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SCHOOL ORGANISATION

A New Synthesis

BY

T. I. DAVIES, H.M.I.

WITH A FOREWORD BY

LORD JAMES OF RUSHOLME



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SCHOOL ORGANISATION

A New Synthesis

Foreword

by

THE RIGHT HONOURABLE THE LORD JAMES OF RUSHOLME

It is abundantly clear that the task of devising curricula for schools of all kinds is becoming far more difficult. The growth of knowledge, the changing content of courses, the wider range of abilities of our pupils, the often misguided desire to widen the spread of subjects, and the need for the most economic deployment of staff are among the problems which face the administrator and the teacher.

The value of Dr. Davies's book is that it tackles the complexities of the time-table using techniques which are becoming normal in many fields of activity but which break new ground in school organisation. It will be a very great pity if some of those who should read and use the book were daunted by the mathematical form in which some of it is necessarily written; the difficulties are more apparent than real. It would be a still greater pity if anyone neglected to heed the very clear warnings that Dr. Davies gives us as to what his book does *not* do. He is not concerned to say *what* should be taught. That is a decision that cannot be reached by mathematical modelmaking. He would also, I know, be the first to affirm that even more important than decisions about the content of education is the quality of the contact between teacher and taught. But what he has approached with great originality and skill is the purely practical problem of putting into concrete terms of hours of teaching and use of staff the deeper decisions which rest on judgements of value and personality. He is concerned that these decisions should be taken against a background of practical possibility and implemented with an efficiency which rests on a scientific method. I believe that this is a book deserving the most careful study by all those involved in the intricate practical tasks of school organisation.

May 1968

Preface

AT A course held for headmasters in Wales in August 1951, Dr. Eric James (now the Lord James of Rusholme) kept insisting that the organisation of the secondary school is subject to what he then called the Law of Conservation of the Curriculum. It was a catching idea that at the time played on the imagination, and later behaved like a fermenting agent. Looking back, my greatest regret is that the medium I was able to provide for this agent took all of sixteen years in the working. During these years there were altogether only two shouts of *eureka*—their echoes have inadvertently been muffled in the script of this book (pp. 56 and 93); but after these two well-spaced events, everything seemed easily to fall into place. Lord James was right: school organisation is subject to laws that are built well and truly into the curriculum's structure.

Eureka does not come from the blue. In my experience it comes from working with other people; and in this instance there have been many of them—far too many for me to hope to name them all individually here. But as a non-mathematician who was once too shy to grasp the implications that stared out of the figures before me, I must thank my colleague, Mr. I. G. Richards, for supplying the confidence that started me off. Then came another colleague, Mr. P. C. Webb, to tell me about the methods, and especially the outlook, of the economist and statistician. And sixteen years being a long time, there eventually arrived a third colleague, Mr. Glyn Evans, who is still at pains to get me to understand what computers can and cannot do. All three have been good teachers, which is the highest compliment I can pay them at the same time that I acknowledge my thanks.

Whether or not there is such a thing as inductive inference, hypotheses are certainly always the products of intensive preoccupation with data. And in this connection it is my privilege to thank all

my colleagues in North Wales who, from their daily contacts with schools, were able to check the theory contained in this book, item by item, as the theme of it unfolded itself. Without the data they so willingly supplied and helped to systematise in what we called the North Wales (H.M.I.) Workshop, this book could not have been written.

Hypotheses were so slow in forming that often the work seemed to be leading nowhere. But not once was a weakening of faith in it shown by the Chief Inspector (Wales), Mr. Wynne Ll. Lloyd, C.B., whose unstinting support it gives me great pleasure to acknowledge. I am grateful also to Dr. Elwyn Davies, the Secretary for Welsh Education, for encouraging me to see that the work should see light of day, in book form. And I want particularly to thank the several headmasters, most of them in North Wales, who early on saw the possibilities of this line of investigation and helped it along.

Last, but not least, the preparation of this book posed an extraordinarily difficult typewriting task. It is with pleasure that I express my thanks to Mrs. D. B. Bostwick for her devoted assistance over many years, and to Mrs. R. Williams and Mrs. K. Culshaw who succeeded her in the work's later stages.

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CHAPTER 1

Introduction

ANYONE wanting to make a study of school organisation would most likely begin by selecting a number of schools and acquainting himself with the ways in which they are organised. He would get down to the task of ascertaining their curriculum details and of sorting these out in an effort to get at the plan or the pattern that lay behind each curriculum's construction. This preliminary task completed, he would then describe the curriculum patterns in the best way that occurred to him from the standpoint of being able later to compare and contrast them one with the other. This in fact is much more easily said than done, because a structural pattern so complex as that of the school curriculum is extraordinarily difficult to represent on paper—unless, of course, an appropriate notation has been found or specially devised for the purpose.

Let it for the moment be supposed that our student of school organisation has acquired such a notation, and that he has used it to bring out clearly the similarities and differences between one curriculum and another among his selected schools. In the light of these findings we could confidently expect him as a next step to classify the curricula according to whether they fell into this or that category of structural pattern. And this being a procedure which he could extend by making the categories progressively broader, the pursuit of it would carry our student forward in a direction that led him further and further away from first-hand experience, deeper into the realm of theory and abstraction. He would probably find this a gratifying course to pursue, because through engaging his mind on concrete, ascertained particulars it satisfied his human desire to see his impressions form into patterns and his experiences fall into order.

A small minority of people, of a quite different turn of mind, might prefer to approach the study of school organisation from the direction absolutely opposite to that just described. They are those who find it congenial to start off a study of this kind from the end of theory pure and simple—the end at which the curriculum of a school (i.e. of any school) is conceived of and defined in completely general and abstract terms. For instance, the school curriculum may be thought of as a system in which a given total of pupils is in the course of the school week distributed among so many classes, with the individual pupil joining a certain number of these classes.

For most of us this second approach lacks the appeal of the first one if only because, in the guise of this abstract definition, the school curriculum is not even recognisable to us at once; it is something that we have to think out rather than instantly recognise. A conceptual effort has got to be made simply in order to come to grips with what, to this way of thinking, school organisation is about. But this is not to imply that the effort involved would not be worth making; because from this kind of abstract concept it should be possible to infer the full range of the broader categories of pattern that the school curriculum will lend itself to, and from these in turn to infer finer, and forever narrower, categories of pattern that led in the end to specific curricula of the kind that we know from experience.

Of several possible approaches to the study of school organisation, these two are selected here for the sake of the advantage that is to be gained from playing them one against the other. This is the interplay that characterises the method used in scientific inquiry—the method which, through its rigorous application and constant use, is responsible for rapid and far-reaching advances in so many modern-day systems. And there is every reason to think that the educational system would likewise register advances if this method was applied to the study and practice of school organisation.

That this must be true may be gathered by taking only a cursory glance at the method itself and the way that it operates. The student who works from experience of a small selection of schools will most likely end up with a general description or statement that

embraces all their curricular patterns. But despite the fact that this generalisation is based on only a small number of *actual* cases, the deductions that the student may be expected to draw from it will include, nevertheless, a very large number of *possible* cases the great majority of which will be new to his, and most likely to general, experience. Among these new kinds are almost certain to be a few which, on first inspection, show promise of being an improvement on the kinds that are known already; so the next logical step is for these promising few to be put to the practical test. Then if their promise is not after all fulfilled, or if the improvement which they bring about is no more than partial, it means going back for a second selection, and this of course will involve yet another appeal to working experience. This is the method which on all sides today is found to pay off; an alternation between theorising and testing that never comes to a stop, and which makes for a rapid and cumulative improvement of man-made systems, to which there is no reason to think that the system of schools is likely to be an exception.

The statement just made may appear as unnecessarily tentative and hedged about with reservation because schools, after all, have been with us for so long that we ought surely to know by now whether or not they are an exception. Education in fact is a field well renowned for its regular and bumper crops of generalisations, including some very large and sweeping ones made about ways of organising schools so that the best interests of children may be reconciled with the needs and demands of society. Moreover, these generalisations lead to advocated patterns of school organisation which are widely tried out and, in the case of some of them, their results are tested with the aid of sophisticated scientific techniques. Indeed, a considerable part of educational research is these days devoted to measuring the responses which pupils make to different curricular structures; and we should be safe in assuming that lessons drawn from these researches are occasionally, perhaps frequently, applied in a manner that leads to the selection and trial of new curricular patterns. So that in this sense—and ultimately, it is the significant sense—education is no stranger at all to the method of

theorising and testing by which systems generally are refined and improved in modern society.

Hence the reservation above remains to be explained. It has just been pointed out that the ultimate concern of school organisation is with qualitative values and the attainment of educationally desirable objectives; which is tantamount to saying that school organisation is in the last analysis—or it might be more appropriate to think of it as the final synthesis—an applied or interested study. This being so, it behoves us to remember that always, and to an overwhelming extent, an applied science depends for its progress on the amount and quality of the support it receives from a related body of pure or disinterested science. It is in this respect that school organisation is lacking. It stands to make real headway only through applying the results and conclusions of a disinterested study, whose concern is with quantitative as opposed to qualitative, statements and values; a study the focus of which is not on achieving what may be educationally *desirable* but rather on exploring the range of what is mechanically *possible* in the way of curricular patterns. The emphasis of this study would not be on *what* to achieve through the system of schools but rather on *how* to achieve it.

The distinction is best illustrated by the plight of a headmaster, say of a comprehensive school, who is possessed of an all-embracing and lucid statement as to the quality of experience that the school should impart to the pupils, but who is then left to his own devices and his own ingenuity when it comes to translating this theoretical ideal into organisational practice. No bigger mistake could be made than to assume that the curriculum's structure is a readily adjustable mechanism which headmasters can adapt with accuracy and speed to the requirements of new educational objectives. Reasonably pliable it may be in the hands of those few who are gifted in the special kind of numeracy that the task involves; but to render the curriculum adjustable easily and generally must mean first acquiring, and then disseminating, a thorough knowledge and understanding of the principles on which its mechanism works. It is in this respect that a gap remains to be filled; and it can be filled only by generating that interplay between theory and experience which alone, in the

long run, can serve to raise the general level of school organisational practice.

Having seen that two different, though not mutually exclusive, views can be taken of school organisation—as a pure study on the one hand and as an applied study and system of practice on the other—we may as well here pay some brief attention to the nature of the link that connects an applied study to its foundation of pure or disinterested knowledge.

When a challenge presented by man's environment is taken up in some field or other of applied science and technology, it is never in these days a matter of individual scientists starting from scratch by discovering for themselves the relevant basic scientific principles. Acting instead as heirs and inheritors to generations of people who have worked the field before them, and as partners or team-mates to hundreds of contemporaries who work different parts of the field, they bring to their task a store of accumulated knowledge which they all possess in common—partly as a result of a shared educational background, and partly also on the score of an effective system of communication that keeps them in constant touch with each other. Given this access to a store of established principles, the applied scientist can select from among them those that will enable him to set up a flexible, theoretical working model to replicate the system that he is asked to construct—a model which, when he puts it to work, may be hoped to bring him somewhere within sight of the problem's solution. Any work that remains for him afterwards to do is more likely to be a matter of exploiting the flexibility of the model (i.e. of altering its specifications) than of reselecting the principles on which it operates. The component parts of the model will almost certainly want trimming here and there, and manipulating, and trimming again perhaps a dozen times over, before in the end success is achieved and the allotted task is completed. Not altogether completed, however, since the final duty of the applied scientist is to communicate his results to the technologist who wants to convert the model from theory into practice, and to fellow scientists who want to avoid pointlessly duplicating his labour. This duty he can usually perform without much difficulty because the model,

being a theoretical one (probably a set of equations), is likely to be the sort that communicates itself to all who are able to read its notation. The procedure throughout is one which may be summarised by saying four things about the working model:

- (i) it draws its principles from pure or disinterested study;
- (ii) it is readily flexible (by altering its specifications);
- (iii) it is self-communicating (to those who know its notation);
and
- (iv) the work that it does contributes to applied or interested study and practice.

And the whole scientific complex, of which the working model is an integral part, behaves very much like a sensitive instrument with which one can face up to whatever new challenge the environment presents.

No more important question could be asked at this time than whether the system of schools is acting like an instrument sensitive and quick to respond to stirring new challenges which on all sides today are presented to it.

This is really to ask whether *effective* models of schools and educational systems are being built fast enough to ensure that every new educational idea, as it comes along, is at least accorded a full and fair trial before it gets superseded. And since in this form the question turns on the model's effectiveness, it becomes a matter of inquiring whether the models now built to replicate schools and educational systems are such that they (i) incorporate all the principles that are to be derived from a pure or disinterested study of school organisation, (ii) are so flexible in the hands of the people who build them that they are easily adjustable, and finely, to new educational objectives, (iii) communicate themselves readily to all who are interested in them, and (iv) succeed by the work that they do in contributing substantially to improvements in the general practice of school organisation.

The model traditionally used for replicating a school in action is, of course, the school time-table; and the extent to which it fails to satisfy the requirements above will be dealt with more fully in the

chapters which follow. Suffice it at this stage to say, on the point of flexibility, that the timetable is a highly particular answer to a school's problem in choosing its curriculum pattern; which implies that as an exploratory instrument its action is hopelessly stilted through being broken up into small, and extremely tedious, steps of piecemeal modification. As an end-product of the headmaster's exploratory thinking the time-table is, of course, absolutely essential; but as a model with which actually to do this thinking it is cumbersome to a degree that at times is defeating—a quality that is only to be expected in an end-product used as the means of its own attainment.

On the second point, of self-communication, the school timetable, although a rich mine of information, has little but toil and sweat to offer to someone who wants to extract the precious ore from it—unless, perhaps, this someone happens to be another headmaster; which is to bring out the fact that as a medium of communication, the time-table is in the nature of a “language” proficiency in which is limited to those who practise it daily. An unfortunate consequence of this is a tendency to set up a kind of consumer-craftsman relationship between administrators and headmasters; so that if an administrator wants to know what kind of curriculum would be likely to result from an action that he proposes to take, his most practical course is to take his problem along to a professional (headmaster) colleague who is versed in the skill of constructing the appropriate model, viz. the school time-table. And once he has, so to speak, placed his order, there is nothing further that the administrator can usefully do except wait for the finished article to be delivered in the fullness of time. On delivery it is found to be precisely that: a finished article that is highly individual on account of the stamp that it bears of the values cherished by, and the degree of competence of, the individual craftsman who made it. Admirable it may be as a piece of craftsmanship, but as a medium of communication it is hardly eloquent of the teeming alternatives that need, surely, to be presented and discussed as a matter of crucial importance.

It will serve to drive home this point of communication if for the

moment, and at the risk of causing the imagination to boggle, we hold out to ourselves the prospect of a reference library of curricular patterns, complete with evaluative comments on each, becoming available at some future date—all set out in the form of complete school time-tables! Yet such a library would be the essential product of any curricular model which, in meeting its third requirement, succeeded in bringing about a general improvement in the practice of school organisation.

Finally, there is the need for the model builder to be able to draw on a full set of constructional principles, revealed and formulated in the course of a systematic advancement of pure or disinterested study. The juggling character of the task of school time-tabling; the wide scatter of the individuals who carry it out; their almost unparalleled isolation, alike from each other as from administrators and all others interested; the paucity of written works on the subject—all these are factors that force the headmaster to work out for himself, or borrow as best he can from his colleagues, the very first principles involved in the job of curriculum construction. In discharging this task the headmaster has access to areas of manipulative freedom, the number of which varies from country to country according to where the functional line is drawn between him and the administrator; but as yet, little or nothing in the way of pure or disinterested study has served to map out these areas of elbow-room and, by doing so, to enable headmasters to maximise the use of their freedom. All in all it is time that some other, more suitable, model was sought or devised for simulating not only the school in action, but also the educational system of which schools are component parts.

In groping after an alternative model we shall be helped if for the time being we ignore all criteria of educational significance and concentrate solely on curriculum structure and pattern. In other words, there is at this juncture much to be said for treating the school curriculum exactly as we would a piece of mechanism—or it might be more appropriate to call it a numerical system—and for sorting out and defining the principles by which this mechanism or system is held together; all which must involve us, of course, in

uncovering whatever numerical relationships obtain inside the curriculum, and in formulating these into what might be called curriculum laws.

It will be more congenial if this task is approached from the end of concrete experience; which is why in the next few chapters examples are chosen from the curricula of actual schools. These curricula will, for the purpose of comparing them one with the other, be stated in terms of a new notation—specially devised for the purpose. This is necessary because no other means is to hand for submitting the curriculum of a school to a quantitative statement in which the interrelationships of its parts are crisply and accurately recorded. Nor is there any other means available by which the curriculum can be stated at successive levels of generality, in the way that the verbal language permits Toby to be presented in the progressively general guises of terrier, dog, carnivore. . . . This is necessary because only after reaching the level of universality, or after framing a curriculum statement in the most general terms possible, can we hope to uncover all the interrelationships—all the laws—by which the school curriculum is bound. Once this has been done, however, so that a few simple rules are ours to apply, we can then reverse the direction of our thinking and start deducing, from the general statement, all the structural patterns that a given curriculum will lend itself to. From this alternation, between the inductive and deductive approaches, we may expect to derive an enlarged capacity for exploring the range of a school's possibilities in curricular structure.

At least this is the lesson to be drawn from countless analogies in the fields of science and technology.

It should now be clear why the main objective in writing this book was to attempt, in however preliminary and tentative terms, the kind of manual on curricular model-building that sooner or later was bound to appear on the shelves of headmasters if education is to embrace the techniques which are so significant a part of the trend of the times. Moreover, since the same mechanical principles that bind the curriculum of the individual school are operative also in the educational system of which the school is a component part,