arguments for:

(i) The recruitment of staff would be easier and cheaper with the result that the present difficulties would largely evaporate;

(ii) The RUM connection would still confer status on the course in Maltese eyes.

Arguments against:

(i) The staff that is recruited will be scrutinized by the Institutions when recognition is eventually sought;

(ii) The RUM degree will become identified with technician training and this association is likely to be terribly difficult to break;

(iii) It would be unwise for the Vice-Chancellor to compromise academic standards. (In fact from the point of view of RUM little but harm can emerge from this proposition.)

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(iv) The process of raising the standard might require anything up to two decades of grim determination on the part of the Vice-Chancellor or the Director of Education;

(v) All those who want recognition would have to go abroad so that the idea would grow up of 'a good degree abroad and a bad one at home'.

### Proposition III

Carry on with the undergraduate teaching as at present in MCAST.

#### Arguments for:

- (i) MCAST has produced its first graduates and they have been quite good;
- (ii) Credit for introducing this education belongs mostly to the UNESCO staff and the Department of Education. Why should they be asked to relinquish this most creditable part of MCAST?
- (iii) Both the technician and undergraduate engineers would be taught in the same place in a single set of laboratories;
- (iv) The engineering staff can be used economically for teaching both undergraduates and higher technicians;
- (v) So long as RUM retains the use of external examiners it is already entirely covered when conferring its degree and lending its status to the course;
- (vi) The present administrative apparatus has already shown itself capable of making difficult decisions by showing commendable firmness in regard to teaching and administrative appointments so that there are few shortcomings of this type in the present of things;
- (vii) Many of the defects in the present MCAST structure can validly be described as temporary results of the College's newness.

#### Arguments against:

- (i) The present structure has obviously failed in some respects. For example it cannot handle Part II Mechanical Engineering next year and the staff is at present very depleted.
- (ii) This failure was accurately predicted years ago by the RUM's external examiners and there has been no rapid, incisive reaction to the clear warnings that they gave.
- (iii) The administrative structure of MCAST is a severe handicap. Thus the heads of department are answerable to a principal who is about to depart with no successor in sight. And the College still has a non-existent Board of Governors;
- (iv) To have any hope of success the heads of department will need far more authority than they have been given at MCAST up to now, particularly in respect of money and the discipline and administration of subordinate staff; but the only men who could obviously have accepted more authority are about to depart;
- (v) The concept of using the same staff for both undergraduate and technician training is potentially dangerous if Malta is interested in proper university-teaching which fosters original thinking. MCAST can fairly readily recruit teachers who are suitable for technician

training and will be under constant pressure to do so in view of the shortage of potential university teachers. (This is already so and had already begun to do harm.)

(vi) It is readily demonstrable that the UNESCO Heads of Department have in effect made the MCAST set-up work. In effect it will be a different MCAST in future on this account since any new heads will be likely to comply with the rules both in detail and spirit;

(vii) The Vice-Chancellor is too remote from what goes on in MCAST and yet has to bear some moral responsibility for what goes on in the College. (For instance, he can do little or nothing to see that the RUM's external examiners' warnings are heeded or their suggestions implemented.)

(viii) The Director of Education is in too exposed a position as regards pressures from individuals as things now stand (with no Board of Governors). That this has not led to disaster so far is a tribute to the Director, but it hardly justifies the arrangement.

Proposition IV

Transfer the undergraduate school of engineering to the RUM.

Arguments for:

(i) Academic advantages would accrue from taking engineering students into the RUM campus both for the engineers and for the other students;

(ii) The act of separating undergraduate teaching from that of higher technicians - even geographically - is inherently desirable since the mixture is beginning to do harm;

(iii) The act of separation could be made the opportunity for a change of departmental structure;

(iv) The heads of department would have the freedom of action that is normally associated with the University. And rapid decision-making will

Arguments against:

(i) It would be madness for RUM to take over the three departments in their present form along with their manifest ailments. An alternative form would have to be decided upon first;

(ii) The Vice-Chancellor would be adding a faculty to RUM which is as complex as a medical faculty and probably more expensive. He would have to have access to specialist advice and help, from someone whom he could trust absolutely (as well as to one or more external examiners). The Vice-Chancellor needs an assurance of such help before he can logically agree to this proposition;

(iii) Nor is the acquisition of this advice likely to be easy. The adviser can hardly be a member



be vital in the next few years if the undergraduate engineering course in Malta is to survive. (This need for much greater flexibility is crucial.)

(v) RUM can attract assistance more easily from U.K. universities than MCAST can, if only because it is qualitatively similar to them;

(vi) Transference would have a beneficial effect on the architects course;

(vii) It can easily be argued that while the Education Department was clearly the best suited to introducing the undergraduate courses it is not necessarily the best for supporting them in perpetuity;

(viii) All three of the University's external examiners have consistently advocated transference on the basis of professional judgment.

of the RUM staff. Indeed he must have access to the resources of a university, be willing to assist occasionally (as in temporary secondment of staff) and he must be willing to make personal sacrifices himself. This is not just another case of international aid but something far more delicate and, therefore, more difficult;

(iv) Unless the long term need of duplicating laboratories is accepted, undergraduates would have to 'go out' for laboratory work;

(v) RUM's only engineering is, frankly, not in the same class as that in MCAST and this is hardly an advertisement for transfer;

(vi) Such a transfer would put a heavy burden on RUM, and in particular, on the Vice-Chancellor. Would it be so heavy that the rest of the University would suffer?

Proposition V

Alter the departmental structure.

Arguments for:

(i) It is not obvious that civil, mechanical and electrical engineering are all equally vital. What about other possibilities, such as production or marine engineering?

(ii) It should be possible to reduce the existing three departments to two, and perhaps even to one. This would make staffing much easier;

(iii) This does not, of itself, mean that professional recognition would be jeopardized, though it does throw emphasis on the senior institution (the ICE) whose standards are known to be high;

(iv) A far more flexible department than those operating at present would be one giving a two year course of basic studies with a third year of specialization in civil or mechanical (or production or marine engineering);

Arguments against:

(i) The present structure is easily understood and quite common, and this is not irrelevant when seeking help;

(ii) The departments are at present identifiable with institutions;

(iii) Any unorthodoxy would demand greater breadth of vision than would otherwise be demanded in the head of a single department;

(iv) It is not obvious what alternatives should be adopted; for example, what about electrical engineering?

(v) Having one department instead of three would put all the eggs in one basket.

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(v) With the right head a single strong department might make more impact than three independent weak ones. Consider for instance the possibility of internationally advertised summer schools.

#### Observations

I have no wish to try to enforce acceptance of any particular solution. Indeed I should place myself hopelessly ultra vires were I to do so. But, on the other hand, it seems plain enough that there is a need, not merely for marshalling arguments but for attaching weights to them. And the act of attaching weights does call for professional judgment. For this reason, it may be thought helpful if I offer a few observations on the facts as I see them.

Before proceeding any further, however, I must make it clear that my views are those of a university teacher of mechanical engineering with a strong inclination towards research and with a firm belief in a fairly 'pure' approach to university teaching. I believe that academic excellence is entirely consonant with first class practical engineering at the professional level. Many would find this viewpoint too austere in the present context and may therefore reject the views which follow as being too stringent. . . They may be right - and they may not. With some hesitation, then, I suggest that:

1. The only one of the foregoing propositions that I am prepared to give a firm opinion on is the second. While it has been (very properly) canvassed by some, I urge that it should not be adopted;
2. The concept of the 'block grant' for the department (or departments) is very important indeed, if not vital;
3. While I am well aware that recent moves in the U.K. will have the effect of perpetuating the idea of a department which teaches both higher technicians and undergraduates, I am convinced that they are basically unsound and can lead only to mediocrity. Is the degree something to do with original thought, or is it not? In my view, then, the two sides should be completely disentangled. This is presumably very much a matter of opinion though;
4. An immediate transference of the undergraduate course to RUM cannot be made, whatever the rights and wrongs of the situation. A number of factors support this view, including the lack of leaders for what would have to remain in MCAST - i.e. the lack of heads of technician departments;
5. But the decision whether or not to effect the transfer eventually can, and should, be taken soon. This decision should determine the nature and terms of reference of those who may be appointed in the near future to keep the courses alive. The decision really must come before the appointments, I think;
6. If the undergraduate course remains in MCAST, the College should perhaps seek the assistance that it will undoubtedly need in the next few years from a comparable college in the U.K.
7. I think that, provided a suitable head can be found for it, a single civil/mechanical department would have

...../advantages.

advantages. The whole question of electrical engineering should be looked at separately. But whether or not this would be meaningful in the light of 6 is somewhat problematical;

8. If a successful future is to be found for the undergraduate course in MCAST, radical surgery is needed in the administrative structure of the College;

9. If a home is to be found for it in RUM, on the other hand, particular attention will have to be paid to the Vice-Chancellor's very obvious and pressing needs;

10. In writing this memorandum I have had very real assistance from all the interested parties - the Department of Education, RUM, MCAST and the Treasury Department. The nature and urgency of the vital questions, the desirability of discussing the five propositions and the validity of all the arguments for and against each are all accepted by those who are acquainted with the present situation. Nowhere has there been a serious suggestion of incompetence or obstructionism on anyone's part. It should be easy, therefore, to resolve all these difficulties without rancour and without delay.

#### Final Note

This memorandum has been written in a matter of three days and it doubtless contains imperfections as a consequence. It is intended to be working document and will, I hope, serve this purpose adequately.

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MEMORANDUM BY VICE-CHANCELLOR AND RECTOR MAGNIFICUS  
ON ENGINEERING COURSES AT M.C.A.S.T.

Professor R.E.D. Bishop, Head of Department at Mechanical Engineering at University College, London, and external examiner for the degree courses at MCAST, was invited by Government to come to Malta at the beginning of August to advise the Minister of Education on the future of the degree and diploma courses in Engineering at MCAST.

2. The first course which started in October 1963 has just ended and all nine students (6 degree and 3 diploma) completed the course satisfactorily. New courses started in October 1965 and there are 13 students (5 degree and 8 diploma) of whom 4 and 7 respectively passed the Part I Examination.

3. There are clear signs that in 1965/66 all was not well at the Part I level. To make matters more difficult, the three UNESCO Heads of Department left at the end of this session, and there are no immediate prospects of replacing them by local counterparts. Apart from the Heads of Departments there are also a number of vacancies at lecturer level; calls for applications have been published and there have been a number of expatriate applicants but no appointments have yet been made, and not all posts can in fact be filled.

4. There will be difficulty in running the Part II courses next year, though it is hoped that the Department of Mechanical Engineering of University College, London and the Department of Civil Engineering of King's College, London will provide help as they did last year. The help required for Part III the following year, however, is likely to be very substantial and Professor Bishop and Professor Nash have both emphasized that they cannot guarantee the continuance of this help.

5. From the advice that has been given by Professor Bishop (and indeed by all three external examiners at various times during the past three years), it would appear that the cost of the degree courses as they are planned at present would be excessively high for the number of students we are likely to have in the next few years. Even if the number of students admitted reaches 30 each year, the courses will not be cheap; and the average number admitted in the past three years has been six per year! The number will no doubt rise as performance



at G.C.E. 'A' level improves but it is not likely to become anything like 30 for a considerable time yet.

6. It would be inadvisable to try to reduce the cost of the courses by reducing standards as this would immediately jeopardise any possibility of recognition of the degree by the Professional Institutions. As a good proportion of the graduates will no doubt seek employment abroad such a reduction in standard would be unacceptable and this solution should therefore be immediately discarded.

7. The possibility of closing down the courses has also been considered. Though immediately this may be the most economical solution, it would make it very much harder to start degree courses again at a later stage. It also disregards the fact that well-equipped (and expensive) laboratories now exist at MCAST which were intended not only for technician training but also for undergraduate teaching. All in all, this solution should not be adopted unless the financial position becomes desperate.

8. Thus assuming that the degree courses will continue, the problem is whether such courses should be left under the control of MCAST or be transferred to RUM. Whichever way this problem is solved there are two points that have to be kept in mind:

- (i) Common use will have to be made of the present laboratories for some time for both technicians and undergraduates so that if the course is transferred to RUM practical classes will in the main still go on at MCAST.
- (ii) In either case the structure of the courses will have to be radically altered so that they could be run more economically, but the final form that the courses will take depend on whether they are run at MCAST or at RUM.

9. Independently of this decision, the training of technicians and higher technicians at MCAST must continue. This is by far what is most needed at the present moment and nothing must be allowed to interfere with its continuation.

10. If the degree courses are to be a success a larger measure of autonomy for the Engineering departments is necessary whether the course is run by MCAST or by RUM. Heads of Departments will need far more authority than they

have been given at MCAST up to now, particularly in respect of money and administration of subordinate staff.

11. The final decision depends very much on the type of course that is wanted. Discussions were held, under the chairmanship of the Minister of Education, between Professor Bishop, the Director of Education, the Rector and Miss Mortimer; the views of Dr. Focken were also sought. The Minister, the Director of Education, Miss Mortimer and the Rector also met together without Professor Bishop further to discuss this question; they unanimously came to the conclusion that the courses should be transferred to RUM, though this would not be done immediately.

12. Some of the reasons for this decision were:

- (i) such a transfer is more likely to produce the desired increase in the number of students;
- (ii) the Education Department though clearly the best-suited to introduce the undergraduate courses in conjunction with the other courses run at MCAST is not necessarily the best for supporting them in perpetuity;
- (iii) the University external examiners have consistently advised transference on the basis of their professional judgement;
- (iv) RUM can attract assistance more easily from U.K. universities than MCAST would be likely to.

13. In the present circumstances, this last is probably the most important consideration. Immediate help is obviously needed; it is equally obvious that help would be needed over the next few years as at present there are no Maltese counterparts who can become Heads of Departments within a sufficiently short time.

14. It is very likely that Professor Bishop can be persuaded to take a very active interest in the future of the engineering courses if their running is transferred to RUM. A man of his calibre is necessary to remove the courses from their present difficulties, and such men are extremely difficult to get. We would be very fortunate if we could have the guidance of Professor Bishop whose reputation as an engineer is of the highest.

15. It must be also stated that if it is decided to leave the courses at MCAST, Professor Bishop would be prepared to enlist the help of someone from a polytechnic in Britain to assist MCAST through the next few years. It is quite understandable that he himself would not be in a position to help directly.

1st September, 1966.



C

MEMORANDUM ON THE TRANSFER OF THE ENGINEERING  
DEGREE COURSES TO THE ROYAL UNIVERSITY OF MALTA

Basic Principles

In considering this question there are certain fundamental basic principles to be kept in view;

- (a) Both the Royal University of Malta and the Malta College of Arts, Science and Technology have an important role to play in the future development of Malta;
- (b) Malta's industrial development needs both professional engineers and higher technicians;
- (c) Wherever a University exists it is natural for degree courses to be concentrated therein;
- (d) The training of higher technicians has to be carried out at an institution such as the Polytechnic.

Historical Note

In Malta Engineering Degree Courses were begun at M.C.A.S.T. because at the time the University had not yet been expanded and re-organized to meet modern requirements and hence it was not felt that it could 'cope' with a vital new Department of Engineering. So much so that the Technical Adviser, Mr. Jones (from the Ministry of Overseas Development) originally recommended that the Engineering Degree Courses at M.C.A.S.T. should prepare students for an External Degree of London University. Fortunately however before the courses were started an arrangement was made with the Royal University of Malta to confer its degree on students while External Examiners would be employed to facilitate recognition by the Professional Institutions and secure membership of these Bodies for the graduates concerned.

Proposal

It is now proposed that the running of these courses should be transferred to the Royal University of Malta in due course.

Reasons for Proposal

1. It has been the advice of the External Examiners on each of the three occasions of their visit that this

should be done. Please see Appendix I herewith.

2. The courses would stand to gain academically and would attract more and better qualified students. At present one of the main difficulties being encountered is that of enrolling a sufficient number of students. The numbers were so low in the course just completed that the cost per head was very high indeed. An enrolment of 30 students is considered necessary to make the courses viable: this objective is more likely to be achieved if the courses are run by the Royal University of Malta because of its established academic standing.

3. The recruitment of staff of University calibre both local and expatriate would become easier if the courses were University based. In fact recent advertisements in the United Kingdom Press for key posts in these courses have brought only a small and mediocre response especially in Electrical Engineering for which it is proposed to re-advertise under the aegis of the Royal University of Malta as this will doubtlessly produce a better response.

4. The Engineering Professions will enjoy status equivalent to the other professions if the courses are conducted at the Royal University of Malta. The transfer of the Civil Engineering Courses to M.C.A.E.T. in fact caused an adverse re-action on the part of the Chamber of Architects. Its return to the Royal University of Malta would doubtless be a popular move with this Body and with the general public.

5. If the courses are transferred to R.U.M. it will be relatively easy to establish links with Universities overseas from which help may be expected.

An example of this during the past year has been the loan for short periods without fees of specialist lecturers from University College London and Kings' College London respectively. These visiting lecturers have been able to fill in certain 'gaps' which could not be covered by local staff. For the sake of the quality of the course it is important that such relations should continue. But Universities of standing such as those named above would not foster links except with other Universities - the arrangements made this year being exceptional - short-term ones.

6. Recognition of the course as such by the Professional Institutions depends on the recommendation of the External Examiners. These have repeatedly stated that they are unable to do this unless the course is run under University conditions - which are impracticable at M.C.A.S.T.

Yet for Malta recognition of the course - as separate from the qualification obtained by individual students is most important as it may in time attract students from overseas under the favourable (financial) terms of Medical courses.

7. The removal of the courses from M.C.A.S.T. would give opportunity for a full development of the Higher Technician Courses which are so vital for the Country. At present although the Degree Courses are numerically insignificant as compared with other courses (please see table at end of memo) and also as regards student enrollment, attention is focussed on them to a disproportionate extent to the detriment of other courses.

8. While at M.C.A.S.T. the number and diversity of the Engineering Courses makes it necessary to retain the present structure of three distinct Departments viz. Civil, Electrical and Mechanical, the Degree Courses if transferred to R.U.M. could be combined in certain ways which will make staffing at this level more economical.

9. Transfer to the R.U.M. would make it easier to satisfy the aspirations of the local staff. While the Degree Courses continue at M.C.A.S.T. every appointment at Lecturer Level must be made on the standards required for University staff. This means that persons who may be well qualified



to teach in Technician Courses cannot be recommended for appointment as Lecturers but are retained in 'Assistant Lecturer' posts. This is causing unrest and a sense of frustration in the M.C.A.S.T. staff.

This would also apply to the filling in due course of higher posts of Senior Lecturers, Heads of Department and ultimately that of Principal - posts which are very much in the mind of local staff at M.C.A.S.T.

10. Financially the Degree Courses would be no more expensive at the Royal University of Malta than at M.C.A.S.T. In fact because of points:

- 2. - increase in number of students
- 6. - attraction of students from abroad
- 8. - fusion of parts of Degree Courses. The cost per head is likely to be less if the courses are run at R.U.M.

#### Conclusion

The purpose of this recommendation is to ensure that the Engineering Degree Courses thrive in their proper environment leaving M.C.A.S.T. free to attain its true and equally important status of a first class Institution for training of Higher Technicians.

DIRECTOR OF EDUCATION

Extracts from Reports of  
External Examiners

1964

There are also serious gaps in the decisions as regards the administrative structure and control of the courses. In our view, for instance, it would be inadvisable to have an Engineering Faculty isolated at M.C.A.S.T. and completely engulfed by students of catering and other subjects of importance in tourism.

1965 (Civil and Mechanical)

It is clear that some difficulty may be experienced in offering a complete, modern course to the present candidates. Particular deficiencies are in

- (a) certain aspects of Theory of Structures, Surveying, and Soil Mechanics on the Civil Engineering side, and
- (b) Automatic control and Vibration on the Mechanical.

We should be glad to overcome the defects provided that we should not thereby incur a continuing commitment.

(Electrical)

As can be read between the lines of the report to R.U.M. by Professors Nash and Bishop of March, 1965, Electrical Engineering needs a rather special approach due to the increasing amount of physics, in particular solid-state physics, which has to be included in its syllabuses. No community envisaging any sort of industrial development can do without its electrical engineers. As those in Malta are likely to be few they must be good. The laboratories at M.C.A.S.T. are now equipped with the rather expensive sophisticated gear suitable for the necessary university undergraduate courses. Unless this gear is matched by the staff it will quickly degenerate into a white elephant, a notoriously uneconomical animal.

1966

It would be truly satisfactory if we could confidently assert that all is set fair for the future, but, as we indicated in our first report (July 1964) and in a subsequent memorandum to the Vice-Chancellor, we believe that the training of professional engineers on lines of these courses to be hopelessly expensive for Malta and we cannot see it succeeding.

As for last year we are again prepared to offer the loan of staff in brief spells from King's College and University College, but we should like these gestures from our side to be accompanied by an indication from the University and Ministry of Education in Malta that they intend to take some action to rationalise the same.

The great social importance of modern technology can scarcely be gainsaid. It is therefore plain that the decision to give higher education in engineering in Malta is a matter of profound significance for the Island. If it is to be offered at all, such education should be university-based. The Island in general, and the university in particular will be the poorer if the Royal University of Malta (R.U.M.) does not accept this responsibility. The case for this seems so strong as to be virtually unassailable.

We **firmly** recommend that students should be based on the new R.U.M. campus in Msida and that they should travel the odd mile for their laboratory work.

Having said this, however, we suggest that the situation is not irretrievable if handled properly - particularly if R.U.M. can be persuaded to take a large measure of initiative.



12th August, 1966

MEMORANDUM TO THE HON. MINISTER OF EDUCATION,  
CULTURE AND TOURISM

on

DEGREE-STANDARD ENGINEERING COURSES IN MALTA

by

G.M. Focken, B.Sc., B.M.E. (Melb.),  
M.Sc., D.Phil., F.Inst.P.

Principal, Malta College of Arts,  
Science and Technology.

Chief Technical Adviser,  
Malta Polytechnic Institute Project.

L-ARKIVI NAZZJONALI TA' MALTA

## PURPOSE

At the request of the Hon. Minister I am glad to have the opportunity of recording my views and comments on the problems associated with the short-term and the long-term administration of these courses, and to make some recommendations for his consideration based on my five years' experience in Malta.

The memorandum prepared by Professor R.E.D. Bishop (5th August, 1966) has been of great value to all those working on these problems, and I have discussed in detail his presentation of the arguments for and against certain lines of action, and accept them as a fair and nearly complete statement of what is involved. Therefore I will give my views and comment on the framework he has built in the first instance, and then try to sum up my recommendations for the foreseeable future of these courses.

## THE SHORT-TERM

The immediate problem concerns 11 students ( 1 Civil, 4 Mechanical, 6 Electrical) who have passed Part I and wish to proceed with Part II next session, starting October, 1966. As a new professor of Civil Engineering has been appointed the staff is adequate, but it is at present inadequate because of depletions in Mechanical and Electrical Engineering. However applications have been received for two posts -- Head of Department and Lecturer -- in each case and some suitable appointments are expected within a few months. The subjects where help is most needed are known to the Appointments Board.

Professor Bishop in his memorandum proposes two alternatives of which the former is preferable, for these reasons, namely, Mr. Rimmer has agreed to an extension of his contract and will certainly have a measure of authority, and the £1500 would only be used for such visiting experts (in Mechanical or Electrical Engineering) as are available and necessary, taking into account new appointees who may arrive. Because of our staff uncertainties for next session I would not at present give a firm opinion on how the Part III course in 1967-68 should be handled in detail.

NOTE: The external examiners in para. 9 of their 1966 report suggest that "the University should pool its resources and revise the Part II course to be run next session to something it can reasonably hope to handle, (i.e. a common course)". Comment: This does not appear to me to be allowable, even if desirable, because the subjects to be taken in Part II of each of the three options have been published and should be adhered to. The Electrical option is almost entirely different from the others.

## THE LONG-TERM PROPOSITIONS

Professor Bishop has set out clearly and vigorously the arguments for and against five "Propositions" and I will comment briefly on the relative weights that I would ascribe to four of these, all of which call for serious  
/discussion. ....



discussion. Regarding Proposition II which is the only one he gives a firm opinion against, I concur, and urge with him that it should not be adopted.

Proposition I. This proposition only merits serious consideration if it is amended in two ways, namely, (a) the students to be sent on scholarships should have completed one year, or two years, of a common basic course at the Malta College of Arts, Science and Technology, and (b) provided a special relationship can be arranged with an appropriate United Kingdom university, such as Durham or Southampton.

As amended it has merit for one or more branches of Engineering; if not amended its only important merit is economy and it should be rejected.

Proposition III. As this preserves the status quo and as the system has worked satisfactorily (although with difficulty) it certainly should be seriously considered and only changed drastically if clear advantages can be relied on.

Using a simple system of weighting, ranging from 5 for a most potent argument to 1 for a weak one, I have allocated weights of 5, 3, 3, 4, 4, 2, 4, total 25, average weight 3.6 for the 7 arguments in favour that are listed. For the 8 arguments against, the corresponding weights allocated are 3, 2, 5, 2, 2, 3, 2, 3, total 22, average weight 2.8. The margin, I think, is large enough to be significant, and some of the arguments against I would like to rebut, so I am definitely in favour of Proposition III.

Might I be allowed to point out also that in my opinion the Government in the terms of the Amended Plan of Operation is committed to continue after 1966 financial support to M.C.A.S.T. on the present scale for a few years. This would certainly be taken to include sufficient funds to continue running the professional Engineering courses or some of them.

Proposition IV. The Proposition is incompatible with the previous one which I supported. It is also the most expensive proposal and I am against it except as a long-term scheme of the order of ten years.

The arguments against this proposition are in my view definitely of greater weight collectively than the arguments for. In particular of the arguments in favour (i) can take account only of the relative difference of the engineering students influence at the Royal University of Malta and at the Malta College of Arts, Science and Technology which I do not believe would be great, (ii) is arguable and I am not impressed by it, (iv) assumes three heads of professional status and with a degree of freedom of action which may be less in Malta than the average British university.

An early transfer of professional engineering courses to R.U.M. would probably be considered unfair by those overseas bodies which contributed large sums to the construction, equipping and staffing of M.C.A.S.T. and would not be consonant with the terms of the Plan of Operation for M.C.A.S.T.

Although it would be difficult, if not impossible, to justify the duplication at R.U.M. of Engineering lecture rooms and laboratories with expensive modern equipment in

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the foreseeable future, a plan for the transfer of the administration and appointment of staff for these courses to the University to be completed in, say, ten years would have advantages.

Proposition V. The arguments listed against are in my view stronger than those listed for, and I would add two further arguments against, viz. (a) competition between three similar departments is stimulating and leads to progress, (b) the proposed new legislation is in terms of the present structure.

Nevertheless, I am of the opinion that some change in departmental structure may be accepted by all, or nearly all, as beneficial and could be implemented when most appropriate. A single head of Engineering of professorial status, while the three departments retaining their identity, would be an acceptable change. Provided the courses were to be extended to four years, then a two-year common course of basic studies would be desirable because it would ease the staffing problem and reduce expense.

#### SUMMARY OF VIEWS EXPRESSED

It appears to be best for the next few years, at least, to carry on with the undergraduate teaching as at present in M.C.A.S.T., while trying in the interests of economy to effect some advantageous departmental surgery and also to implement improvements in the present administrative structure.

#### ADDITIONAL OBSERVATIONS

In Professor Bishop's Memorandum there are a few relevant factors that appear to have been overlooked.

(1) There are two categories of students, both unfortunately small in number at present, attending professional Engineering course at M.C.A.S.T. Those taking the B.Sc.(Eng.) course are university students. The second and larger group are taking the Diploma in Engineering and they are the concern of M.C.A.S.T.

(2) The special considerations connected with Electrical Engineering are barely mentioned, and no balanced view on engineering can be arrived at in this way.

(3) An important factor in staffing M.C.A.S.T. is the Government policy regarding expatriates. When Maltese graduates with adequate qualifications and the right calibre are available they should be appointed to vacant posts. Efforts should be made to develop them further both within the College and in special cases by providing the opportunity to take selected courses overseas.

#### A RECOMMENDED POSSIBLE SOLUTION

As an outcome of the preceding views and comments a plan is suggested (in outline only) for consideration /which meets.....

which meets the principal criteria -- high standard courses, providing Malta's real needs, and not over expensive. If approval in principle were given, and discussions were held on implementation and details, it could be effective from October, 1967, when a new course is scheduled to start.

(a) One Head of Engineering at M.C.A.S.T., recognized by R.U.M. as of professorial status. He would preferably be a Civil or an Electrical Engineer and a good administrator.

(b) At least two well qualified senior lecturers would be required for each of the three departments, and two of these may be given responsibility under the Head of Engineering for their departments.

(c) All professional engineering (and architectural) students would take a two year course of basic subjects.

(d) On completion of the Part II qualification students would select one of the three options leading in two years to a degree of B.Sc.(Eng.) or a Dip. Eng. in the appropriate branch of Engineering.

(e) The three options could be:-

(i) Building (or Architectural) Engineering course combining architecture and civil engineering, and superseding the present M.C.A.S.T. course in civil engineering and the R.U.M. course in architecture. There would be a prospect that this course would be recognized by the Institution of Civil Engineers. I circulated proposed details for such a course (1/12/1965) based on suggestions by R.F. Wills and discussions with Professor Nash.

(ii) Electrical Engineering course at M.C.A.S.T.

(iii) Mechanical Engineering course consisting of the last two years of a course at a United Kingdom university by arrangement.

(f) My estimate is that a biennial output of approximately 10 Building, 6 Electrical and 4 Mechanical professional engineers is adequate and may be possible for the next few years, after which the students entering may increase sufficiently to produce annually the above number of graduates. In this latter stage the courses may be just possibly viable.

ADDITIONAL RECOMMENDATIONS THAT AFFECT  
PROFESSIONAL ENGINEERING COURSES

(1) If there was a very good appointment as Assistant Director of Technical Education, it could remove or reduce administrative difficulties that hinder these courses.

(2) New legislation to provide for the establishment of the Engineering Professions would provide an impetus to capable students to enrol for the courses.

(3) By use of fellowships provided by technical aid, or funds provided by the Government (such as were approved in the 1966/67 M.C.A.S.T. estimates), a scheme should be implemented for training selected M.C.A.S.T. staff on advanced courses overseas of normal duration one academic year. In this way and by understudying expatriates for a period it may be possible to fill additional positions with well trained nationals.

/(4) The draft.....



(4) The draft Agreement between the R.U.M. and M.C.A.S.T. ( or the Education Department) should be further discussed by a small committee in an attempt to produce an acceptable amended Agreement, which should be submitted for signature to the Government and the University.

(5) An early attempt should be made to set up a Board of Governors, whose composition and functions would be acceptable to the Minister. It could advise Government on a block grant for a triennium for M.C.A.S.T.

(6) The Education Department could build up the public image of the M.C.A.S.T. as an advanced technical institute of university status, and to delegate more responsibility to the College administration and heads of departments. M.C.A.S.T. should stand in a separate category, distinct from all other teaching institutions within the ambit of the Department.

(7) As a long term consideration if M.C.A.S.T. does not thrive in the next decade, a report may be required on transferring its administration to the University Council, provided the Council still has its present degree of autonomy.

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