The Caribbean Statistical Training Programme (CSTP)

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1. Introduction

CSTP was inspired by the Caribbean Community (Caricom) for the thirteen small, scattered, and poor member countries. It is to provide training at basic, diploma (intermediate), and degree levels, coordinated vertically and horizontally. A Regional Coordinator (RC), between May 1989 and May 1990, and a Visiting Professor (VP), between March 1989 and March 1991, have been paid by the Commonwealth Fund for Technical Cooperation (CFTC) to get the programme started. The author is the RC.

CSTP must be self-propelled. It would be futile if it were just glued on top of what is there. It must grow naturally and fruitfully out of the life of each country so that it can continue to develop with the country.

Because each country is so small, CSTP must serve the whole community in each country-business just as much as government. With that wide market the word "statistics" is a dangerous turn-off. "The numbers side of management" is an attractive and clear phrase to all sectors. The wideness of the market also demands training which is thoroughly practical; it must include lots of practice - like the training of a tennis player or a teacher. And the practice, like the rest of the training, must grow out of the business and government of the country, not out of those rich and far-off places.

Finally, because most children leave school fearing and disliking mathematics, the training must also be fun.

2. The degree level

A question which has bothered the RC since the outset is "What is the demand for statisticians?". To provide a usable answer, a survey would have to be elaborate and to cover several of the thirteen countries. The RC had insufficient time, so he applied a chain of assumptions that, with some adjustments, applied the UK market experience to the area, and estimated a demand of 30-45 statisticians per year.

The universities and campuses are as follows: University of the West Indies (UWI) - Mona Campus, Kingston, Jamaica; Cave Hill Campus, Bridgetown, Barbados; St Augustine's Campus, Port-of-Spain, Trinidad. University of Guyana (UG) - Georgetown, Guyana. In October 1988 a group of students at the Mona campus started their BSc degree in the Faculty of Social Sciences; they were the first who were able to consider whether to choose the Economic and Social Statistics option, which was the first statistical degree available anywhere in the region.

Unfortunately, it is widely believed in the business world that social science graduates, well sensitised to the evils of slavery, indentured labour, and colonialism, and convinced that central planning and administered prices are the way to economic and social development, have not been helped to be effective in business.

Even with the doubts about the background, it is clear that the nature of the statistics degree needs to be modified and that a vigorous marketing strategy in business and government is needed. As in business, product design (the nature of the degree) and the strategy and tactics of marketing must be kept in line and in step with each other.

Work is therefore underway to modify the degree. The simplest indication of what sort of modification is in view is the name of the proposed degree - Business, Economic and Social Statistics (BESS). As well as adding in the Business uses of statistics, there will be more emphasis on application; indeed, as far as possible, applications will be presented before or the same time as the methods used. Two vacation internships in approved employment will provide a certain amount of practice. They will also give the employers an opportunity to run an eye over the students and will form part of the assessment for the degree.

Continuing the marketing effort for BESS is going to be hampered by the same shortage of the right sort of staff in the relevant departments of the university. And the way forward is the same: improve, by practice, by doing. Progress may be slow to begin with. As an aid to marketing, a list of activities in the numbers side of management was prepared. It is as follows.

The Numbers Side of Management

Function	The Numbers Side
Marketing	Recording, analysing, and forecasting - sales, markets, and market shares; analysing and modelling demand; market research; allocating marketing effort.
Production	Recording and analysing output; setting output norms; recording and analysing materials used; process control; quality control; optimising - product mix, plant layout, maintenance routines, equipment replacement; inventory control.
Manpower	Recording, analysing, and forecasting staff numbers; quantifying job descriptions; determining bonus distributions; estimating levels and trends in wages elsewhere; estimating levels and trends in prices.

Finance	Recording, analysing, and forecasting costs, prices, cash flows, rates of return; optimising asset portfolio.
General Management	Recording, analysing, and forecasting performance indicators; network analysis; corporate strategy.

3. The intermediate level

There is not so much to be said about the intermediate level because most of the points have already been made about the degree. But a certificate is not so intellectually rigorous as a degree and a BESS certificate can be structured rather more nearly in line with the working lives of government and business than can a degree.

The specification of the course has been conceived and even presented in the form of a matrix. One axis is the familiar set of "subjects" of which a BESS course is bound to consist; seven in all: Accounting, Economics, Social Affairs including Demography, Mathematics, Statistical Methods, Statistical Procedures, Computing. (The distinct role of "Statistical Procedures" can be illustrated by the example of the distinction between sampling theory and managing a sample in the field.) But it is the other axis of the matrix which is important and may be less familiar. It consists of the five functional components of managing any medium-sized or large organisation. They are: Marketing, Production, Personnel, Finance, Research and Development. It may just be worth pointing out that there are other subjects involved in each of the functional components of managing. But Law, the Natural Sciences, Medicine, etc. need not form part of an intermediate-level BESS course.

Some explanation may be worthwhile of what is meant by managing "Production" in the government sector. It is the task of managing the supply and delivery of the service being provided. The purpose of most of the government sectors is to deliver a service of one kind or another, and managing the supply and delivery of the service is just the same as managing production and delivery in the business sector.

The subjects of Mathematics and Computing are used only at one remove by managers. Even in large, modern organisations, where every manager has a terminal or a networked personal computer on his desk, the manager is merely using the computer as he uses the telephone; he is not "doing computing". The same is nearly, but not quite, true of Statistical Methods and Statistical Procedures.

In the matrix there are $7 \times 5 = 35$ cells. Thirty-one of them are well-filled (allowing the interpretation expressed in the previous paragraph). But there is very little, if any, use of the subject of "Accounting in Personnel Management" or of the subject of "Social Affairs including Demography" in Financial Management. Also, knowing the subject of "Social Affairs including Demography" is only useful for the production and research and development functions of management of government sector organisations and private sector service companies.

The course will last 500-600 hours and several of the institutions who are considering putting it on will run it in two full-time summer modules from June to September.

4. The basic level

Many contacts in business and in government mentioned a shortage of quite junior people who were, in practice, able to carry out the fundamental tasks in the numbers side of management. The tasks in question are: designing and carrying out record-keeping systems; using those systems to measure business and government variables; reporting, in speech and in writing, on the measurements; building simple models allowing for fluctuation; calculating trends; forecasting.

It was to meet these needs that an outline, in 110 pages, of a "Practical Basic Course in the Quantitative Crafts" was written. The outline has been widely circulated in the region. Also available, though not so widely circulated, are an "Operations Manual" of how to put the course on and evaluate questionnaires for students and their employers. *It cannot be too heavily emphasised that all three documents are no more than outline drafts which need adapting and improving so as to match the economy and society of the country where the course is being put on.*

The structure of the course, by themes, is as follows: Shops; Hotels and Tourism; Factories; Foreign Trade; Demography; Games with Numbers; Managing Statistics; National Accounts; and Communication.

Other possible themes are: "Hands-on" computing; Agriculture and agro-processing; Job description and evaluation; Construction; Finance and accounts, etc.

There is not space in this paper to present what is in the course outline, but some remarks are worth making.

(i) The course, as adapted, must grow out of, and be full of, the current life and work of the country.

(ii) Students need to be shown real-life situations in their own country first and then the quantitative methods to deal with them.

(iii) The 15 or 20 lecturers and supervisors of practical sessions must be current practitioners, in the country, of the quantitative crafts.

(iv) Because the course is aimed at people who are afraid of mathematics, it must all, but especially the mathematical sections, be given by people who find joy in using numbers and can communicate their joy.

(v) The Course Organiser or producer must be an entrepreneur; creative, executive, a real leader. He is not a coordinator; he is a producer/director.

The Operations Manual specifies a report *by* the Course Organiser *about* the course *to* the employers of the students and to Caricom. That report will be a vital input for the Course Organiser of the next course, wherever it is given.

The total costs will be about US$200-$300 per student, towards the bottom end of that range in most countries. Half goes on photocopying, half on fees for the Course Organiser and other resource people. It is appropriate that students pay half the cost, i.e. US$100-$150, with a well-based and confident expectation that employers will pay the fees for their students. Aid will cover the other half. The demand for the course is not known, but the RC, on the basis of his experiences in the first eight months, guesses that it could be for 50 courses in the first few years. Fifty courses of thirty students each at US$100-$150 per student would need US$150,000-225,000.

At the outset, accreditation of this course will be no more than can be carried by the certificate awarded in each country to the students who do well enough in practical sessions and in the examination. It is to be hoped that employers will all agree that successful students are worth higher wages as well as giving them more challenging work, exploiting their new practical abilities. For the longer term, there is the possibility of persuading the Caribbean Examinations Council to set and mark an examination which would carry more weight of accreditation, both for pay and for entry to the next level of training.

5. Conclusion

It is too early to write a conclusion. At the time of writing, not even the twelve months of the Regional Coordinator is over and the Visiting Professor has more than a year of his appointment to run. Even after that it would be wrong to write "Conclusion". Statistical training must go on. It must grow and adapt to the changing needs and abilities of the country where it is happening. In the Caricom region the pressing needs are for social and economic development; statistics has a part to play in that, and the more successfully it plays its part the more rapidly will the economy and society change. Statistical training will have to change alongside or preferably ahead. Nevertheless, things are underway. At the time of writing:

(i) six countries are committed to mounting the Practical Basic Course in 1990 and four more are actively considering doing so;
(ii) the College of Arts, Science and Technology in Jamaica is nearly committed to starting a certificate-level BESS course in June 1990;
(iii) the Community College in Barbados and the University of Guyana are also actively considering doing so in June 1991;
(iv) Professor Raktoe is moving rapidly and with great success towards starting a BESS degree at the Mona campus of the University of the West Indies;
(v) the other two campuses of the University of the West Indies are actively considering starting BESS degrees also under the leadership of Professor Raktoe.

These are not foundations, but rather growing points which, with diligence and luck, will become a productive forest.