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Observations on the Work of the United Nations Educational
Scientific and Cultural Organisation in Colombia

Report

by

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During a tour of inspection which I carried out in Colombia during the whole of the month of February 1970, I saw something of, and had discussions on, the following Special Fund projects for which UNESCO is Executing Agent:

The Industrial University of Santander, which bears the reference number COL 5; The School of Engineering, National University, Bogotá, COL 8; and Middle Level Agricultural Education, COL 24.

My observations on these projects are given below and on the following pages.

The Industrial University of Santander, Bucaramanga
(UNDP/SF project COL 5)

The Industrial University of Santander - IUS - was founded in 1948. Operations under UNDP project COL 5 - started in December 1961 - proposed to increase the capacity of the University, raise the level of teaching, curriculum and research, and lay the foundation for more specialized courses, with the aim of "covering the needs of Colombian industry for fully qualified engineers" in industrial, mechanical, electrical, metallurgical, petroleum and chemical engineering. The plan of operations was conceived in a framework of achieving an annual output of some 280 graduate engineers by the year 1967. The five-year project was due to end in December 1966, but its life was extended to March 1968, presumably the better to ensure the full attainment of its aims.

2. One of the weaknesses of this operation was the absence of contact between the University and real, live industry in Colombia, the needs of which in terms of graduate engineers were never ascertained, nor yet have been. An attempt to form an estimate was made in 1959-60, when "hundreds" of questionnaires were issued to Colombian industrial firms, of which only fifty-six were sufficiently interested to reply. The annual

target of 280 was apparently considered to be too high however and at a date I was not able to establish the sights seem to have been lowered to 235. Long wrestling with the various statistics produced to me failed to lead me to any but the most general conclusions about the degree to which the specified aims of IUS had been achieved. The change in the form of presentation from annual to semestral figures, the impossibility of establishing a common frame of reference, and the difficulty of distinguishing clearly between students matriculated at the beginning of semesters and those actually studying at all stages at any given time gave rise to possible variations of interpretation that robbed the picture of any statistical value. However, seeking firmer ground in UNESCO's own Terrinal Report, I find the following figures:-

	Plan of Operations	Actually realised
Intake	9298	5870
Drop outs and failures	1631	3487
Graduated	1002	621

Subtracting drop-outs, failures and graduates from intake, I get the following figures, which seem to me necessarily to reflect the number of undergraduates still pursuing their studies at the end of the project:-

6665	1762 (or just over 26% of expectations).
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Output of graduates during the years 1968 and 1969 was 102 and 115 (or 117 according to which set of figures is used) against the 280 (or 235) aimed at. This is not unqualified success, but this aspect, after all, is not the direct or prime responsibility of UNESCO.

3. Turning to the institution-forming aspect, we have the positive fact that, after the termination of UNDP aid to the project, the six faculties continue, producing something over a hundred graduates a year between them. I do not know what the output was in 1960, nor have I any means of judging how the standard of the final product rose over the years

of the project. I was told, however, that graduates of IUS are greatly esteemed by Colombian industrialists and that there is almost certainly a higher degree of employment among the alumni of Bucaramanga than among their competitors from some other university centres of industrial training in Colombia (the existence of which, incidentally, throws a question mark over the basic concept of the plan of operation). This is all distressingly vague, but the results of a current personal enquiry into the employment of IUS graduates have not yet been analysed. 55 counterparts were trained by the 23 experts who served in the project. I hold a list of the names of 31 of these, showing that in March 1968 21 were still working at IUS while 5 were abroad, 1 in commerce in Colombia, 2 in educational pursuits elsewhere in Colombia and 2 unspecified. Among these 31 were the 10 who had been abroad under project fellowships; of these, according to another, undated list, 5 were still serving IUS, 3 were abroad and 2 were elsewhere in Colombia. I do not know how representative is this sample of 31 out of the total of 55, nor do I know what the complete picture is to-day, two years later, but the tendency towards the brain-drain is strong. On the whole, however, the position is not unsatisfactory.

4. In December 1968, a second "extension" of the plan of operations - for a further two and a half years - was agreed, with the object of assisting with the establishment of post-graduate studies in the one discipline of chemical engineering. To my mind this move, in which there was a strong element of "donor bias", was a tactical mistake. Even had the conditions been ripe for such a move (and I shall argue later that they were not), the establishment of a school of post-graduate studies is a very different operation from aid to an existing university faculty at undergraduate level. What was proposed was a new and separate project and should have been submitted as such for full and independent consideration. The argument that it simply upgraded the work already being done at a lower level is misleading,

as the story of subsequent developments shows. One result of the mistake is that it gives additional weight to the argument that this project will soon have been in operation for $8\frac{1}{2}$ years and must have either achieved its object or be incapable of so doing, whereas in fact the new target could be hit, if at all, only after the expenditure of considerably more time, human resources and money.

5. The extended plan of operations for the post-graduate phase provided for three, staggered fellowships, the candidates for which were required to hold masters degrees in chemical engineering. Two and a quarter years after the signature of the "extension" agreement, it still proves impossible to find even one duly qualified candidate. Moreover, the inducements necessary to persuade three young holders of the degree of Ph. D. in chemical engineering - did such exist - to devote their talents to teaching in Santander would have to be very great. Logically, the probability of losing the services of specially trained staff increase with the level of activity concerned. At the technical level in agriculture or forestry, the problem hardly arises. In industry, the pull of the private sector is already felt at the floor level, while in overseeing grades it becomes stronger. In managerial or professional grades, the chances of holding staff in a project are still further diminished and at the level of Ph. D., chemical engineering, they become very slight indeed.

6. Two UNESCO experts have been working on the extended project since February and August 1969; their contracts expire in July and August 1970 respectively. In addition, one consultant served for 3 months. There are two counterpart professors, part of whose time is taken up in other work at the University. The first year of post-graduate work started in February 1969, with six students, since reduced to 5. Two of these are meeting their own expenses, since "industry was not interested in doing so". 7 candidates presented themselves in February 1970 for enrolment in the second first-year course. It is not surprising that, in the first year,

the experts found themselves teaching all the graduate courses offered. The extended plan of operations called for 72 man/months of services by senior technical counterpart staff, including lecturers; the amount actually furnished is variously reported as 25¹/₂ and 20 man/months. The experts told me that they expected to do less lecturing and more supervision during the second year; with more than twice the number of students to handle, in two courses, this seems to be optimistic - for the immediate future, at least. IUS is negotiating for the services of certain Colombians now reading for Ph. D. degrees in the U.S.A. - with what result is not yet known. It all gives the impression of trying to run before the walking stage is fully mastered.

7. Even had the University's own plans for financing the extension to post-graduate studies, including proposed new buildings, run smoothly - which they did not - and had the fellowship programme been launched according to the time-table, it is most unlikely that the 30 months allocated would have been sufficient to set up an independently-functioning school of post-graduate studies and research. As it is, in spite of the best efforts of the two experts on the spot, they will leave with very much still to be done. The University has therefore prepared a draft request for a further four years of assistance from the UN family. This has not yet reached the stage of a formal application to UNDP and I believe from my conversations at Bogotá that the Colombian Government will wish to look very closely at the cost-effectiveness of this operation and the degree of priority it merits against other possible applications of available foreign co-operation before reaching a decision on further action.

8. I recommend caution until the views of the Colombian Government are known, with, perhaps, at the most, aid on a TA rather than an SF scale to consolidate present gains until a firmer base for advance to a higher level of studies can be achieved - should this be the wish of the Colombian authorities in contemplation of the country's overall requirements.

The School of Engineering, National University, Bogotá

(UNDP/SF project COL 8)

I have not before seen a project in which activities on the ground bore so little resemblance to the provisions of the plan of operations, with no traceable reference in the Resident Representative's files to any authorized change of plan, no apparent realisation that anything in the management of the operation was abnormal, nor any obvious reaction from headquarters to the continual receipt of returns which, in contemplation of the plan, were incomprehensible. My enquiries were not facilitated by the fact that the sole UNESCO expert on the project had arrived only in October 1969 - I think after the departure of his last UNESCO colleague - and therefore represented no real link with his predecessors. The project started work on 4 May 1964 and I believe that technically its life has already ended, but this last expert's contract continues until August 1970.

2. This project was conceived in reaction to a situation in which, while engineering courses in the National University were restricted to Civil Engineering, the economic and industrial development of the country was giving rise to a demand for specialization in Sanitary, Transport and Structural Engineering. The object of the plan was therefore to introduce courses in these branches, double the intake into the faculty from 100 to 200 a year and aim to produce 140 graduate engineers annually by 1969, at the same time improving academic standards. The pattern of instruction was agreed with the Colombian authorities concerned and laid down in the plan of operations as two years of basic studies followed by three years of specialization in one of the three branches listed above, leading to an engineering degree after five years study. (The plan also made provision for refresher courses for graduates and other suitably qualified persons).

3. When I called for the latest return of student enrolment and graduation, in order to compare performance with the plan, I found that UNESCO form 362, incorporated in the periodic reports, had been completed

in such a way as to be quite uninformative and showed unbelievably low figures - one graduate in structural and two in sanitary engineering over the last reporting period! All the statistics seemed to confound rather than elucidate and it took some time to establish what I now believe to be the correct explanation, namely, that the pattern set down in the plan of operations was no longer applied. The three special subjects introduced by the project no longer featured in the five-year undergraduate course. Thus truncated, the course itself had not done badly. Over the last four years (1966 - 69), it had produced an average of 157 graduate engineers a year - 48% in civil, 25% in chemical, 16% in mechanical and 11% in electrical engineering - from an average undergraduate population in the faculty - taken at the beginning of each semester - of 1,452 (this giving a drop-out plus failure rate of 56.6%).

4. Sanitary, transport and structural engineering, specified in the plan of operations as the main targets of the undergraduate programme, have apparently now come to be taught only in the "post-graduate" courses, which lead, after two years' study to the degree of Master. Although described as post-graduate, these courses are also attended by "other suitably qualified students". The popularity of these courses has been increasing recently, as shown by enrolment figures rising from 54 in 1967 to 116 in 1969, but few students following these courses seem to devote themselves seriously to the task of obtaining a Master's degree. Masters' degrees actually conferred in the two years 1968 and 1969 taken together were: sanitary engineering 6, transport engineering 2 and structural engineering 4.

5. To resume: in the three specified specializations, if I understand the position correctly, 6 Masters are being produced annually against a target of 140 Bachelors, i.e., graduate engineers. This is presumably the pattern desired by the university and that is the governing factor. The situation does however raise the question of the value of carefully devised and negotiated plans of operation. For my own interest, if for

no other reason, I should be grateful if an investigation could be set on foot at UNESCO headquarters to establish whether, and if so when and in what terms, it was decided to amend the aim and methods of the project. In any case, it would be interesting to learn how the very unilluminating figures reaching Paris were interpreted and whether any elucidation was sought.

6. On the question of methods, I should like to raise the question of the production of text books, which in this project appears, not untypically, to have occupied a great amount of time of both experts and - for translation, adaptation etc. - of their counterparts also. I am prepared to believe that some countries experience particular and genuine difficulties over the language and presentation of text books, necessitating, perhaps, separate translation or even compilation, but that this should be so in the very large group of Spanish-speaking countries I find hard to accept. Even if there are no satisfactory commercial text books available, a large degree of centralization must be possible and could not fail to be economical. The present system is worse than the mediaeval copying of manuscripts; it is the equivalent of re-editing the scriptures separately in every monastery.

7. The perennial problem of ensuring a desirable degree of permanency in counterpart staff was foreseen and covered as well as could be in the plan of operations. "The Government", this read, "the Government shall take the necessary administrative and legislative action for the establishment of a scale of salaries and conditions of service which will ensure the full-time services of duly qualified counterpart staff". The fellowship programme seems to have worked well. Ten fellowships were provided for (one later being split between two persons) and all but one fellow returned to Colombia and served the project. Nevertheless, suggestions that wages in the private sector were on the average some fifty percent higher than in comparable public service were as frequent in this project as in most and it is clear that Government has a far from easy task in keeping up with

continual escalation. However, at the time of my visit, the position seemed apparently satisfactory. The faculty turned out 171 graduate engineers in 1969 with a minimum of UN assistance and I was assured, particularly by one teacher with ten years of experience of the faculty, that in his view academic standards had undoubtedly risen very satisfactorily. The one remaining UNESCO expert supervises ten teaching professors in his particular subject and, apart from the curious reversion of the curriculum to the status quo ante, this project seems to have been relatively successful and self-perpetuating, given reasonable future stability among counterparts.

8. A request for a second phase has been submitted. This aims at improving teaching at undergraduate level in electrical, mechanical and chemical engineering. In the last, a possible extension to post-graduate studies is foreseen. In civil engineering it is desired to extend the present operation, presumably to the existing level. For this purpose, 474 man/months of experts' services are requested, costing some three quarters of a million dollars, 432 man/months of fellowships at a quarter of a million dollars and equipment and books to a value of just over half a million, or say \$1.1m. in all, against a comparable figure of \$595,000 for Phase I. In the latest priority list of the Colombian Government this request was rated as sixth in the order of importance. I myself believe that the faculty authorities, who approached me personally to explain the extent of their need, may be inclined to under-rate the amount of self-help available in Colombia itself - apart from the post-graduate level - after nearly six years of this project and seven years of similar assistance to the Industrial University of Santander (COL 5).

9. Finally, I should like to mention an administrative point. Towards the end of my stay in Colombia, the University Supreme Council decreed the closing of the National University for the whole of the remainder of the current semester because of the threat of student disturbances (in

which connexion the faculty of engineering was one of two receiving special mention in the press). If this closure is maintained, I recommend the withdrawal of the one remaining expert of the project team, whose continued presence in Bogotá seems superfluous, unless perhaps circumstances, in the judgement of the Resident Representative, permit him to continue his research work on problems of hydrology with some of his senior staff.

Summary of Recommendations

1. That enquiry be made into an apparently unauthorized change of curriculum (Para. 5)
2. That the possibility of centralizing the labour of preparing Spanish-language text books be examined (Para. 6)
3. That the possibility of greater self-help at the level in question be closely considered in connexion with the request for a second phase of this project (Para. 7)
4. That the one remaining UNESCO expert on the project be withdrawn unless it can be shown that there is useful work which he can perform during the closure, for the current semester, of the National University (Para. 9).

Middle Level Agricultural Education

(UNDP/SF project COL 24)

In face of the risk of possible charges of invidious comparison of projects not truly comparable, I am prepared to say that this is, all in all, the best operation which I saw in Colombia. It started under the shadow of administrative troubles including the loss of the plan of operations in the post between Paris and Bogotá and a great delay in making the first counterpart payment, and it has since suffered a student revolt and the consequent abandonment, for re-siting, of one of its four main centres, but it nevertheless came back fighting strongly and, in one year's work, has established itself very firmly and worthily.

2. In the first place, its purpose is right and nicely calculated to meet two of the pressing current needs of Colombia: 1) To assist the Government in developing training facilities for middle-level technicians for future employment in public and private sectors of agricultural development services and 2) To provide teachers in agricultural science at the middle level.

3. In the second place, it enjoys a full measure of enthusiastic support within the framework of the Government's broad plan for the development of its Institutes for Diversified Middle Level Education. The Government is in advance of its timetable as laid down in the plan of operations and admirable speed has been made in the completion of buildings in spite of increased costs of construction. Energetic and far-reaching action has been taken to raise the quality of teaching staff and new posts have been provided beyond those foreseen. Words and deeds alike point to the great importance which the Government lays on this project. Moreover, this interest and support are reflected in the attitude and actions of the Agricultural Institute, the Institute for Agrarian Reform etc, not to speak of helpful links with FAO projects in Colombia and a World Food Programme operation working in the existing establishments of COL 24.

4. I was not able to visit as many of the project experts as I should have wished, but those I saw gave me an excellent impression of competence and dedication and I received good reports of those I did not see. It is vital to maintain this high standard among future specialists selected for this project; conditions are not always easy and enthusiasm must be high. I was pleased to learn, incidentally, that the experts are, or are to be, used with imagination and flexibility, being switched about the various ITAs (Technical Agricultural Institutes) as the requirements of the project as a whole indicate. Such variety of employment will be helpful to the operation and to the individual alike.

5. The fellowship programme appears to be well-conceived and well in hand, with the possible end-use of each fellow foreseen in advance. As in all projects in the educational field in Colombia, the question of emoluments is pressing now and will be decisive for future success, and it is encouraging to be able to report that the Government appears to be taking positive steps to make the profession of teaching in agriculture sufficiently attractive to retain the services of able individuals. Another favourable point is that most of the future staff of the ITAs will be trained in Colombia, at the Agricultural Teacher Training Institute at Pamplona (which is, of course, one of the seats of project COL 24).

6. A serious danger lies over this project, arising from its very success. Calculated to match the strength of the three ITAs at Paipa, Buga and in Córdoba (ex Loricá), plus the ITA and Teacher Training School at Pamplona, the project is in peril of being diluted into relative ineffectiveness by the multiplication of centres. Two existing schools have already joined themselves to the organisation and therefore make demands on the project - San José at Ibagué and Valsalice at Fusagasugá. The Government is also seriously engaged in consideration of the establishment, with international assistance, of three more ITAs - on the Atlantic

Coast, in the Eastern Plains and in the southernmost Department of Nariño. Moreover, the intake of pupils at existing centres has already exceeded what was expected. One of the outstanding impressions of my visit to the ITA at Buga was that of the press of last-minute applicants for enrolment before the start of the new term. The existing ITAs cannot accommodate all the products of the agricultural schools who wish to proceed to higher technical training and, although it is to be hoped that the example of Valsalice, which has increased its pupils from 14 to 115, is exceptional, there can be no doubt that great expansion is in early prospect.

7. This is a common phenomenon in Colombian education, which has given considerable difficulty, to put it no higher, to more than one UN project. It can be argued that UNESCO experts are one step removed from the labour of primary production of the institutes' output and that it can make little difference whether an expert trains five or ten counterparts, but in the early stages of a project, when primary teaching by the expert himself is in practice almost inevitable, expansion of the agreed framework is a serious potential cause of disruption of a project. If, into the bargain, the number of separate institutes is also multiplied, the strain on project staff is clearly likely to be increased. The difficulty of agency staff's refusing to undertake wider responsibility is obvious, as is that of arguing with Headquarters the need for significant revision of a plan of operations. However, if neither course is taken, breakdown is possible and there can be no question of requesting Government to restrain a country's expansion. In the present instance and in view of the success and promise of this operation, I would unhesitatingly recommend that every effort be made to expand the project to go as far as possible towards meeting the reasonable requirements of the situation, if necessary finding counter-balancing economies elsewhere.

8. I have another, but lesser, preoccupation. Stretching too wide would be a danger; reaching too high would be another. The Government's request to the Special Fund in 1965 specified a programme for agricultural education "below university level". This has been the basis of the development of the ITAs, although these are completely integrated into the educational system of Colombia and students can take full courses leading to university entrance if they can and wish to proceed beyond the technical level. But education in Colombia has hitherto been geared by and large to the ultimate goal of the university. Old habits die hard and already voices are heard suggesting that the success of the ITAs offers a platform that might lead to higher things, that it would be useful to branch into research etc. To my mind, thought on these lines would be a mistake. One new concept in Colombian education, aimed at increasing the number of secondary school places from 404,000 in 1965 to 1,300,000 in 1975, is based on the idea of steering a large proportion of the output of the secondary schools into the technical channels where hands and brains are in real demand. The ITAs and the project which serves them are absolutely in line with this trend.

9. Experience of at least two other projects in Colombia has convinced me of the error of imagining that the step from technical to academic teaching, or indeed from undergraduate to post-graduate education is easy, let alone automatic, and I am satisfied that project COL 24 can be most efficacious on its present proved level, expanded if possible, but not stretched upwards. The university level in agriculture is of course already being looked after through other channels, including the very successful project COL 18 at the National University (executing agency FAO), which has a mandate, inter alia, to "develop applied research". On the Colombian side, research and experiment are definitely laid down in the current Colombian Development Plan, 1969-1972 (V.81.3.2.b) as the responsibility of the Agricultural Institute (Instituto Colombiano agropecuario) - ICA.

Summary of recommendations

1. That, if possible, this project be enlarged to meet growing demands (Para. 7)
2. That the project be maintained at its present, agreed, technical level (Paras. 8 and 9).