THE USE OF METAPHORS AS MODELS IN RELIGIOUS DISCOURSE, WITH SPECIAL REFERENCE TO IMPLICATIONS FOR SYLLABUSES IN RELIGIOUS EDUCATION

MARGARET MARY ANDREWS

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SUMMARY

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A frequently advocated method in contemporary religious education syllabuses is the thematic method. In Part A an account of the method is provided, and the reasons for its emergence indicated. A representative sample of syllabuses published between 1945 and 1975 is examined. On the basis of this evidence, types of theme are identified. It is asserted that the origin of the method is to be found in developmental psychology, particularly as ascribed to Piaget. It is further argued that a lack of a clearly articulated theological base led to confusion in the practical application of the method. In the rest of the study, an attempt is made to remedy this defect.

It is argued that themes are metaphors, which are themselves models. In the literature, the theological model has been described through the scientific model, and this has been compared with the literary metaphor. In Part B evidence from a selected group of authors is presented to demonstrate that literary metaphors can function like scientific models in significant respects.

In Part C the characteristics of the theological model are indicated, and a comparison made with the scientific and literary model. On the basis of the evidence consulted, it is argued that models are of cognitive value. It is further asserted that two theological approaches to the operation of the model can be distinguished. These divergent theologies are related to the types of theme described in Part B. In a final section, Piaget's classification system is described, and possible ways of incorporating these systems into the model theologies indicated.

key-words: theme; metaphor; model; religious education

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PART A

THE THEMATIC APPROACH TO RELIGIOUS EDUCATION: ITS ORIGINS AND CHARACTERISTICS

General Introduction

'Perhaps the finest service the teacher can render to the child is to help him know and love the Bible'.[1] 'Any theme which deepens children's sensitivity to themselves and their environment achieves something in terms of religious education'.[2] The thirty-year gap that separates these two statements gives some small indication of the dramatic change in educationists' perception of school religion: a perception which has effected a thoroughgoing change in aims, content and methodology. More particularly, the quotations focus on a re-appraisal of method in the subject; a movement from biblical study to a 'thematic' approach, and it is on this aspect of change that the present study is centred.

The focus of this study lies, therefore, in the analysis of a particular method - the thematic approach - within a particular subject area - religious education.

(1) Choice of topic - the thematic approach

The thematic approach was selected because it is a post-war introduction into the methodology of school religion, and is currently recommended in most syllabuses for religious education.

The matter is of especial interest to older teachers, as they have been

witness to some of the changes later described. Trained in the methods pre-supposed by the first quotation, they now find themselves in an educational world pre-supposed by the second. Many teachers welcomed the opportunity provided both by researchers and syllabus-designers to break away from a strictly biblical interpretation of religious education. At the same time, many doubts were raised as to the real religious and educational value of some new techniques suggested. The thematic approach was one such technique which posed questions, while promising a fruitful approach.

(2) Subject matter - religious education

By the term 'religious education' is meant the subject as made obligatory in the 1944 Education Act (sometimes called by it 'religious instruction').[3] The term refers, therefore, to school timetable periods set aside for education in religion; and, to be more precise, for work prescribed outside the public examination system. This subject will be called RE in the study.

The general aim of Part A of the study is to isolate main trends in the origin and use of the term 'thematic approach'. The Part will be organised as follows:

Section (A) - the description and classification of evidence through which the relevant changes can be traced. The evidence will be syllabuses and method-books in RE. These will be divided into three categories based broadly on date of publication. The three categories will be labelled as: Traditional evidence, published between 1945 and ca. 1965

Recent evidence, published between ca. 1965 and ca. 1972

Contemporary evidence, published between ca. 1973 and the present day

Section (B) - the description of types of themes in contemporary evidence. These will be labelled and characterized as follows:

experience - in which the theme is dependent upon the everyday experiences of life

Christian - in which the phenomena of Christianity is a dominant feature of the theme

symbol - in which the theme is presented in a multi-faith context

It will be argued that themes in these senses are absent from traditional evidence, but present in recent and contemporary evidence.

Section (C) - the origin of the thematic method in RE. It will be argued that the origin of the thematic method is to be seen in developmental psychology rather than theology. The work of Ronald Goldman will be cited as critical evidence.

Section (D) - an account in outline of other factors shaping the development of the thematic method. These factors will be grouped under the heads:

social and cultural

theological and educational

the existence of the 1944 Act

Concluding remarks - It will be argued in these remarks that the operation of the thematic method was accompanied by confusion. This was due to the application of educational psychology to RE which resulted in a temporary by-passing of the theological implications of the move, particularly in the experience theme. Later themes, the Christian and symbol ones, were devised with a more articulate theological base to avoid the difficulties attending the experience theme.

SECTION (A)

THE EVIDENCE

1. DESCRIPTION AND CLASSIFICATION

The general aim of the first part of the study is to isolate main trends in the origin and changing use of the term 'thematic approach'. There is, therefore, a need to describe the evidence in which these trends can be identified. This evidence is most naturally syllabuses in RE, and can be divided into two main types: (1) Agreed syllabuses, (2) Schemes and books on method.

(1) Agreed syllabuses

The 1944 Education Act made compulsory the teaching of RE in state schools. In order to ensure that the teaching was free from denominational bias, each local authority was obliged to set up an Advisory Council with members drawn from a wide spectrum of religious and professional interests. This Council was to produce an acceptable non-denominational syllabus to be used in the sponsoring Authority's area - hence, the use of the word 'agreed'.[4] There were already in existence some local authority syllabuses:[5] however, a mere revision of these was inappropriate. The main purpose of the 1944 Act was to make compulsory secondary education. Completely new schemes of work had to be devised for the 11-15 year-old pupils. These productions may be held as representative of a 'concensus' view among religious educators. In the immediate post-war period

their public status was high, and one or two of them went through numerous re-prints.[6] Since that time, the arrival of a revision or a completely new Agreed Syllabus is usually accompanied by comments in professional journals.

(2) Schemes and books on method

Throughout the period, educationists have compiled syllabuses produced through the normal publishing channels. In addition, professional societies have published materials specifically for use in schools. The most consciously school-oriented of these is what used to be called the Institute of Christian Education, and known now as the Christian Education Movement. Other relevant societies are the Inter-Varsity Fellowship and the more recent Association for Religious Education.

2. PRINCIPLES OF SELECTION

The account is to be based on actual usage which pre-supposes a survey of the syllabuses outlined above. Potentially, the amount of material to be examined is enormous; the choice lay between a wide-ranging, but superficial survey, and between a comparatively narrow, but detailed examination of a representative sample. As this first part is concerned with the identification of main trends, it was decided that the latter procedure would be less cumbersome than a broad-based discussion. This is partly because the 'classic' syllabuses of the past can be identified with reasonable ease, and partly because the trends can be described more concisely without loss of honesty.

The aim is to define a sample which reflects the 'concensus' view of RE. Set out below are the criteria adopted for sifting through the syllabuses.

(1) Dates

A decision had to be made as what dates were significant in marking out the changes pre-supposed by the opening comments. A study of the evidence showed the following dates to be significant:

(a) 1945 - ca. 1965

(b) ca. 1966 - ca. 1972

(c) ca. 1973 - the present

In order to avoid clumsy referencing, labels were chosen to describe the publications relevant to the period concerned:

period (a) - traditional (in the descriptive sense that they represent an inherited tradition)

period (b) - recent

period (c) - contemporary

(2) Age-range

As the introduction of the thematic method has had consequences throughout the school curriculum, priority has been given to documents covering the whole school age-range.

(3) Representative character

(a) Traditional syllabuses and publications

For some time after the War, there were shortages affecting

adversely the publication of books. A popular book would go through many reprints, and be used over a long period of time. One criterion for sorting will be the number of reprints a given syllabus or book passed through. For Agreed Syllabuses, another criterion can be used. In practice, not all local authorities produced syllabuses: some borrowed from others. A representative Agreed Syllabus can therefore be one adopted by authorities other than the sponsoring one.

(b) Recent and contemporary syllabuses

Publication difficulties of a different sort are now with us, and in any case movements of thought in the '60s and '70s were and are much more rapid than in the two post-war decades. It is therefore rare for a document to be re-printed and re-edited, particularly if a leading aim is to provide working suggestions. The criteria to be used for recent syllabuses are citations in standard works of reference, in religious education journals and bibliographies of Agreed Syllabuses. The period covered by contemporary syllabuses is comparatively short; reliance in this case will be placed partly on the author's own discretion, partly references in a journal of significance. The journal selected for this purpose is 'Learning for Living' (since 1978 the 'British Journal of Religious Education'). It is published four times a year by the Christian Education Movement. Its aim is to monitor and assess religious education in schools. In the author's opinion, it can be held to represent the broadest spectrum

of thought in this area.

3. EVIDENCE SELECTED

Using the criteria outlined above, the sample was made as set out below:

	Agreed Syllabus	Books
(1) TRADITIONAL EVIDENCE	Cambridgeshire, (1949)[7]	AVERY, M., Teaching Scripture: a book on method (1951)[8]
		YOUNGMAN, B., Teaching Religious Knowledge (1953)[9]
(2) RECENT EVIDENCE	London, (1968)[10]	FERGUSON, J., To do and to know (1968)[11]
		DEAN, J., Religious education for children (1971)[12]
(3) CONTEMPORARY EVIDENCE	Birmingham, (1975)[13]	GRIMMITT, M., What can I do in RE? (1973)[14]
		HOLM, J., Teaching Religion in school (1975)[15]
		Syllabus suggestions of the CEM[16]

4. INTERNAL ARRANGEMENT OF THE EVIDENCE

It will be helpful to state here an outline arrangement of the selected texts as there is a basic pattern common to all documents with occasional variations. The criteria for describing evidence as 'strong' or 'weak' will relate to this patterning.

The source material can be divided into five main categories which could potentially reflect the impact of the thematic method:-

Introduction, stating the overall aim and scope of the syllabus
Articles on special topics thought likely to affect the RE teacher
The syllabus, or recommendations for study
Bibliographies
Indices of subjects and authors

The outline given below will indicate whether or not these five types are to be found in the documents selected.

1. Traditional Evidence

(a) Cambridgeshire Agreed Syllabus

This syllabus contains
Introduction, of some length for an Agreed Syllabus
Special articles
A programme of work from nursery to Sixth form. The recommendations are attached to age-groups, defined on a chronological basis. The work for each age-group is prefaced by a brief introduction, usually of a practical nature.

Bibliographies arranged under topics

No index

(b) Avery (1954 revision)

This book contains

A very brief introduction

Special articles

No programme of work, but comments on existing Agreed Syllabuses, with practical hints on classroom technique

A brief bibliography, arranged under topics

An index to topics

(c) Youngman (1958 edition)

This book contains

A brief introduction

Special articles

No programme of work as such, but an analysis of current Agreed Syllabuses with examples of practical teaching

Bibliography, topically arranged

An index to authors and topics

2. Recent Evidence

(a) London

This syllabus contains

An introduction

Special articles

A programme of work from nursery to Sixth form. Recommendations are attached to phases of child growth, though chronological ages are also given. A brief introduction prefaces each phase

Bibliographies are attached to articles and syllabus recommendations in the main body of the document. Syllabus book-lists are found exclusively in sections for Adolescence and Sixth form work. A concluding page lists other bibliographies

There is no index.

(b) Ferguson

This book contains

A brief introduction

Special articles

A programme of work for Junior School pupils

Brief bibliographies are attached to the programmes of work

There is no index,

(c) Dean

This book contains

No introduction

The book is a series of articles with suggestions for practical work in schools

Bibliographies are attached to the articles, and there is a summary bibliography at the end, topically arranged

There is an index to topics and authors.

3. Contemporary Evidence

(a) Birmingham

This syllabus contains

An introduction

Special articles, usually attached to sections of the syllabus

A programme of work from nursery to Sixth form. Four main phases of child growth are defined, and each section is numbered accordingly. Once more, 'approximate' chronological ages are given.

Bibliographies are introduced at intervals throughout the syllabus. One of the appendices is a bibliography on other religions

There is no index.

The syllabus is presented in loose-leaf format.

(b) Grimmitt

This book contains

An introduction

Special articles

A programme of work in outline for children 5 to 16. Examples of the outline are worked out in detail in a separate section

Bibliographies are provided at the end of each chapter, and there is a select bibliography at the end, topically arranged.

There is no index.

(c) Holm

This book contains

A brief introduction

Special articles

An outline programme of work for children 5 to 15+ with amplification of recommendations

A comprehensive bibliography, topically arranged

Two indices, one to units of work, the other to subjects

The one characteristic in common to all these syllabuses is a set of special articles. Most contain schemes of work either in outline or in detail: but all provide guidelines to actual work. The introductions vary very much in their force; and bibliographies and indices show equal variation in the seriousness given to them. The chief interest focuses, therefore, on articles about religious education or related issues, and actual work suggested.

SUMMARY

Evidence has been divided into three categories on the broad basis of date of publication. These three categories are:-

Traditional evidence - 1945 - ca. 1965

Recent evidence - ca. 1966 - ca. 1972

Contemporary evidence - ca. 1973 - the present

SECTION (B)

DESCRIPTION OF TYPES OF THEME

Introduction

A selection and classification of evidence was made in Section (A). This evidence will now be reviewed to discover when thematic teaching first emerged, and how it has changed since its first emergence. In this Section, it will be argued that teaching by themes was originally construed as teaching through life-themes. By this activity was meant the equation of religious education with reflection on life-experience. Later types of theme move away from the life-theme approach as originally understood: they rely on observed religious phenomena as the focus of the theme. They are called in this study 'Christian' and 'symbol' themes. It is argued that this type of theme is different in kind from the life-theme. An explanation is provided - namely, that the life-theme approach was attended by certain theological difficulties. Such difficulties do not attend the use of symbol and Christian themes, as the theological base was determined before the design of the theme.

In what follows, the assertions below will be justified:-

(1) that the thematic method is absent from traditional syllabuses, but is a significant feature of recent and contemporary syllabuses

(2) that three types of theme can be isolated from contemporary syllabuses

(i) experience - the use of life-experience as religious education

(ii) Christian - the use of the phenomena of Christianity as religious education

(iii) symbol - the use of the phenomena of religion in a multi-faith context

1. CLARIFICATION OF TERMS

Clearly, the phrase 'thematic method' needs explanation. It means 'teaching religion by themes'. 'Themes' are sometimes called 'life-theme' in the literature, but for our present purposes the descriptions may be regarded as co-terminous.[17] The selected contemporary syllabus defines the thematic method, and this account will be used as a working definition for the purposes of this section. The definition runs as follows:-
a theme is 'a unit of work arranged around an area of the child's immediate, everyday experience'. (Birmingham, (1975), p.(b)7).
It is useful to unpack this concept further. First, it is assumed that there does exist a sufficiently wide common spectrum of experience available to the children under discussion and believed by them in like ways. On the basis of the correctness of this assumption such experiences as school, home and play could form the theme of the RE lessons.

Second, the phrase 'arranged around' indicates that the continuing focus of the scheme of lessons is the child's experience, but not necessarily its total content. A theme on the 'family' might, for example, take as its focal point family life in 20th Century Birmingham. Other items in some way relating to families could also be included, perhaps family patterns other than city ones.

Third, material of any type can be utilised in compiling the unit of work as long as it relates to the subject of the theme.

Historical, literary and other more customary ways of arranging material are incidental. In a theme on 'homes', for example, it would be possible theoretically to include life in a high-rise block of flats, a day in the family life of Mahomet, building techniques of Palestinian stone houses.

It is important to observe that in studying life-experience, thematically arranged, religious education is taking place.

Summary: religious education through the thematic method

(i) centres round an area of experience known to the child

(ii) occurs when that area of experience remains the focus of a given scheme

(iii) included material disparate in type, receiving its unity from its relation to the experience describing the theme.

2. EXAMINATION OF ASSERTION

(1) Procedure

The evidence previously described will be examined. It will be rated 'strong' if the thematic method features in special articles, prefaces to recommendations and appears as a method in syllabus work. It will be rated 'weak' if brief mention is made of it in special articles, recommendations, bibliographies and indices. Any difficulties in applying the working definition will be noted.

(2) Examination of the evidence

(a) Evidence from traditional syllabuses

In the Cambridgeshire syllabus there are no references to the thematic method. The compilers were not ignorant of the value of appealing to the experience of children in teaching RE; but the selection of experience-based material was made on quite other grounds, and was of a specific type.[18]

A glance at Avery and Youngman confirms that thematic teaching did not feature as a method in traditional schemes.[19]

Summary: Assertion (1) is justified; thematic teaching as defined does not feature as a method in traditional schemes.

(b) Evidence from recent syllabuses

In the London syllabus there are two prefaces to recommendations where an account of the thematic method is given (London, 1968, pp. 33-34, 41-44). In the second of these possible criticisms of the method are dealt with, support being given to the thematic method. The prefaces relate to 'Older infants and younger juniors' (age 6-8 years), and to 'Later childhood' (age 8-13 years).

In the recommendations, many themes are suggested. The first one to be mentioned is 'Fire' (London, 1968, p. 33). However, for the Later Childhood phase almost all of the work is

thematic in type. Further classification of themes is provided:-

About activities	e.g. hands, sounds, fishing
About relationships	e.g. families, weddings, names
About sustaining life	e.g. food, health
Of general interest	e.g. clothes, holidays, books
Religious themes	e.g. Christmas, prayer

(London, 1968, pp. 44-47).

In order to examine how 'theme' is construed, one of these will be examined more closely. The one chosen is 'Hands'. In Appendix A is a photocopy of suggested material as specified in the syllabus.

A glance at this schedule should confirm that it fits in with our working definition:-

'Hands' are familiar to children.

'Hands' remains in the focus of the scheme.

The material is disparate; thus, appearing in the theme is music (10), language (4), bible text (16, 18).

Confirmatory evidence of the existence of the method can be found in other recent books. Evening has a chapter entitled 'Life-themes'[20]: Dean, two chapters 'Religion is about myself'[21]: Ferguson's second Part is devoted wholly to themes (Ferguson, 1968, pp. 37-137). In both Dean (1971, p. 141) and Evening (1972, p. 190) themes/thematic teaching appear as index headings. In all three the criteria for recognising the thematic method can be observed: and the evidence is strong.

i The working definition re-considered

According to our definition the stuff of themes is life-experience. We would expect any grouping of themes to provide useful categories of such life-experiences. The first four categories specified in the London syllabus conform to this specification.

The fifth category, however, is a puzzle. It is denominated 'religious' themes (Ferguson, 1968, pp. 37-137). But, by definition, the study of themes or common life-experience is religious education, and so any grouping of 'religious' themes must be designated tautologous. Two choices lie before us. Either the confusion is only verbal - the concept of life-experience as religious remains, but the label is ill-chosen. Alternatively, a distinction is effectively drawn between 'life' themes and 'religious' themes. In this case, questions are begged as to the precise nature of the link between 'life' and 'religion'.

Usage is the only court of appeal here. Two of the 'religious' themes mentioned are Christmas and Easter. In these cases, the material focuses round common customs associated with these two festivals.[22] The difficulty here is verbal only. The other two examples given are, however, the Bible (London, 1968, pp. 59-62), the Church (pp. 57-59) and Prayer (p. 66). There is surely no sense in which it is possible to state that the Bible, Church and prayer are features of the average child's experience. The difficulty here must be judged a real one. Not only is unfamiliar experience the focus of the theme as in 'prayer', but experience has been dispensed with completely in, for example, the

Bible. Much material in this section is degrees away from expressive literature. Thus, an analysis of the Greek and Hebrew languages is presented; and a history of the Bible text (pp. 60-61).

What links together these religious themes is their specifically Christian content. The delineation of this category betrays the feeling that thematic study as elsewhere prescribed is not really 'religious', an issue which is taken up in one of the preambles (London, 1968, p. 42). At the very least, a need is felt to represent within the context of thematic teaching material traditionally 'religious' like the Bible text, the phenomenon of the Church, the ritual of prayer and so on. The implication is that the concept of the life-theme as religious education is being questioned - that there is a distinction between experience of life and 'religious' values.

A revision of the working definition which can feature as the subject of more detailed discussion later on will run as follows:-
A special grouping of themes can be denominated 'religious' themes. These

(i) centre round a specifically Christian activity or phenomenon

(ii) utilise children's common life-experience to introduce the theme and act as a continuing point of reference

(iii) include material more uniform in kind than the strict life-theme, though this is not to exclude wholly diverse types of material.

A religious theme is to be distinguished from a life-theme

by the use of life-experience as a form of methodology rather than arbiter of content.

Interestingly enough, confirmation of the appropriateness of this re-definition can be found in Evening, (1972, pp. 39-42), Dean, (1971, pp. 61-68) and Ferguson (1968, pp. 37-137) where a group 'religious/biblical' themes appear alongside life-themes with the same force as London.

ii Further observations

It is noticeable that the entire work prescribed for 8-13 year olds is thematic in its approach. Elsewhere the method is recommended for younger children and for adolescents, though here the Committee is careful to distinguish between thematic teaching and integrated studies. That this feature is no accident is demonstrated by reference to other books. Most examples from Dean (1971, pp. 34-51) are for younger children: Evening (1972, p. 24) emphasizes the usefulnees of the method for junior school children. All of Ferguson's thematic work (1968, pp. 37-144) is for junior school children.

Summary

The thematic method is a feature of recent syllabuses. There is a distinction drawn between life-themes and religious themes. The content of religious themes centres round a feature of Christian life. Themes are thought to be specially appropriate for 8-13 year olds.

(c) Evidence from contemporary syllabuses

A study of the Birmingham syllabus shows that the life-theme approach is now an acceptable method of teaching RE. Three major examples are given viz. Families and their neighbourhood, Discovery and discoverers, Living together in the City Community (Birmingham, 1975, pp. (b) 19-26). These conform to our original definition. As further evidence of the positive status attending the method, special essays are included to explain its operation to teachers (p. (a) 3, (b) 7-10) (though one might still note an apologetic air about its justification).

That the method now has status is reflected by other contemporary documents. Grimmitt gives many examples of themes in Appendix 1 to his book (called by him 'existential' themes) (Grimmitt, 1973, pp. 159-185). A substantial part of his writing is devoted to the analysis of the thematic method (pp. 49-113). In Jean Holm's book a special section is devoted to a history of thematic teaching in school (Holm, 1975, pp. 13-19); there is a discussion on the experience-centred basis of such teaching (pp. 25-33), practical examples are given in the Units of work (pp. 140-141); and linked index headings are provided (p. 178).

The assertion in its initial form can be said to be confirmed.

i Difficulties encountered in applying the working definition

There are no 'religious' themes in the London sense of the word. But there is clear evidence that the introduction of religious

categories per se through the medium of children's experience is a feature. If we treat the second (revised) definition as a model, we may note certain differences in its application. Whereas in London the content was specifically Christian, in Birmingham it is multi-faith. The chief device used is the symbol as a possible source of the theme. 'Light' is given as an example (Birmingham, 1975, p. (b) 9).

Symbol-type treatment of religion is not unique to contemporary syllabuses; the revised West Riding Syllabus of 1965 made extensive use of the technique.[23] What makes the Birmingham contribution unusual is that teaching by symbols is seen as a valuable method of teaching other religions. Thus, in the paragraph referred to above, study of festivals of light from Judaism (Hanukkah), Hinduism (Divali) and Christianity (Christmas) is recommended. Indeed, themes in general are seen as potential vehicles for the presentation of non-Christian faiths. Within the theme 'Families and their neighbourhood' is included a section on domestic festivals - the Jewish Sabbath meal (p. (b) 19), the concept of the joint family in Indian society (p. (b) 20), Christmas as a family celebration (p. (b) 20). Like tendencies are to be found in the two other schemes from that section.[24]

The question arises as to whether or not it is possible to regard symbol as rooted in children's experience. The notion of 'symbol' is a complex one; but it is possible to say without qualification that the source of many religious symbols is to be found in human experience (like Father) or physical needs (like water). Granted this position, to the group 'religious themes' can be added the

group 'symbol theme'.

Following the religious theme model, these can be defined as follows:

Symbol themes

(i) centre round multi-faith symbol

(ii) focus on the common experience underlying the symbol

(iii) include material which takes its unity from the use made of the symbol in life, worship and belief.

Other contemporary documents feature both the religious theme and the symbol theme. There is, however, a much wider variation of Christian content in the symbol themes. Holm calls hers 'biblical image' themes (Holm, 1975, pp. 92-93, 172-177): usage and examples relate to symbols found in the Bible. This use clearly resembles that of the West Riding syllabus. Both Grimmitt (1973, pp. 215-225 on light), Holm (1975, p. 154 on sacred places) and CEM (1973, Festivals; 1976, Religious Dress) include multi-faith material, arranged thematically.

ii Further observations

Themes in the Birmingham syllabus are prescribed with particular urgency for 8-12 year olds. However, not all the work for these pupils is thematic in character. Other possible approaches are described under the heading 'Ways of Living' (Birmingham, 1975, pp. (b) 27-57). The thematic method is here depicted as one way amongst others of presenting religious education.

Much the same emphasis is found in Holm who designs life-themes more particularly for children of middle-school age-range (Holm,

1975, 140-141 et seq). Grimmitt is less prescriptive than Holm or Birmingham: he schematizes themes in such a way as to utilize them for children of the entire school age-range.

Summary

The thematic approach is a significant one in contemporary syllabuses. Care is taken to explain the rationale of the method to would-be practitioners.

The teaching of other faiths is incorporated into the thematic approach. Religious themes display much more variation than in recent schemes.

A preference is still expressed for the use of the thematic approach for 8-12 year-old school children. There is still some confusion expressed as to whether or not religious education is equivalent to the study of life-themes.

What can usefully be done now is to classify themes based on contemporary usage for ease of future reference. The grouping below is suggested:-

Experience

personal qualities

e.g. courage, concern

domestic events

e.g. journeys, holidays

Religious

e.g. prayer, the Bible

Symbol

of significance to more than one faith

e.g. water, Father

What characterizes experience themes is that the exploration of the experience is equated with religious education. Hence, the experience(s) selected remain the focus of the exploration, and the material selected must be coherent with the theme; it is disparate in type.

Both religious and symbol themes make a distinction between human and 'religious' uses of experience; and they identify specific products of faith which can be labelled 'religious'. In these cases, the thematic approach is used as a method in presenting phenomena designated 'religious'. Religious themes are Christian in content: symbol themes are multi-faith in content.

There is clearly danger of confusion in use of terms, and it would be preferable to re-label 'religious' themes 'Christian' themes (of which sub-groups might be biblical image themes, worship themes, etc.).

The list will then be three-fold:-

Experience

Christian

Symbol

SUMMARY TO SECTION (B)

In the teaching of RE there is an identifiable method appropriately labelled as 'thematic'. In current usage the method entails the grouping of otherwise diverse material round a theme. These themes can be grouped into three main types: experiential, Christian and symbolic.

Some discrepancy about the nature of the thematic method in teaching RE has been observed. On the one hand, the study of everyday experience is regarded as both the content and method of religious education. On the other hand, a distinction is drawn between everyday experience and religious uses of it. In this case, the religious uses of experience itself is employed as a method for introducing these religious uses.

Themes began by being Christian in their scope; in contemporary syllabuses they can be multi-faith.

SECTION (C)

THE ORIGIN OF THE THEMATIC METHOD IN RE

Introduction

It was argued in Section (B) that the thematic method could not be identified in traditional syllabuses, but is a recognized feature of recent and contemporary syllabuses. It was also argued that the absence of a well-articulated theological base rendered the original life-theme suspect. Symbol and Christian themes represent an attempt to begin with an informed theological base, and mark a later stage in the development of the thematic method. These statements imply that a sequence of events occurred after the publication of the first traditional syllabuses which forced educators to challenge the predominance of biblical teaching in these syllabuses.

It will be argued in this Section that the catalyst of change was the publication in 1965 of the research of Ronald Goldman. It will further be argued that as Goldman was an educational psychologist, it was psychological rather than theological insights which induced change. This change was the introduction into RE of the thematic method.

Assertion to be justified:-

that the origin of the thematic method is to be seen in developmental psychology rather than theology, particularly in the work of Jean Piaget as popularized by Ronald Goldman.

It is thus the case that any theological evaluation is a later development

in the history of the application of the method.

1. GOLDMAN'S RESEARCH AND RECOMMENDATIONS

In order to test the hypothesis, it is necessary to know something of Piaget's work and Goldman's interpretation of it. The account which follows is necessarily brief and its chief purpose is to provide sufficient information to make the consultation of the evidence a meaningful exercise.

(1) The Sources

Goldman's work is enshrined in two books:-

(a) Religious thinking from childhood to adolescence

This book is an account of research into religious education. It was published in 1964; but the thesis on which it is based was produced in 1961. The bulk of the research work was carried out in the late 1950s.

(b) Readiness for Religion, published in 1965

In this book Goldman set out a programme for the teaching of RE covering the whole school age-range. Accompanying the book was a series of work-cards and pamphlets for actual use in school. These were produced in collaboration with RE specialists.[25]

(2) General setting of Goldman's work

During the 1950s attempts were made in most school subjects to determine the success of the introduction of compulsory

secondary education. Surveys into religious education prior to Goldman were part of this exercise. Goldman gives a summary of such research which preceded his own investigation (1964, pp. 22-30).

It should be noted that Goldman is first and foremost a psychologist and not a theologian. This is not to imply that he was blind to the insights of theologians, but to state that his approach in matters religious is that of an educated layman rather than a sophisticated theorist. In brief, he takes the line of the main-line liberal in matters of biblical scholarship, the norm of the syllabuses of the time. The fact is of significance, since the findings are set in a psychological base; but for the most part his findings have been assessed or put into practical shape by theologians or educationists without much psychological background.

(3) Particular background of Goldman's work

Goldman's choice of psychological model is clearly important as it dictates the nature of the practical work, and the resultant conclusions. The aim of Goldman was to test the ability of pupils to grasp religious concepts. Goldman understands 'concept' in the following way: human beings try to make meaningful patterns of the sense-data they perceive: these interpreted sense-data are called 'percepts'. When links are made between apparently unconnected percepts, a concept is formed. The normal way of communicating a concept is by attaching to it a verbal label. Thus the word 'ball' groups together isolated objects (percepts) that possess like perceived qualities of roundness, bounce and

so on. The word excludes round objects that do not bounce (like apples). The vast majority of words are conceptual in character, classifying and labelling experience as they do (Goldman, 1964, pp. 11-13).

Concepts can be very simple or highly complex. The simplest ones group percepts of physical objects - words like animal, furniture come into this category. The most complex concepts emerge as the result of an ability to think in an abstract manner - i.e., to abstract certain principles underlying simple concepts. Thus a word like 'race' is at one level a class of people sharing certain physical characteristics and located within certain geographical frontiers. It can also be used in reference to the principle by which people are assigned to cultural groups within and beyond these geographical boundaries.

It is inevitable that each branch of human knowledge should come to have associated with it specific concepts, particularly of the more complex kind; these will possess certain features that link them together within the discipline, and separate them from other disciplines. Accordingly, religious concepts can be identified. The chief distinguishing qualities of religious concepts are defined by Goldman as 'the process of generalising from various experiences, previous perceptions and already held concepts to an interpretative concept of the activity and nature of the divine' (1964, p. 14). It follows that if a child is to arrive at a proper understanding of a given religious concept, he must have conceptualised the experience from which the concept was derived and possess the ability to generalise from that

experience and any related existing concepts to the new one. Goldman gives an example of this process. There are many 'shepherd' images in the Bible; for a proper grasp of the force of these images, already formed concepts on the nature of sheep-farming in biblical times and of sheep in general is pre-supposed (ibid, p. 14).

The focus of Goldman's work was concentrated more particularly on the processes of thought necessary to the proper formation of religious concepts. If the fundamental processes of generalisation and abstraction were demonstrably not present in a child then it was pointless teaching them the concepts which were dependent on these processes.

There were certain consequences emerging from the problem as stated in this way and for which a solution was being sought.

(a) A model of thinking was required which leant itself to empirical analysis. This was found in Piaget's description of mental processes. Briefly, Piaget states that in their mental development children pass through certain clearly-defined stages. He has described three of these. Each stage is characterized by the availability to the child of certain mental skills (or operations). The ability to form types of concepts is directly dependent on the kind of operations available to the child. Thus, the complex concepts which depend on a high level of abstraction and generalisation can be achieved only when the final developmental stage has

been reached (in a normal child about 12·00 years). At earlier stages only much cruder techniques of classification can be undertaken. In support of his theories, Piaget and his collaborators developed a battery of tests and analytic tools. The basic design was adapted by Goldman (ibid, pp. 19-22).

(b) As this was not to be a test of knowledge, but of mental skills, the more familiar the basic material the better. Most syllabuses in use in the late 50s were like the Cambridge in their basic structure and choice of material. After some pre-testing, Goldman finally selected three biblical incidents to be the basis of his study. They were (or should have been) familiar to children in school as they appeared in all the relevant RE syllabuses. The concepts underlying each were both biblically authentic and sufficiently complex for his purpose. (i.e. they required the possession of formal thought for their understanding). (1964, pp. 36-39).[26]

(c) As Goldman wished to test the entire school age-range of pupils, the customary technique of questionnaire was inappropriate, as the youngest pupils were unable to read. The one-to-one interview was finally chosen, partly on analogy with Piaget's own experimental techniques, partly because it was appropriate for all ages. The number of subjects studied was accordingly drastically curtailed; and a small carefully selected

sample replaced the more normal numerically broad random sample. Goldman was, of course, sensitive to the difficulties thus created (1964, pp. 39-43).

(4) Experimental results and recommendations

The actual experiments took the form of relating the incident to the subject and then asking him questions on the narrative. The questions were deliberately designed to test whether or not the concepts implicit in the episodes were grasped. Within the limits of the experimental design Goldman demonstrated that the central concepts of those three biblical episodes could not be grasped by pupils in the primary school. More positively the characteristics of thinking peculiar to the various developmental stages could also be confirmed by analysis of responses to these three episodes (1964, pp. 51-67).

The immediate implications were eagerly seized upon. The inevitable conclusion was that the teaching of much biblical material, at least in the primary school, (1964, pp. 220-246, 1965, pp. 70-73) was ill-advised. As such material represented the stock material of syllabuses of the time, a good deal of critical comment was focused on this aspect.[27]

As there appeared to be very little biblical text that demanded the operation of pre-formal skills for its apprehension, the question now was what shape religious education for youngsters under the age of twelve should take. The answer was to make it more 'child-centred' in conformity with Goldman's position

stated earlier. The first materials were produced directly under Goldman's aegis. He coined the term 'life-theme' to epitomise the practical shape that his ideas took: i.e. that the child's own experience was now to become the source-material of religious education. Consequently, spontaneity was seen as the hallmark of the education for the very young. A more structured approach to experience was recommended for older pupils and only for adolescents was any biblical study in the accepted sense of that term advised. The structured element was described as a 'theme': the prefix 'life' was normally added to it to remind the educationist that the theme was to be rooted in first-hand experience of the child. So firmly did Goldman feel that Piaget's developmental structure had been justified that he devised a series of analogous terms for religious development. In Appendix B is given a summary from his own book of his description of the stages and suggested syllabus recommendations (1965, p. 196).

Summary

Goldman claimed that much biblical material commonly prescribed for study in schools contained complex concepts. Taking Piaget as his model, he further claimed that the successful manipulation of these concepts was dependent upon the possession of the capacities for generalisation and abstraction. These capacities were present only at the stage of formal operations as described by Piaget. This stage was normally negotiated by the child at 12·00 years chronological age. Goldman designed a set of experiments to test his claims, and concluded that the

concepts behind the biblical episodes tested were unavailable to children operating at the pre-formal stages.

In place of the biblical material prescribed for pre-adolescent pupils, Goldman advocated the presentation of life-themes. The material from the theme was to come from the child's own life-experience. A series of books was produced under Goldman's auspices to launch the new teaching-method.

2. EXAMINATION OF THE ASSERTION

It is to be argued in what follows that the main impetus to change in the presentation of RE came from the Piagetian scheme of mental development as mediated through Goldman's research and enshrined in his advocacy of the teaching of RE by themes. Some evidence has already been adduced in broad support of this statement: the thematic method is absent from traditional syllabuses, but present in recent and contemporary ones. Dating is of importance here. Goldman's books were published in 1964 and 1965: recent syllabuses were produced from 1966 onwards. There is a prima facie case for supposing that Goldman's work was critical to the change in direction.

The assertion to be justified is:-

that the origin of the thematic method is to be seen in developmental psychology rather than theology, particularly in the work of Jean Piaget as popularized by Ronald Goldman.

(1) Procedure

Recent and contemporary syllabuses will be reviewed

Evidence in strong support of the assertion will be construed as:-

specific reference to Goldman and/or Piaget in direct association with the thematic method

Less strong, but still confirmatory evidence will be reference to the basic concepts of Goldman's and Piaget's findings

The intrdocution of the thematic method particularly for younger children

Mention of relevant books in bibliographies; and of 'themes' in indices

Disconfirming evidence will be the approved introduction of the thematic method which emerges from concerns other than those of Piaget and his interpreter Goldman.

(2) Examination of the evidence

By way of prior observation, it should be noted that the survey to date produced no evidence of the thematic method or reading of Piaget before the appearance of recent syllabuses.

(a) Recent syllabuses

In the London syllabus the name of Piaget appears twice (London, 1968, pp. 11, 32), the name of Goldman once

(1968, p. 27). That the occurrence of these names is not merely incidental is shown by the more detailed reference to Piaget's line of approach. Thus, in discussing teaching, the priority of mental age over chronological age is stressed (1968, p. 10). A description is provided of the so-called intuitive and concrete ways of thinking (1968, pp. 20-21, 41); these are both Piagetian phrases. The content and methodology recommended are directly related to these descriptions. Dominant here is the thematic method.

As negative confirming evidence it might be noted that Biblical material of the type demanding formal-type operations is deliberately excluded from the recommendations for younger children. Thus, the teaching of the miraculous is pronounced unsound (ibid, p. 21), and so symbol-and-myth-and-legend type text (ibid, pp. 33, 36).

Once the stage of formal operations can reasonably be inferred to have emerged, Bible study makes its comeback: for adolescents, a Gospel study of the life of Jesus (72-75), and a study of ideas about God from the OT (69-70). Themes give way to integrated studies at the methodological level (63-64). Themes are seen as peculiarly appropriate to children at the concrete stage of thought.

Summary and discussion

Thus far, the evidence seems overwhelmingly strong in support of the assertion. There are however, puzzles about the evidence. The one reference to Goldman is brief and very trite. No books by Piaget or Goldman appear in occasional collections scattered throughout the syllabus. This can scarcely be due to pressure of time; criticisms of Goldman's findings were well publicised by the time the Committee was in session. One can only infer that personal factors entered into the situation. Goldman's work was carried out largely in the Midlands, and there may have been a reluctance to admit his impact. The more likely explanation is that in 1965 was published a book 'Honest to God'. The writer was J. A. T. Robinson, then Bishop of Woolwich. The book created much public excitement at the time, and the Bishop happened to be on the Board of consultants responsible for drawing up the syllabus (see later in study pp. 50 - 51 for further comment). Whatever the reason, the puzzle does point to the need for consultation of the other books to determine the strength of the Goldman/theme equation.

Ferguson's account is an interesting one; she sets developments in RE against developments in other subjects - reading, mathematics, and science. It is in connection with mathematics that her first mention of Piaget and his stages is made (1968, p. 22). As one of Piaget's stated aims in her account was to determine how far abstract concepts could be taught his work is seen as having significance for the teaching of abstract concepts in RE (1968, pp. 24-25). She goes on to say 'no discussion on this

topic would be complete without a reference to Dr. Ronald Goldman and his recent research into religious thinking' (p. 28). She accepts the thematic approach (though with qualifications) (pp. 28-30), and proposes methods for working out appropriate themes and cites examples of them. Her book is designed especially for middle-age school children. Evening recognises Goldman's contribution to the emergence of child-centred teaching (1972, pp. 19-20). In Dean, there is a descriptive outline of both Piaget's theory and Goldman's research design and main conclusions (1971, pp. 21-25, 39, 85-86). Further, the types of themes recommended and their treatment assumes the correctness of Goldman's findings (1971,pp. 61-62, 98-99). Evening (1972, pp. 19-20) likewise associates the emergence of the thematic method with Goldman's research.

Summary

There is strong evidence in confirmation of the hypotheses - that the thematic approach is directly related to the popularisation of Piaget's views on child development through the work of R. Goldman.

(b) Contemporary syllabuses

It would be reasonable to infer from the summary given above that references in contemporary syllabuses would show fuller and more informed references to Piaget and Goldman while displaying a more critical attitude to the application of the method.

The introduction to the Birmingham syllabus states categorically that 'the syllabus is based on the developmental phases of childhood' (Birmingham, 1975, p. 1). Reference to both Piaget ((a) 2, 5 (b) 1 (c) 21) and Goldman (p. (b) 1, 7) appear at significant points in the text, with amplification of their views. Notable is the increased use of their respective technical vocabularies. Thus, for Piaget, the notions of assimilation, accommodation and mental schemata are met with (p. (a) 2): for Goldman, 'sub-religious' and 'personal religious' thought (p. (b) 1). The thematic approach is related directly to the work of developmental psychologists. Works of both Piaget and Goldman are cited in the bibliographies. This evidence must count as strong in confirmation of the hypothesis.

Confirmation of the position outlined above is found in other contemporary works. Holm asserts that the Goldman findings have produced the thematic approach (Holm, 1975, pp. 1-2, 55); and work presented in the main body of the text is clearly related to developmental psychology (e.g. p. 26, 35). In accordance with our prediction, other writings show a more carefully critical approach; the CEM has indicated possible fresh directions the findings could take[28]; Grimmitt has undertaken a thorough re-organisation of the thematic approach. Other documents are now assuming the seminal importance of Goldman.

SUMMARY TO SECTION (C)

The hypothesis can be considered confirmed, despite the puzzling evidence from London. Thus, the books by Piaget which most obviously describe the development of the mental stages in children became available in English from 1950 onwards. In RE, the potential relationship between developmental psychology and the teaching of religion in school was first indicated by R. Goldman. Sales of his books and evidence from syllabuses examined confirm our hypothesis that his research and recommendations were crucial in commending the thematic approach to practitioners in school religion.

SECTION (D)

OTHER FACTORS AFFECTING INDIRECTLY THE ADOPTION AND TREATMENT OF THE THEMATIC METHOD

Introduction

It has been asserted in the foregoing section that the original impetus in bringing the thematic method into prominence came from the psychological, rather than the theological, direction. However, it has also been shown that the method was seen to have theological implications, and that it was strongly advocated in our representative syllabus. This statement of the situation suggests that factors other than strict psychological ones were conducive to the adoption and popularity of the thematic approach in religious education. As these factors are post-Goldman in their influence, they are likely to act as predictors for the future development of the method. These factors have been identified as follows:-

(1) post-Goldman research work
(2) social and cultural factors:-
    the arrival of immigrants
    advances in classroom technology
(3) influence of theologians and philosophers
(4) the terminology of the 1944 Act

The main point in outlining the part played by these factors is to give shape to the ensuing discussion. Any consideration of a methodology becomes realistic if that methodology is likely to be sustained at least for the foreseeable future. In the first sub-section, the contribution made by the factors summarized above will be described. A second

sub-section will estimate the likelihood of their continuing stability. A final sub-section will sum up the relative strength of these observations in directing the assessment of the thematic method.

1. POST-GOLDMAN RESEARCH

There is a sense in which Goldman can be said to have acted as a catalyst for releasing the tensions felt over the teaching of traditional syllabuses. During the 1960s many more individual research documents left the presses. Most research work lying behind these documents was conducted in secondary schools, partly because the questionnaire technique was easy to administer to pupils who could read, partly because hostility to what was offered was much more overt in that sector.

The studies published covered virtually all aspects of the subject. Acland[29], for example, recommended very strongly a teacher-designed programme, which incorporated specified learning needs of the pupils; Loukes[30], on the other hand, advocated that the pupils' needs as perceived by themselves should form the syllabus. An extremely valuable survey was undertaken by Colin Alves[31] on behalf of the British Council of Churches in which levels of religious insight amongst school pupils were measured, and teacher effectiveness rated. Diverse though the recommendations might be, one prescription was common to all: biblical teaching should be broadened in such a way as to include other aspects of Christianity in schools. The way was now open for question-marks to be placed against the basic assumptions of the traditional syllabuses - that biblical teaching was the stock-in-trade of the RE lessons. This challenge was now an informed one, based on a wide perspective of competent research work. Such fundamental questioning made it easier for new techniques which were non-biblical in character to find acceptance in schools and colleges.

Since that time, much research work in schools has been undertaken by official bodies. Some of these were set up specifically to advocate

changes in the curriculum, and in particular to promote integrated studies. One of these was the Schools Council. This is a body set up in 1964 under the auspices of the Government, but independent of it. Its brief was to promote research through studies in schools. The London syllabus makes reference to two of its publications.[32]

The equation of the word 'religious' with the word 'Christian' was first challenged explicitly in a project mounted by the Schools Council. In 1971, it turned its attention to RE for the secondary school age-range. In the Working Paper[33] and in the resultant syllabuses[34], a clear distinction is made between religion as a phenomenon of human experience, and Christianity, a specific example of it. Non-Christian faiths are prescribed for pupils below the VI form age-range, and the beginnings of a thematic-type treatment can be discerned. Work currently being undertaken by the Schools Council confirms this trend; other faiths are now a part of the staple recommended diet of the school-child.[35]

2. SOCIAL AND CULTURAL FACTORS

Most change which is dubbed 'educational' comes about as a result of pragmatic considerations and there were during our period certain changes in society which made some re-consideration of the subject inevitable for serious practitioners in the area. The two most important are technology and immigration.

(1) Immigration

In the late 50s and early 60s people from non-European cultures arrived in noticeably large numbers in some of our large cities.

Their arrival was accompanied by much publicity over the tensions surrounding their settlement. It is difficult to over-emphasise the the importance of this factor in promoting the study of other faiths, and thereby indirectly the thematic method.

It has already been noted that contemporary syllabuses recommend the study of other religions throughout the whole school age-range. In London (1968, p. 85), and Cambridge (1949, pp. 109, 134), comparative religion was suggested only for VI formers. Further, background books of the traditional and recent time provided information on the major religions as described by scholars.[36] Buddhism featured in all such accounts. In contemporary syllabuses, however, Buddhism does not feature at all, whereas the very minor Sikhism is presented as equivalent in importance to Islam, Judaism and Hinduism.[37] This selection is based on perceived local need rather than principles of academic rigour, and is enunciated for the first time in London's syllabus (1968, p. 85).

(2) Technology

When traditional syllabuses were published, the only effective means of teaching were 'chalk-and-talk', combined with the study of a text-book. The only audio and visual equipment practically available to schools were radios and overhead picture projectors.

Since the 50s, technological facilities available to schools have increased enormously. The film-strip and slide-projectors of the 60s have been improved upon in the 70s, and the cassette has made recording and playback an easy matter. TV and video-tape recorders

are to be found in most schools. Curriculum development is much more likely to occur under these conditions than in the more restrictive immediate post-war days. A further incentive to adopt fresh methods came from re-organisation of secondary schooling when some teachers were faced with pupils of abilities and attitudes different from those taught by them previously. Experiments in team-teaching and open-plan building style performed a like function in the primary sector.

3. INFLUENCE OF THEOLOGY, PHILOSOPHY OF RELIGION AND EDUCATION

It will be argued in this section that the work of theologians, philosophers of religion and education becomes of greater conscious importance the nearer we approach contemporary syllabuses. Implied in this assertion is the assumption that the content and methodology of recent and contemporary syllabuses become more open, so aims were increasingly subjected to scrutiny. Movements of thought in theology and philosophy of religion and education produced an atmosphere tolerant of this fresh approach at the school level.

(1) Traditional syllabuses

Previous to the time of Goldman, the only theology considered to have any direct bearing on religious education in schools was biblical research. It is noticeable that in the Cambridge syllabus there are no references to theologians other than biblical scholars, or to philosophers of religion or education. The syllabus is insular in another direction: the biblical scholars mentioned are exclusively British.

The trend is not so obvious in Avery and Youngman; but even here the influence of scholars other than biblical commentators is minimal.

(2) Recent syllabuses

The questioning of the biblical approach in these syllabuses meant that aims had to be re-thought. No longer could the neo-confessionalist approaches of the post-war era find inevitable acceptance. Cox's book 'Changing aims in RE' (London, 1966) reflects the more open approach to the subject. 'Religious' was still 'Christian', but any attempt to persuade pupils to Christian belief was deplored (pp. 60-66).

Shortly before Cox published his book, an event of significance in the popular British theological world occurred. In 1963 was published a book 'Honest to God' by J. A. T. Robinson, then Bishop of Woolwich. The impact of Robinson's book in the world of popular religious thought was akin to the impact of Cox in the world of religious education. The book popularized the views of two notable theologians, Dietrich Bonhoffer and Paul Tillich. It questioned the traditional descriptive use of transcendental concepts in religious talk, including the word 'God'. While theologians and sophisticated Christian thinkers did not attach much importance to the book, public interest in general was awakened. Newspapers of the time featured the book, and others in the same vein followed.[38]

The impact of Robinson's book can be clearly discerned in the London syllabus (pp. 17, 32). Whether or not Robinson's document or the controversial interest that was stirred was a factor in making the

designers of the London syllabus conscious of theology in general terms is difficult to say; but an awareness of the discipline is evidenced by an article entitled 'The problems of theology' (pp. 16-18). A brief account of specific theological schools is provided, and the account includes British, American and Continental thinkers, for example, I. T. Ramsey, P. van Buren and Bultmann. It seems that this account is provided for information only; no particular theologian or school of theological thought is declared as having a formative influence in the construction of the syllabus.

There is, perhaps, one other way in which the influence of theological study was subtle, but nonetheless present. Since the end of the war, in particular, there had been a real attempt by scholars to approach the study of other faiths with as much objectivity as possible. The traditional syllabuses reflect attitudes which these scholars sought to supplant; that Christianity was the norm faith by which others should be judged. In the London syllabus, study of non-Christian faiths is recommended for sixth forms only. But a conscious effort is made to describe each faith, and avoid any Christian norm-based judgement upon them.

The philosophy of education, however, receives no mention in London. This is surprising partly because two notable books in this area were published before the compilation of the syllabus. These were 'Glaucon' and 'Beyond Neutrality' by M. V. C. Jeffreys,[39] and they became standard texts in educational courses. More significantly, they were slanted in a specific Christian direction.

One of the other selected documents demonstrated an awareness of a

theoretical framework. Dean justifies certain aspects of thematic teaching in reference to the writings of certain theologians. Further evidence of the impact made by Robinson can be obtained from her book: both he and Bonhoffer are quoted (1971, pp. 9-10). Further, she shows an interest in more strictly philosophical concerns. There is a chapter entitled 'What is religion?' (pp. 16-20), which contains an (admittedly standard) quotation from A. N. Whitehead. But this quotation is used as the basis for the rest of the chapter. Perhaps more significantly, reference is made to the curriculum as a variety of disciplines where the issue of knowledge is seen as critical (pp. 77-84).

The trend towards forging a conscious link between the contents of a given syllabus and aims derived from a carefully formulated theoretical base was reinforced by research undertaken by the Schools Council.

The Professor of Religious Studies at Lancaster University, Ninian Smart, was closely involved with the work. For the first time since the end of the war, the work of academics and practice of the subject at school level were brought together in a practical project. Professor Smart has done much to popularise an objective-type approach to the study of religion,[40] and is a scholar in other faiths. The Lancaster Project, as the investigation came to be called, shows clear evidence of this approach. Religion is to be described as objectively as possible; the emotions and feelings characteristic of a religious experience are to be approached through the exercise of the imagination.

(3) Contemporary syllabuses

It has already been shown that the Birmingham syllabus, in its content, makes much of the teaching of other religions through symbol themes. It is also the case that the theological and philosophic background is explicitly stated and coherently related to the actual content. Religious education is '....directed towards developing a critical understanding of the religious and moral dimensions of human experience. This involves informing pupils in a descriptive, critical and experimental manner about what religion is, and increasing their sensitivity to the areas of experience from which religious views of life might arise.' (Introduction, p. 4).

In the religious education lessons then, a pupil learns on the one hand, how to handle the empirical data of religion: and on the other, to perceive how some life-experiences have become the source of religious views of life.

One important consequence is seen as emerging from this statement. In order that religion as a phenomenon is adequately contextualised in the contemporary world, alternative belief and action systems must be studied. Hence the justification for the teaching of Communism and humanism which have eschewed transcendental approaches. Communism and Humanism are thus set in the context of religions which do take account of the transcendent like Islam, Sikhism, Christianity. The key phrase to describe these traditions is 'stance for Living' (1975, p. (c) 2); and a selection of these is presented in the syllabus.

Taking the syllabus as a whole, it is important to note that Christianity takes its place with other 'stances for living' and religions. In so far as a larger proportion of time is devoted to this faith, this is because of its historical and cultural importance in our own country rather than its intrinsic worth. It is interesting to note in this context that there are bibliographical references to scholars in other religions outside the West.[41]

More importantly from the point of view of the present study, themes are located securely within a theoretical framework (pp. (b) 3-4, 7-10). Thus, use is made of symbol and religious themes in the teaching of the empirical data of observed religions (pp. (b) 61-65), but it is in the study of experience that the thematic method really comes into its own. Here, the work is structured entirely on thematic lines (pp. (b) 7-10, 19-26).

The premises of the Birmingham syllabus has thus been very carefully worked out; and not surprisingly, academics are again noticeable in the Committee - John Hick, Professor of Theology in the University of Birmingham, Harry Stopes-Roe of the department in the University and John Hull of the School of Education, to mention only three.

It is perhaps because of the interests of those involved in the construction of the syllabus that the philosophical bias is towards the philosophy of religion rather than the philosophy of education. A study of philosophy, leading to the philosophy of religion is recommended in the syllabus, and there are references to other philosophers of religion in the bibliography.[42] By

contrast, no philosophy of education is explicated and there are bibliographical references to only two current writers in the field, one of them American.[43] Two puzzling omissions are Hirst and Peters whose names feature in most standard texts currently available.

In Holm, the work of curriculum philosophers is asserted to be a chief factor in contemporary educational thinking, and thus of religious education. The names of Hirst and Peters are cited as significant British writers (1975, p. 2): the work of the American philosopher, Phenix is summarised. The interest that philosophical techniques has had is reflected in the chapter headings 'What is religion?' (pp. 7-12) and the attempt to provide a definition from which a proper understanding of religious education can be derived. In other sections of the book, this definition is worked out more fully in terms of 'implicit' and 'explicit' religion (pp. 13-14). This distinction is then applied in the practical working out of a syllabus. Briefly, implicit religion is associated with teaching based on experience, explicit religion with the empirically observable expressions of religion in society. The point is mentioned here because the division seems to rely on a particular analysis of religion called the 'phenomenological approach', itself dependent on certain philosophical pre-suppositions. It is not appropriate to expand further on the technique at this point; but simply to note its appearance. Regrettably, Holm does not include bibliographies for these opening chapters, and no writers are referred to in the text, so her source of her analysis can only be inferred. However, it is of interest that the philosophical analysis is strongly present, but takes a direction different from

the Birmingham route.

The CEM material likewise contains articles reflecting a philosophical interest.[44]

4. TERMINOLOGY OF THE 1944 ACT

None of the foregoing changes described in the previous section could easily have taken place had it not been for the fortuitous phrasing of the 1944 Education Act as it related to RE. Religious education, or religious instruction to use the preferred term of the Act, was made obligatory in state schools. By the word 'religious' was meant 'Christian'; and by the term 'instruction' was meant 'knowledge' - in particular 'Bible knowledge'.

The fact, however, that 'religious' is potentially an open term, and the fact that 'education' is sometimes used in the Act as an alternative to 'instruction' is an accident of language use that has enabled changes to take place which have not defied the letter, though they might allegedly infringe its spirit.

CONCLUDING REMARKS

(i) Summary

The main purpose of this historical introduction is to give an account of the chief factors which have influenced the emergence of the thematic method.

Three types of theme have been identified: experience, Christian

and symbol. It has been asserted that the chief causative influence was the Piaget-Goldman research.

Another factor which had implications for the thematic method was immigration into Britain of significant numbers of coloured people. This series of events led directly to the introduction of other faiths into the RE curriculum, and the thematic method was found to have relevance to it.

Improvements in class 'hardware' have made it possible for teachers to capitalise on a method which functioned more effectively with a variety of techniques avaialble.

One trend which is characteristic of contemporary as distinct from traditional and recent syllabuses has been identified. This is the involvement of academic theologians and philosophers with the practical business of constructing a syllabus for use in schools.

(ii) The problem stated

It has been implied in the previous chapters that we have now reached the end of a phase in Religious Education. The Schools Council has undertaken a wide-ranging evaluation of the subject. Individual studies have indicated a desire to consolidate findings, or to set RE in the context of other disciplines, e.g. curriculum studies The general mood, therefore, is one of appraisal, and it is fitting that the theological basis of the thematic method should be investigated. It has been suggested that life-themes, on the one hand, and symbol/Christian themes, on the other, are in reality

two different kinds of theme. It will be proposed in this study that their respective theological bases are very different and that failure to recognise this distinction, and to have an adequately articulated theological base for each type leads only to confusion.

There is a great danger that the life-theme becomes an ad-hoc assemblage of items, and that the links between the various items are verbal rather than conceptual.[45]

The aim of this study is to show that the thematic approach is theologically viable. This assertion depends upon the acceptance of prior propositions:-

(a) that themes are a species of metaphor, and metaphors can be construed as models

(b) that to utilise models in reference to God is to talk in theologically appropriate ways

It will also be argued that the developmental approach is in broad terms an acceptable model for the structuring of work, and that themes should accordingly be structured in conformity with developmental stages.

A final section will give examples of how this might be achieved in practical terms.

PART B

THE METAPHOR, AND ITS ANALYSIS THROUGH THE SCIENTIFIC MODEL

General Introduction

A working assumption of this study is the conviction that an effective religious education can emerge only from a properly articulated view of religion. It will be necessary to explore the theological implications of thematic teaching. This will be done by sorting out the relationship between themes, metaphors and models. These concepts are inter-related in the literature.

To say as much is to raise questions about religious discourse, and the placing of models, themes and metaphors within it.

In the previous section, an account of 'theme' was produced, and it was asserted that two types of theme could be identified. These were labelled and defined as:-

(i) experience theme

a theme in which an area of experience known to the child is both the content and the method of the theme.

(ii) symbol/Christian themes

a theme in which secular and sacred uses of the chosen area of experience are distinguished and investigated.

What is common to both is that successful exemplars are productive of religious insight; they are, therefore, not of value in themselves, but only for the religious end in view. There is a case for supposing that they function like metaphor, and it is this issue which is to be explored and

developed in what follows. However, it will first be necessary to arrive at an account of metaphor and to distinguish between literary and religious metaphor.

It so happens that in recent debate, metaphor has been analysed through the model as utilized by some scientists. The discussion has been extended to draw parallels between scientific and religious models. The assertion is that at least some of these models are to be classified as metaphor. To be true to the history and shape of this debate, it will be necessary to state what are the relationships between the scientific model and literary metaphor; and to show how religious models and metaphors fit into the debate.

The problems attending such discussions are formidable, as very few people are skilled in such diverse areas as the philosophy of science, of language and religion. On the other hand, if themes are religious metaphor, it is unlikely that a proper understanding of thematic teaching will emerge unless the enterprise is undertaken. It is for this reason that it is proposed to examine a small number of authorities. These writers either refer to, or receive mention from, other authors in the group. The cross-reference should keep the line of argument coherent. The aim is to present a possible projection of the metaphor/model/theme map rather than prescribe a particular projection as the only or advised one. This part will form the prologue to Part C wherein it will be demonstrated that the two types of theme can be construed as two divergent theological approaches to the understanding of the nature and operation of the religious metaphor/model.

Part B will examine the cognitive function of metaphor and model. It will

have two main aims:-

(a) to state the ways in which metaphors can be said to possess meaning

(b) to establish the ways in which meaningful metaphors and models in science can be linked together.

The Part will be organised thus:-

SECTION (A) AN ACCOUNT OF THE METAPHOR

This account will be based on the following pattern:-

identity of a metaphorical pattern

how meaning in metaphor is achieved

guides for the interpretation of a metaphor

evidence for the creation of fresh meaning through use of a metaphor

variables affecting the impact of a metaphor

The authorities whose work will form the basis of the account are noted below:-

	Metaphor, paper in	
BLACK, M.	Models and metaphors	1962
WHEELWRIGHT, P.	Metaphor and Reality	1962

SECTION (B) CLARIFICATION OF THE CONCEPT OF METAPHOR THROUGH THE SCIENTIFIC MODEL

It will be asserted that the metaphor resembles the scientific model in significant respects. The pattern of analysis defined in Section (A) will be utilised in this section.

The concluding remarks will show in brief how the structure of the scientific model has been used by philosophers of religion and theologians in clarifying the model in religion. A fuller discussion of their insights and consequences for the theme in religious education will be reserved for Part (C). Authorities referred to in Section (B) are as follows:-

BLACK, M.	Models and archetypes: paper in Models and Metaphors	1962
HARRÉ, R.	Theories and things	1961
	The principles of scientific thinking	1970
	The philosophies of science	1972
WATSON, J. B.	The double helix	1968
BARBOUR, I.	Myths, models and paradigms	1974

SECTION (C) A COMPARISON OF THE LITERARY METAPHOR AND THE SCIENTIFIC MODEL

The literary metaphor and scientific model will be compared according to the schedule developed in Section (B). It will be asserted that both metaphor and model have a cognitive dimension, and that there is a common area of meaningfulness. The likely relevance of these conclusions for religious models and metaphors will be indicated.

SECTION (A)

AN ACCOUNT OF METAPHOR

Introduction

It will be helpful to clarify the use of the word 'metaphor'. By this term is meant the basic form of figurative speech.[1] Other literary devices like symbol, simile, are, for the purposes of this exercise, to be regarded as sub-species of this generic type. A more precise account of the relationship between metaphor and other kinds of figurative speech will be presented at a later place in the study (pp179-180). Further, the account presented below is based on books where the emphasis is naturally on verbal metaphor. It is possible to talk both of visual and audial metaphor, and this point will be developed later[2] (pp. 179-180).

1. FIRST SOURCE

BLACK, M. Metaphor 1962
in 'Models and metaphors'

This author was chosen because he has analysed both the operation of literary metaphor and scientific models. His work is frequently cited by other commentators.[3] In one paper, 'Metaphor', he presents evidence in support of the proposition that metaphors have meaning, and, as such, are appropriate methods of debate. In his second paper, 'Models and archetypes', he develops the thesis that models in science resemble literary-style metaphors in significant ways.

Black begins his paper by setting out his aim: the construction of a 'logical grammar' (his inverted commas) of metaphor (p. 25). By this he means the provision of an account of the rules governing the operation of metaphor, and the kind of meaning generated by its use (25, 29-30, 236-237). He builds up his case as follows:-

(1) the identity of a metaphor through examples (pp 25-30).
A critique of the 'substitution' and 'comparison' views of metaphor

(2) guidelines for the interpretation of metaphor (pp 41-44)

(3) the 'interaction' view of metaphor (pp 38-47)

In what follows, it is Black's positive contribution to the debate which will be developed, as these views are the basis for his second paper. His account of the substitution and comparison views of metaphor will therefore be omitted from the ensuing discussion.

(1) Examples of metaphor

Black provides cases of 'non-controversial' instances of the genre, of which three are given below:-

(a) the chairman ploughed through the discussion
(b) blotting-paper voices (Henry James)
(c) the poor are the negroes of Europe (Chamfort)

Black claims that a clear distinction can be drawn in each case between those words with a literal use, and those with a

non-literal use. In the cases above, 'chairman', 'voices', 'the poor' are recognisably literal categories: 'ploughed', 'blotting-paper', 'negroes' are recognisably non-literal uses. By implication, the words used here non-literally do have a normal literal use: in the sentence 'the farmer ploughed his field', 'ploughed' bears a plain, literal sense. The non-literal uses in the cases above are designated 'metaphor'; they are judged non-literal in reference to the context in which they occur. To the literal use (the context), Black gives the label, 'frame'; to the non-literal use, the label 'focus'. Thus, in case (b) above, 'voices' is the frame, 'blotting-paper' the focus. A simple metaphorical expression is one in which two kinds of language-use can be identified. One use, the focus, is recognisably non-literal; the other the frame, is straightforward (pp 27-28).

It is unfortunate that Black should choose these terms as related in the paragraphs above, as the more customary ones are 'tenor' for frame and 'vehicle' for focus.[4] To add to the confusion, Black introduces another set of terms later on. Rather than abandon these terms, it was thought preferable to retain the conventional ones alongside Black's own.

(2) Guidelines for the interpretation of metaphor

Black is very sensitive to the fact that not all metaphorical expressions are simple ones. In the case 'the light is but the shadow of God', 'light', which is the frame (or tenor) clearly bears a symbolic and thus metaphorical sense in its

own right. Further, 'light' and 'shadow' are related to each other as bipolar adjectives which complicates the relationship between tenor and vehicle. It is for reasons like this that the word 'guidelines' is consciously used: there are no 'rules' which operate on each and every occasion. The guidelines isolated are:

(a) control of the tenor (frame) over the focus (vehicle)

> Black points out that a non-literal use of the same word will vary in meaning according to the context in which it is set. He takes as his example the word 'plough' used metaphorically. He asks whether 'I like to plough my memories regularly' bears a different sense from 'the chairman ploughed through the discussion'. If any difference is alleged, it is the tenor (frame) that is the determinant of that difference (p. 28).

(b) knowledge of the general context in which the expression is set

> Sometimes a lack of sufficient contextual cues may well hinder the interpretation of metaphor. Thus, at one extreme, to hear a man described as a 'cesspool' is to recognise a metaphor independently of any specific context. At the opposite extreme, Churchill's metaphorical reference to Mussolini as 'that utensil' becomes the more forceful the more that is known of the context - the intention of the speaker, the occasion and so on (p. 29).

(c) the force of the focus (vehicle)

> It is not known how far the vehicle can have alternatives. It is difficult to envisage any alternative for 'utensil' in this Churchillian phrase. Significantly, it is doubtful that this metaphor could ever be satisfactorily translated into another language (p. 28). On the other hand, case

(1)(a) would not be seriously weakened is 'bulldozed' were substituted for 'ploughed'.

(d) a frequent absence of straightforward language in both tenor and vehicle

As has been noted, the tenor (frame) is sometimes metaphorical; and in certain cases, tenor and vehicle are meant to inter-relate in a more than straightforward manner. Black quotes the following couplet from Auden:

'Oh dear white children, casual as birds
Playing amid the ruined languages'

'White' here is both descriptive and symbolic (pp 26-27). The title of Eugene O'Neill's play, 'A long day's journey into night' might be cited as a particularly complex example. Tenor and vehicle inter-penetrate in a most subtle manner. This latter point is clearly of great significance for religious discourse, utilising as it does speech of a highly symbolic kind.

(3) The interaction view of metaphor

In his next section, Black aims to present a positive 'grammar' of metaphor, despite the elusive nature of the guidelines. The position, in brief, that he wishes to assert is:-

(a) that in a metaphorical expression, there is created fresh meaning over and above a 'translation' into a pre-supposed literal statement.

(b) that, in analysing metaphor, we are talking of meaning, not metaphor.

(c) that an organic role needs to be assigned to both tenor

and vehicle.

Black considers that the view most fully accommodating this position is the 'inter-action' view as proposed by I. A. Richards. Metaphors of Black's own might most easily convey his case. A metaphor is a 'filter' through which the tenor (frame) is discerned (pp 39-40), it is a 'screen' through which the tenor is viewed (pp 41-44). The previous meaning of the tenor is thereby changed or enlarged: the focus (vehicle) and tenor (frame) interact with one another to produce a new and extended meaning.

Black refers to the metaphor 'Man is a wolf' to amplify his position. Perhaps confusingly, the labels 'frame' and 'focus' are abandoned for the terms 'principal subject' and 'subsidiary subject'. The change is made on the grounds that what is under discussion is the existence of 'systems of things' rather than things in themselves. The principal subject is in this case 'man', the subsidiary subject 'wolf'. The metaphor works by applying to the principal subject the commonplaces, or stereotyped beliefs held about the subsidiary subject. In this case wolf is commonly supposed to be voracious, bad-tempered, and so on. The metaphor thus selects, emphasises, organizes features of the principal in terms of the subsidiary subject. In this activity, principal and subsidiary subject interact to produce fresh meaning over and above a literal description of the habits of wolves transferred to man (pp 39-41).

(4) The characteristics of metaphor

The above account entails assertion of the following characteristics

of metaphor:-

(a) its meaning is relative to conditions operative at a given time

These conditions are:-

(i) knowledge of appropriate connotations to both originator and audience

(ii) ability of the originator to arouse the desired connotations in his audience

(iii) ability of the audience to perceive the intention of the originator. (This response can be both cognitive and emotional).

For example, a naturalist might object in reference to the wolf metaphor that the social structure of wolves is well adapted for survival of the pack, that wolves rarely attack unless provoked, etc. In this case, the metaphor 'man is a wolf' will have a very different intention, and a different final meaning if delivered to a congress of naturalists. The metaphor will be meaningless if delivered to people who have never heard of wolves. Thus, there is an organic connection between the intention of the originator and the interpretation of the expression by the audience.

(b) there should be evidence of the creation of extended meaning

Black makes the point that later usage is an indication of the meaning created by metaphors. Some metaphors become incorporated into the stock of 'plain' language; in many cases, they are used so frequently that eventually their metaphorical force is lost (pp 203-206). Black gives as a possible example the word 'leg' (in the phrase 'leg of an angle') applied metaphorically by mathematicians to the

bounding line of an angle (p. 32). Barfield provides a fascinating account of how the Latin word 'ruo' (rush) now means 'derelict building'.[5] The process can still be observed. Some ten years ago, the word 'charismatic' was used by theologians, and meant 'derived from the Spirit of God' (of some outstanding ability). Now the word is used descriptively of any person with unusual personal qualities.

The observation prompts the interesting question of how the boundary of a metaphor is to be defined. It is also worth observing that not all philosophers are as averse to the use of metaphor, as has sometimes been supposed. The parables 'The invisible gardener' and 'The persecuted don' have generated a fair amount of worthwhile discussion.[6]

2. SECOND SOURCE

WHEELWRIGHT, P. Metaphor and Reality 1962[7]

In this book, Wheelwright identifies two types of metaphor, epiphor and diaphor. He also provides an account of the tensive function of metaphor.

An earlier book, 'The burning fountain', 1954, he had discussed the functioning of metaphor by comparison with plain (or steno-) language, and related it to other forms of figurative speech like myth and symbol.

Wheelwright has followed Aristotle in dividing metaphor into two basic types. Like Black, he takes issue very strongly with those who would

regard metaphor as an inferior way of speaking, and disapproves of the positivists' rejection of them as meaningless (1954, pp 282-290). He sees metaphor as cognitively significant (1962, pp 48, 52. 1954, p. 296).

(1) Types of metaphor identified

(a) Epiphor (1962, pp 72-78)

The word comes from two Greek words - the particle 'ep' (over two) and 'phor' (movement). An epiphor is, therefore, a metaphor whose meaning is achieved by the movement from the vehicle (focus) 'over into' the tenor (frame). Thus, in the example, 'Life is a dream', dreaming is the vehicle through which life is apprehended. Pre-supposed by this account is the existence of some similarity between the vehicle and the tenor - the hearer is bidden to perceive the similarity of dissimilars. Most metaphorical expressions are epiphoric in type.

(b) Diaphor (1962, pp 78-85)

This word means literally 'movement through' (from the Greek particle 'dia' (through)). In the case of diaphor, meaning is achieved solely through the juxtaposition of the two contexts. Thus, in the example given by Wheelwright,

'My country, 'tis of thee
Sweet land of liberty
Higgledy-piggledy, my black hen.'

The anti-patriotic sentiment of this triad is conveyed not through the apprehension of 'country' through the metaphor 'hen', but through the association of two contexts which solely through their association convey the hostile sentiment.

Another example quoted by Wheelwright is a couplet from Ezra Pound

'The apparition of these faces in the crowd;
Petals on a wet, black bough.'

Perhaps more problematic is Gertrude Stein's sentence, 'A silence is a whole waste of a desert spoon, a whole waste of any little shaving.' The word 'problematic' is used, for many people will not regard diaphor as meaningful at all. Diaphor is much used in so-called 'concrete' poetry, and this has only a minority following. Nonetheless, it is regarded by some as a significant method of conveying meaning. Wheelwright regards as the purest form of diaphor non-imitative music and abstract painting (p. 79). The force of diaphor lies, therefore, in a bringing together of at least two groups of elements which is completely novel and unexpected. Such groups would never be associated outside the diaphoric context, and the meaning is created by the tension brought about simply by the juxtaposing of these contexts. It is possible in a limited number of contexts to find diaphor and epiphor combined (pp 86-91). Wheelwright regards these as the most effective of metaphors. Thus, the opening words of the following question would be considered diaphoric in character, the rest epiphor.

Altogether elsewhere, vast
Herds of reindeer move across
Miles and miles of golden moss,
Silently and very fast.

Another example cited is the famous line from Shakespeare

'.....my salad days

When I was green in judgement.'

(2) Tensive force: the psychological operation of metaphor (pp 45-50)

Both Black (1962, p. 236) and Wheelwright make mention of the tension latent in a successful metaphor. The unexpected juxtaposition of the two contexts normally unrelated creates 'energy-tension' in the attentive hearer or reader. The two contexts surprisingly associated produces a sense of shock in the recipient: curiosity is aroused and the person tries to solve the puzzle of the juxtaposed contexts. The method is to work out the point of the comparison in terms of the positive analogy.

The sense of puzzlement is sharpened when a metaphor awakens diverse connotations. Wheelwright instances Marvell's lines:-

'The grave's a fine and private place
But none, I think, do there embrace.'

The word 'fine' evokes sentiments of approval, of the end (finis) of narrow (a fine line).

One other observation made by both Black and Wheelwright ought to be mentioned at this point. Both refer to the 'root' (Black, 1962, pp 239-240) or 'archetypal' (Wheelwright, 1962, pp 111-128) metaphor. By this is meant a metaphor which subsumes within it subsidiary metaphors. The most obvious example of this type of figure is a metaphor which forms the basic analogy for a poem. Wheelwright (1962, pp 99-100) quotes 'metamorphosis' as the presiding metaphor for e.g. Ovid and Joyce.

At a much more complex level, it is possible to identify metaphors which contain within themselves many diverse associations. The wheel is quoted by Wheelwright as an example: for example, its circular shape suggests perfection, the spokes of the wheel are reminiscent of the sun's rays and thus suggest creative forces (1962, pp 125-127). Water, light and the Word (1962, pp 116-125) are other examples. Black (1962, pp 239-240) makes reference to Pepper's concept; a metaphor is adopted as a set of categories by which all other facts are interpreted. Such metaphors frequently become a metaphysical system. No examples are provided of this phenomenon: but something of the same order of thought seems to be behind Wheelwright's account of myth. He instances Agni, the Vedic Creator-deity who combines within himself justice and wisdom, and acts as the link between men and the other gods (1962, p. 138). Metaphors such as the ones mentioned here have come to have community acceptance, and their status affects their impact. The function of a metaphor - whether it is a stereotype or a fresh metaphor - is of significance in determining of its meaning.

3. AN ACCOUNT OF METAPHOR

The original brief of this section was to show in what ways a metaphor can be said to possess meaning. By extrapolating from the discussion above and from Black's summary points, the account of a metaphor may be presented in summary form:-

(1) Identity of a metaphorical exapression

Two contexts are juxtaposed: one is called the tenor, and is that to which the originator is calling attention. The other context is called the vehicle, and is that through which the originator

invites the tenor to be construed.

(2) How meaning in metaphor is achieved

Tenor and vehicle interact to produce fresh meaning. The originator invites his audience to apply to the tenor appropriate connotations of the vehicle, i.e. those analogous with the tenor. The resultant interaction produces a perception which goes beyond a literal transcription of the analogous elements. It is possible to identify positive, negative and neutral qualities of the metaphor. Perception depends upon an initial curiosity aroused within the percipient when confronted with the metaphor and the subsequent recognition of the appropriate connotations. Many metaphors thus generate energy-tension. Connotations of the vehicle actively applied and appropriately employed to the tenor become positively analogous; other connotations become neutral or negatively analogous. The tenor is also affected by the presence of the vehicle: hence, the use of the term, 'interaction', to describe what is happening.

(3) Guidelines for the interpretation of a metaphor

The meaning of a metaphor depends upon the possibility of a match between the intention of the originator and the presence of the connotations desired in the vehicle.

An actual match between the intention of the originator and the perception of appropriate connotations by percipients.

An awareness of the existence of the two basic types of metaphor:-

epiphor; where the meaning is achieved by movement from the vehicle to the tenor

diaphor; where juxtaposition is determinative of meaning

(4) Evidence for the creation of fresh meaning through use of a metaphor

The presence in our language of words deemed metaphorical, and now treated as 'plain'.

Responses made by percipients to metaphorical statements.

(5) Variables affecting the impact of a metaphor

Knowledge of the total context in which the metaphor is set.

The degree of control of vehicle over tenor.

The appropriateness of the vehicle.

The use of metaphor in both vehicle and tenor.

The degree and kind of energy-tension generated.

The function of the metaphor in any given instance.

A special type of metaphor has been identified: the root metaphor. This is a metaphor which subsumes subsidiary metaphors.

SECTION (B)

CLARIFICATION OF THE METAPHOR THROUGH THE SCIENTIFIC MODEL

In this section, attention will be centred on two issues:-

(1) the particular metaphor-like qualities asserted of scientific models. It may be that scientific models function like metaphors only in certain respects; it may also be the case that only certain kinds of scientific models may resemble metaphors. It is in this context that the explanatory model will be described.

(2) the relationship of model use in science to other traditional scientific techniques. In particular, special attention will be paid to the kind of cognitive response anticipated from models; the kind of meaning asserted of scientific models.

There is, unfortunately, no agreement amongst commentators over classification, and consequently terminology, of scientific models. Accordingly, Black's and Harré's views have been outlined, though they approach the problem from different angles. Their terminology has been adhered to, though Harré's takes precedence where appropriate.

Introduction

The word 'model' is customarily chosen when reference is made to the scientific 'metaphor'. Most discussion has centred round the theoretical model (to use Black's term) or the explanatory model (to use Harré's term). This type of model is allegedly hypothetical in character and is said to function in significant ways like metaphor

Both Black and Wheelwright were at pains to emphasize the meaningfulness of at least some metaphors. The reasons why such an emphasis can be found, and why parallels between metaphor and model have been sought are largely historical, and to be found in movements within philosophy this century.[8] The debate has centred round the concept of meaningfulness.

According to a significant group of thinkers, the true business of philosophy is the analysis of language. The goal of such analysis was to locate bases of certainty in discourse. It was proposed that the fundamental unit of intelligible expression was the sentence. From these, sentences that were content-filled were extrapolated. Thus, only propositions, i.e. sentences claiming that such and such is the case, could be considered as candidates for the desired certainty.

A further elimination of unsuitable candidates was now made. What made a proposition acceptable was its meaningfulness: this was defined as the steps needed to be taken to demonstrate its truth-claims. The cliche associated with this kind of philosophy is 'The meaning of a sentence is the method of its verification.'

Statements true by definition were necessarily meaningful, e.g. 'Bachelors are unmarried males'. Statements deriving from sense experience formed another significant group of meaningful propositions, e.g. 'Snow is white. All swans are black'. Tests for meaningfulness would therefore be empirical in character and the tests would decide the truth of the statements. With the application of rules as described by logicians would be built up statements of empirical fact - those which had survived the relevant tests. To the principle of positive verification was added by some the principle of falsifiability: in discovering what an assertion denies, is discovered

what it asserts. Only empirical propositions were subject to this procedure.

Thus, of the two propositions, 'It is raining in Birmingham', and 'Birmingham contains some beautiful buildings', only the first is meaningful. An overall view of the city would show whether or not rain was falling; and the phrases 'is raining' and 'Birmingham' have clear, unambiguous senses. In the second case, there are no agreed empirical criteria by which the word 'beautiful' could be defined. The statement is construed as a value-judgement, and accordingly judged meaningless.

It is important to notice that the methods of verification or falsification need only be possible in principle; they do not have to be practically available. Thus, the proposition 'There are men on Mars' is meaningful because it is demonstrable in principle: only technological difficulties prevent its demonstration.

The name given to the group of thinkers subscribing to this view is 'logical positivists' or 'empiricists'. Although there are variants in the tradition, it is important to note that they all hold in common that only a designated type of discourse is meaningful.

Science appeared to many positivists to be the discipline par excellence which was meaningful because it satisfied stringent empirical tests. Thus, it was asserted that the starting-place for the enterprise were observations of phenomena. These were charted independently of any cultural values or theoretical assumptions. On the basis of the observations made, hypotheses were constructed. Empirical type tests were devised which substantiated or disconfirmed the hypothesis. An empirically

demonstrable hypotheses through a process of inductive generalisation was incorporated into a theory. The theory is thus a description of what is the case.

The claim has been made by several notable scientists that the explanatory model does not conform to the criteria of meaningfulness as described above. For example, it has been alleged that some models are unintelligible if the impact of the culture from which they sprang is ignored. The model in these cases emerges from valuational judgements as to what is desirable. Of some models it has been asserted that the imagination of the scientists was critical to its emergence, and that rules of inference (rather than deduction) were applied to a model regarded commonly as successful. The total effect of such an investigation has been to challenge 'meaningfulness' as defined by the positivists.

The model is held to function as metaphor. Both religion and literature make extensive use of metaphor, clearly meaningless to the positivists. If models in science and metaphor in literature and religion have certain essential characteristics in common, then the concept of what is meaningful may undergo revision. Metaphor can be re-instated as cognitive, as a viable form of discourse.

One way of approaching this issue has been to identify the metaphorical characteristics of the model, and then to assert meaningfulness to those literary and religious metaphors conforming to the explanatory model. It is this aspect of the debate which will be followed in the ensuing section.

Four authorities were selected for examination: Black, Harré, Barbour and Watson. Black's account was selected because it emerges from his

description of metaphor. Section (A) and Section (B) of Part B are thereby linked together. Both Harré and Watson present a specific example of a scientific model whose metaphorical characteristics are spelled out in some detail. Barbour has linked together the metaphorical scientific model and the metaphorical religious model. The analysis of his work is preparatory to Part C. The section will be organised as follows:-

1. BLACK'S ACCOUNT OF THE SCIENTIFIC MODEL

   Black's categorisation of models into analogue, theoretical and archetype will be described.

2. HARRÉ'S ACCOUNT OF THE SCIENTIFIC MODEL

   Harré's account will be described through his example of the Darwinian model of evolution.

3. WATSON'S ACCOUNT OF THE SCIENTIFIC MODEL

   Watson presents his personal account of the practical uses to which a model was put - namely, the discovery of the structure of the DNA molecule.

4. BARBOUR'S ACCOUNT OF THE SCIENTIFIC MODEL

   Barbour makes a detailed comparison of both the scientific and theological model. He asserts that in many ways the theological model resembles the scientific model. His account of the model in science will be outlined here, and will form the chief link between this Part and Part C.

5. CONCLUSIONS

   The findings of the sub-sections 1-3 will be related to contributions of other writers in the area. The conclusions will be categorised under the schedule for the account of metaphor used in Section (A).

One major difficulty in the presentation of the author's views was encountered; there is no agreement over classification of models or

terminology. In the account of Black's and Harré's views, their categories and terminology have been adhered to. Later, for the sake of clarity, a decision was made over the terms to be used for the different types of model.

1. FIRST SOURCE: BLACK'S ACCOUNT OF THE SCIENTIFIC MODEL

BLACK, M. Models and Archetypes pp. 219-243 1962
paper in 'Models and Metaphors'

Black espouses the view that scientific models are metaphorical in some ways. His categories of metaphorical scientific models will be described - analogue and theoretical. His isolation of a particular group of models, called by him an archetype, will be described. Throughout the account reference will be made to the examples given by Black.

Black's account of the scientific model is based directly on his account of metaphor presented earlier. In that account, he asserted that a cognitive dimension can be discerned in at least some metaphors. In this paper, he asserts that certain scientific models function in significant ways like metaphors with a cognitive dimension. They are meaningful. Black distinguishes four types of model. These he denominates as scale, analogue, mathematical and theoretical. In effect, the models he identifies as metaphor-like are to be found in the analogue and theoretical groups. This is an important point, as apparently, not all models in use in science are to be construed as metaphor. In what follows, the characteristics of analogue and theoretical models will be described. Throughout the account, reference will be made to examples given by Black.

(1) Analogue models (pp 222-223)

Example: an economic system modelled by an hydraulic process

Black defines an analogue model as:-

'a material object, system or process designed to reproduce as fully as possible in some new medium he structure or web of relationships in an original'.

Again, it is

'a symbolic representation of some real or imaginary original, subject to rules of interpretation for making accurate inferences from the relevant features of the model'.

From these statements it is possible to determine both the structure of a model and its function.

Structure

First, it is possible to identify both an original (in this case, a system of economics) and a model (an hydraulic process). By definition, the model represents the original in a medium different from that of the original (so that hydraulics is not in any normal way related to economics).

Second, what is represented in the model is the underlying structure, the 'web of relationships' characteristic of the original. So important is this relational quality that Black introduces a special word to describe it: isomorphism. The hydraulics process is 'isomorphic' with the economics system in so far as the balance of forces within the economic system correspond

point-by-point with the balance of movements within the hydraulic model. Thus, any external features are not necessarily significant in model terms; it is the internal checks and balances which must be accurately reflected.

Third, an analogue model must be constructed and not simply imagined. The original may be a mental construct, but the model must itself be an object, system or process that is material in form. So, in terms of our example, the hydraulics model must be made to be classified as an alanlogue model; the source, the proposed economics system, is a theory composed in the mind.

Function

The prime purpose of an analogue model is to enable the scientist to make 'accurate inferences' from the model; that is, to make claims for the original by reference to the model. Characteristically, a model is constructed initially in an area where facts are partially known, and in a successful model fresh insights will be created, unlooked for hypotheses generated. The chief point that Black wishes to establish is that the alleged facts generated by the model are inferential and not deductive in character. Accordingly, the 'rules for interpretation' are critical in ensuring the accuracy of the claims made. These rules may be described as follows:-

First, the model works through the 'analogical transfer of vocabulary' (236). Where the relationships of the model are isomorphic with its source, what can be said of the model can

apply with equal force to the original. Thus, the language of the hydraulics process is applicable analogically to the economic system.

Second, it becomes possible to speak of positive and negative analogy. The principle of isomorphism implies that the external features of the model will be negatively analogous in so far as they are not significant aspects of the web of relationships. Thus, the pipes and construction materials of the hydraulics mechanism will be negatively analogous, the compensations of movement in the various parts of movement in the various parts of the apparatus will be positively analogous.

Black is careful to point out that the possibilities for error by the use of analogue models is considerable. Great care must be exercised over the choice of model and over the identity of the isomorphic elements. Nonetheless, the fact that some have been successful is justification sufficient for the use of the method.

(2) Theoretical models (pp 226-236)

Example: an electric field modelled by an incompressible fluid as described by Clerk Maxwell (p. 226).

It is this group which Black considers to be the most significant of the genre (pp. 233, 239). In some ways, they represent the analogous models described above. He quotes with approval Maxwell's description of such a model:-
'a collection of imaginary properties which may be employed for establishing certain theorems in pure mathematics in a way more

intelligible to many minds and more applicable to physical problems than that in which alegbraic symbols alone are used'. (Underlining is equivalent to Black's italics). (p. 227).

It is clear from this description that theoretical models share many characteristics with analogue models: isomorphism between the original and the model is a necessary defining characteristic (cf. 230) and the effective model creates insight. These likenesses are noted by Black.

There are, however, certain important differences. Characteristically the source of a theoretical model is mathematical formulae. Further, it is not necessary to construct a theoretical model; it can be imaginary. Some serve an heuristic purpose only: the language of the model is transferred by analogy to the original. Other theoretical models, however, are 'existential' in their use: the secondary medium can be identified in some way with the original itself. It is this 'existential' use of models that Black considers to be their most notable feature.

As he goes to some length to develop this point, it may be as well to refer to an example to make the matter clear. The 'paradigm' of such theoretical models is Clerk Maxwell's representation of an electrical field in terms of an incompressible fluid. The model works in such a way that it is in some way the source represented: to use the language of an incompressible fluid is to describe what an electrical field actually is.

Black puts the matter thus: to use a theoretical model is to 'talk in a certain way': such a technique represents the 'heart of the method'. It works not by analogy (as in analogue models), but through and by means of an underlying analogy (p. 229). The difference between an heuristic function of a model and an existential use is described thus: in the former case, the model of the incompressible fluid is an heuristic convenience - it is as if the electric field were being described as a fluid. In the existential case, however, the fluid is regarded as being the actual descriptive medium of the electric field (p. 228).

Other examples are given: according to Black, both Bohr through his model of the atom and Rutherford through his model of the solar system believed they were describing the case as it actually is. They were not merely 'dressing up' mathematical formulae or making these concepts more realizable, the model was part of the description. It follows that in these circumstances that the margin for error is greatly widened, and the rules for interpretation consequently elusive.

To summarise: Black specifies five conditions for the use of theoretical models:-

(a) they are typically employed in a field where some facts and regularities are established

(b) there is a need felt for further exploration

(c) a description of at least some entities is located in a secondary, better-organised field. This is the model

(d) interpretative rules are constructed. These are the rules of correlation between the model and the partially known area

(e) inferences from assumptions in the secondary field are interpreted by the rules. Further validation is sought in terms of rules appropriate to the primary domain

Despite the hazardous nature of this enterprise, Black claims that the method is justified on the grounds that it yields results. The differences between theoretical and analogue models may be summarized thus:-

Analogue models		Theoretical models	
i	normally find their source in observed phenomena	i	normally find their source in mathematical formulae
ii	are physically constructed	ii	are more typically imagined
iii	work by a theory of argument from analogy	iii	work by means of analogical transfer
iv	are more characteristically heuristic in function	iv	are explanatory in function

(3) Archetypes (pp 241-243)

So convinced is Black of the provenness of the model method that he designates some models as archetypes. These are found when it is so customary to describe a given range of ideas through the model that the language of the model is characteristically reverted to when these ideas are under discussion. The example which Black gives is from the writings of Kurt Lewin, the sociological theorist. From his work can be extrapolated such 'models' as field, vector, tension, boundary. These are essentially physical terms, and imply some underlying 'massive

archetype' (p. 241). Black is very keen to point out that an archetype is not a metaphysical construct: its provenness must lie within the limits of empirical testing.

To conclude, Black believes that models resemble a 'sustained and systematic metaphor' (p. 236). The isomorphism necessary to the analogue and theoretical model is a metaphorical method of investigation; it requires analogical transfer of vocabulary, and in both cases, new insights are generated. The chief difference between the model and the literary metaphor is to be found in the control exerted by the facts known prior to the development of the model. Otherwise, 'science, like the humanities....is an affair of the imagination' (p. 243).

2. SECOND SOURCE: HARRÉ'S ACCOUNT OF THE SCIENTIFIC MODEL

HARRÉ, R. The principles of scientific thinking pp 33-62 1970[9]
chap. 2 in 'Models in theories'

Harre regards explanation as the supreme task of science; and the explanatory model is a necessary adjunct in this enterprise. He asserts that explanatory models function like metaphor. It will be asserted here that the explanatory model as described by Harre is akin to the theoretical model as described by Black. It therefore functions as metaphor. The operation of the explanatory model will be clarified through Harré's own example of the Darwinian model of evolution.

(1) The explanatory model

Harré is at pains to clarify the different types of knowledge available to scientists. The only strictly certain knowledge is to be found in mathematics and logic. But for him, it is explanation that is the chief end of science, for it is through explanation that our knowledge of the world is extended. To explain in this sense is to move outside the deductive certainties of logic and maths. Inferences are made from observed data, and claims advanced as to the nature of the causal mechanisms producing the phenomena observed: it is in the identity of these causal mechanisms that explanation consists. The means by which the inferences are made, and the claims advanced, can be the model. The vehicle for the explanation is the theory. The model, therefore, is an explanatory device.[10]

The structure giving rise to a theory can be described thus:-

(a) the observation of phenomena

(b) the selection of an appropriate concept which becomes the model to explain the phenomena (i.e. describe it, and infer causal mechanism producing the observed patterns)

(c) the selection of the appropriate links between the model-concept and the phenomena which becomes the explanation. This process is called by Harre the identity and description of the model transforms

(2) The Darwinian model

The example which Harré gives in detail should make this

structure clear. His Darwinian model is presented in schematic form (1970, p. 58):-

Phenomena	Transform	Model of unkown mechanism	Source	
Natural variation in species	cause of natural variation is natural selection	natural selection by struggle for existence	(1)	causal structure of domestic selection
		M	(2)	Malthus' theory

M is a model (called by Harré a paramorph) with respect to the unkown mechanism of change
M is a model (called by Harré a homeomorph) with respect to domestic variation and selection, and to Malthus' theory

This schema is explicated thus (1970, p. 57):-

(a) The observational data were the facts relating to animal and plant varieties: the study of fossils had revealed that some species that had once survived were no longer to be found, there exists on earth many varieties that had not existed in time past, that even in plants and animals basically alike there are many differences (of which the differing kinds of tortoise in the Galapagos islands constituted a notable example). The problem was to explain the mechanism that made both for similarities and for differences. It was commonly held at Darwin's time that the individual species were fixed. Darwin's painstakingly collected data focused on the minute differences evident in each species.

(b) The analogy which Darwin developed into a model was the process of domestic selection. A breeder can capitalise on the differences between individuals of the same species by consciously breeding for a selected trait. (For example, Pomeranian dogs differ slightly in size. By breeding only from the smallest individuals, it has been possible to produce very tiny dogs). One of the most important features of this process is that because the life-span of plants and animals is so much smaller than that of human beings, specific change can be brought about in a natural human generation.

(c) Darwin focused on the process of selection itself as the model transform. As is pointed out by Harré, the activity of the breeder in consciously selecting appropriate features was consciously rejected from his model. Hence, the incorporation of Malthus' theory into the final formulation. Darwin posited that variation was not random: the agent of selection was hypothesized as adaptation to the environment. Malthus' theory explained why some species were well-adapted and survived, why some were ill-adapted, and why some species had vanished.

(2) Types of hypotheses and the model

Harré, like other commentators, is well aware that in many sophisticated theories, more than one model serves the explanatory function, and he has developed a taxonomy of models to account for this feature. It is sufficient to notice here that Harre distinguished very carefully between the different types of

hypotheses generated by a theory. These hypotheses, if confirmed (or not disconfirmed) become statements (p. 56). These will be illustrated from the Darwinian example quoted above). They are:-

(a) existential hypotheses

those which postulate the mechanism productive of the phenomena

i.e. the iconic model

(in the example above, the model is domestic selection modelling the hypothetical mechanism, natural selection)

(b) descriptions of the model or hypothetical mechanism

i.e. the attributes and modes of behaviour of the model as hypothetical mechanism

(in Darwin, the process of domestic selection as distinct from the activity of the breeder - as descriptive of natural selection)

(c) causal hypotheses

the postulation of the causal mechanism, producing the patterns observed in the phenomena

(in Darwin, natural selection in the struggle for existence, the determinative factor being ability to adapt to the environment)

(d) modal transforms

postulation that that which is true of the model is true of the hypothetical mechanism

The whole is called by Harre a 'statement picture complex' (p. 56), that is, a theory.

A model in this sense is explanatory; the causal mechanisms cannot be deduced from the phenomena, they can only be inferred. It is

accepted as knowledge because it works.

Comments

Harré has provided a careful and useful account of the explanatory model. Of particular value is his analysis of the process by which an iconic model becomes an explanatory one. Crucial to this process is inductive reasoning. He has also given very careful attention to the actual status of the knowledge arrived at by such means. Elsewhere he states that explanatory models are accepted by scientists on the grounds that they work. Theoretically, such explanations can be overturned, as was Newton's account of the laws of forces by Einstein.[11] In the case of Darwin, such overturning seems extremely unlikely; but new data (or fresh perceptions of the old) could lead to the adoption of a new explanatory model, and therefore a revised account of how differences in observed species occur.

Harré cites other examples of explanatory models: these are, for example:
fluid model for electricity (p. 47)
kinetic theory of gases (pp 55-56)

Throughout his account, Harré is keen to assert that the model is <u>one</u> way amongst others of arriving at scientific knowledge. Such an assertion does not in any way denigrate the method: but knowledge obtained through model technique is appropriate in certain cases, but not in all.

A comparison of Harré's account with Black's might be fruitful at this

point. The Darwinian example shares characteristics with both the analogue and theoretical model. The source was observed phenomena (as in the analogue model) but the model was imagined and not built (as in the theoretical case). The use of analogy is perhaps of interest here: clearly, the principle of isomorphism is important; the modal transforms must be appropriate and hence isomorphic. Harre's account of the use of analogy is insightful: because of his interest in the development of a model, he seems to suppose a situation in which an analogue model can progress to a theoretical model. Thus, the Darwinian model of domestic selection was first applied analogically to the observed differences in species: it became a theoretical model when it explained the mechanisms productive of the observed changes.

Harré's account can be considered complementary to that of Black. He draws attention to the following characteristics of scientific models:-
he defines the status of knowledge engendered by the explanatory model;
he states that through the model are described the causal mechanisms which produce observed phenomena.
he describes the process by which a model moves from analogical use (the iconic model) to an explanatory use.

3. THIRD SOURCE: WATSON'S ACCOUNT OF THE DOUBLE HELIX MODEL

WATSON, J. B. The Double Helix 1968[12]

It was thought useful to record the contribution of a practising scientist to this debate. The structure of the DNA molecule was finally revealed through the use of a model. In this book, Watson describes the procedures he and Crick followed. His measure of the

model as an instrument of practical thought will be indicated.

In presenting the contribution made by Watson to the debate, the following points will be kept in mind:-

(1) the nature of the problem

(2) the type of data to which Watson and Crick had success

(3) the part played by the model in solution of the problem

(4) to what degree the model can be considered analogue, theoretical or explanatory in type

(1) Nature of the problem

The structure of the DNA molecule was a major puzzle to bio-chemists of the 50s. It was believed by many scientists that the knowledge of its structure would show how traits were passed from one generation to another. For many years, research into the structure of protein molecules had been pursued in the hope that their successful analysis would produce a usable account of genetic transference (pp 8-9). Other lines of research were being actively undertaken; in particular, the structure of RNA (ribonucleic acid) had been investigated. All these research projects had proved abortive. Avery proposed that analysis of protein molecules would not produce the desired account: he hypothesized that all genes were composed of DNA (deoxyribonucleic acid) molecules, and that these were therefore the agents of inheritance (pp 13-14). Many leading scientists were examining what was known of the DNA molecule in the hope that a full account of its structure might be produced. Considerable status would accrue to the successful scientist who solved the puzzle;

fundamental work in genetics was hampered until the laws governing genetic inheritance were known. Watson and Crick decided to test Avery's hypothesis with the conviction that it would reveal itself as the primary genetic material. They concluded that existing research methods would not produce the desired result: and decided to build a model on the basis of what was already known in the hope that the structure would then be revealed.

(2) The type of date to which Crick and Watson had access

Research on the problem had been proceeding along many lines:

(a) stereo-chemistry (p. 51)

DNA contained a large number of nucleotides, linked together in a regular way.

(b) X-ray photography (notably by Franklin) (pp 50-51, 54)

Photographs indicated that the molecule had a crystalline structure.

(c) mathematical formulae (pp 125-131)

Worked out notably by Chargaff. The hypothesis that DNA was an acid led to the further hypothesis that DNA would resemble in some ways the structure of the RNA strand (p. 153).

Watson has this to say of the role played by the evidence with which he was confronted:

> The model has been derived almost entirely from stereo-chemical considerations with the only X-ray consideration being the spacing between the pair of bases 3, 4a which was originally found by Astbury... This agreement (X-ray pattern) in no way constitutes a proof of our model...to do this we must obtain collaboration from the group at Kings College, London who possess very excellent photographs of a crystalline phase in addition to rather good photographs of a

> paracrystalline phase...as yet we have no clear idea as to how these helices can pack together to form the crystalline phase.
>
> (pp 230-231 - from a letter written to a fellow-scientist, Delbrück)

The importance of stereo-chemical considerations is referred to later on. Another scientist utilising model technique was Pauling and his proposed model of the DNA structure. Watson and and Crick found it unsatisfactory on stereo-chemical grounds (pp 212-213, 160-161).

However, the other information available had to be incorporated in the model as finally produced. Notable in this was the crystallographic photography undertaken at Kings (pp 76-77, 167-169). The model also demonstrated that Chargaff's mathematics were the result of the DNA structure (p. 196).

Thus, observed phenomena were the formative data in the production of the model. However, throughout the investigative process, the scientists' results were checked against the various kinds of evidence available. The problem was one in which some facts were known.

(3) The part played by the model in solution of the problem

Model-technique was adopted as a research tool. The known information combined with the imagination as is graphically described by Watson. For example, the investigation of the structure of RNA gave clear indication that this acid had clear

helical markings. It was on the basis of this evidence in part that Watson and Crick inferred that DNA also had a helical structure (pp 110-116). The number of helices was changed as the research progressed. For example, the triple helix gave way to the double helix. Nonetheless, the basic conviction that DNA had a helical configuration remained unchanged. Even apparently contradictory evidence failed to shake this belief (p. 95).

It also remained the conviction of the scientists that only model-play would cause the structure of DNA to be revealed and confirm their belief that the molecule was the source of genetic inheritance. Many other leading scientists were openly hostile to the use of the model and actively thwarted Watson's and Crick's attempts to obtain information. For example, Franklin refused to release to them vital photographic results (p. 95). Watson and Crick remain convinced that the use of the model was indispensable to the final result.

(4) To what extent the model is to be considered analogue, theoretical or explanatory

A comparison of this model with the summary of Black's analogue and theoretical models produced the following conclusions:-
It conforms more clearly to the analogue type:

(a) It was based on observed phenomena, notably stereo-chemistry and crystallographic photography.

(b) It was physically constructed. Indeed, manipulation of the model was essential to its eventual success.

(c) The model was intended to present an account of the structure

of the DNA molecule; from the beginning its function as an heuristic device was assumed.

(d) The structure of the molecule was presented via an analogy; the isomorphic qualities of the model were crucial to its adequacy. Inference played a large part in the design of the model; the conviction that it was a genuine account persisted, even when contrary evidence temporarily rendered it suspect.

On the other hand, there are also within the model reminiscences of the theoretical model: Chargaff's mathematical equations were justified when the model was finally produced.

Significantly, a model displaying theoretical characteristics was later developed. The 'grammar' model is held to be descriptive of the causal mechanisms by which characteristics are inherited from previous generations. Further, this latter model is a mental construct.[13]

4. FOURTH SOURCE: BARBOUR'S ACCOUNT OF THE SCIENTIFIC MODEL

BARBOUR, I.	Issues in Science and Religion	1966[14]
	Myths, models and paradigms	1974[15]

Ian Barbour has worked in both physics and theology. He was at the time of writing his second book Professor in the Department of Philosophy at Purdue University in Indiana. The first book is an historical account of the development of scientific techniques and of theological movements. Certain sections of the book deal with the

use of models both in science and theology. The second volume is a more detailed analysis of the functioning of models in the two areas. He wishes to assert that models are cognitive in their scope, and exhibit metaphorical characteristics. A striking feature of his account is the delineation of the so-called 'complementarity principle' which he finds useful in reference to both scientific and theological models.

(1) Types of models

Black's interaction view of metaphor is quoted with approval (1974, p. 12): so also his views on scientific models as metaphor-like in operation and type (1974, p. 42, 1966, p. 160). Significantly, the analyses of Hesse (notably 1966, pp 33, 43, 160, 1974, pp 7 -75), Ferré (1974, pp 65, 69) and Harré (1974, pp 38, 43) are quoted with approval.

As might be expected, Barbour groups models into categories, though the criteria for sorting are different from those selected by Black and Ferre. He groups scientific models accordingly (1974, pp 29-31):-

(a) experimental models

In general, these are constructed in a laboratory. A sub-group, however, is called 'analogue' models. In these cases, the system under investigation is modelled by another system. For example, an electrical circuit model might represent an acoustic system. Barbour sees analogue models as applicable to systems only (not material objects): it is the use to which they are put - experimentation - that lies at their heart, rather than isomorphism. The group cannot

be considered identical to Black's analogue category.[16]

(b) Logical models

These are in use chiefly by logicians and mathematicians, and they operate exclusively in the realm of ideas. The original is a set of axioms or theorems of a formal deductive system: the model represents these in entities satisfying the axiomatic or theoretical system. Thus, a set of geometrical points and lines models Euclid's formal axioms. These would seem to be nearest to Black's theoretical models, though in so far as he does not exlcude physical systems as sources of models, his grouping is wider in its scope.

(c) Theoretical models

It is to this group that Barbour devotes most of his attention, partly because of its implication for theology, but partly because of its chief use - making intelligible the world. They are defined as (imaginative mental constructs invented to account for observed phenomena).

His examples of metaphorical models are drawn from the analogue and theoretical groups. In general terms, these models are defined by him as a 'systematic analogy postulated between a phenomenon whose laws are already known, and one under investigation' (1966, p. 158). Contained within this statement are descriptions of models already noted: there are two frames of reference which interact to produce meaning. One of the frames is well-known, the other partially known.

Other examples of scientific models construed as 'systematically

developed metaphors' are, for example:-

the kekulé model: a ring-shaped structure to account for the properties of benzine (1966, p. 158)

wave-functions of quantum physics (1066, p. 161)

kinetic theory (1974, p. 33, 1966, p. 160)

DNA code - molecules in terms of letter, words, sentences, grammar and punctuation (1974, p. 47)

Like other commentators, Barbour wishes to challenge the view that scientific thinking is wholly of a deductive kind. He makes explicit mention of the role played by induction and the imagination in the formulation of theories (1966, pp 139, 172-174). These subjective uncertain ways of operation combine with deductive processes in the devising and treating of hypotheses. Even in the validation process, certain valuational criteria can be identified, e.g. the elegance of a theory as a sign of its authenticity (1966, pp 145-146). He notes Einstein's positive identification with his theory on the grounds of its beauty (1966, pp 145-146, 300).

A further line suggested by Black, but developed in more detail by Barbour is his conception of the models as the means by which intelligible discourse about the source is enabled to take place. He states explicitly that a prime function of the model is to represent symbolically structures otherwise inaccessible (1974, pp 37-38, 1966, pp 158-162). Particularly this is true in the case of atomic physics: such data are 'not only inaccessible to direct observation, and inexpressible in terms of the senses; we are unable even to imagine it' (1966, p. 158).

(2) The principle of complementarity

Barbour has noted that in the formation of certain scientific theories, more than one model was formative. Further, these models were contradictory. His major exemplar is taken from experiments to determine the structure of the atom. In his earlier work, he provided an historical account of the emergence of quantum theory in this century (1966, pp 273-282) noting the part played by both the wave and particle models in uncovering the structure of the atom. His main point is that these models are incompatible, and both are necessary to contemplate theoretical atomic physics. In his later work, he describes more fully the character of these 'complementary' models. Briefly, they must refer to the same entity and of themselves be the same logical type; there must be coherence even within tension (1974, pp 71-91). What it is important to note here is that the phenomenon is only rarely met with. The observation is of importance because from Barbour's point of view literalism in scientific thinking is shown to be inadequate. He also asserts that paradox is a feature of some scientific thinking - a feature which is re-considered in his discussion of theological models.

(3) The scientific paradigm

Barbour is most anxious to assert that philosophical pre-suppositions of any culture and the scientific concensus within that culture circumscribe the achievements in science to a marked degree. Thus, the whole scientific enterprise depends upon the assumption that nature is both uniform and reliable (1966,

p. 181). Concensus in scientific thinking shapes the judgements and methodology of given scientists. So powerful is a given paradigm that in the past certain theories arrived at by unorthodox methods were ruled out-of-order. Thus, the Michelson-Morley experiments were ignored at the time they were first promulgated but were seen to be crucial in the post-Einstein era (1974, p. 100). Other examples of unorthodox procedures which later proved fruitful are given (1974, pp 99-102). According to this view, scientific revolutions are paradigm shifts: thus, mechanistic Newtonian physics supplanted the Aristotelian world-view; and the determinacy of Newton has in its turn been overturned by the uncertainty principle.

Perhaps interestingly, he writes that Einstein was still convinced of the existence of a general law as yet undiscovered. Such observations have repercussions for the status of scientific knowledge; it is 'certain' only within the context of the data understood, and the concensus dominant at the time. Models come to occupy a special position in this account as they are a technique working symbolically to suggest hypotheses granted the paradigm in operation at the time.

SUMMARY: THE SCIENTIFIC MODEL AS DEFINED IN THE THREE SOURCES

A summary account of the three sources discussed above might read:-

(1) The model must have a source, i.e. data: this is characteristically observed phenomena or mathematical formulae.

(2) The model is constructed in a situation where some facts are known; these facts are critical to the development and use of the model,

and exert a controlling force on it. If the model fails to account adequately for the known facts, it must either be abandoned, or adapted until these facts are incorporated within it.

(3) Three functions can be distinguished:-
it can be used to demonstrate facts or processes or structure
it can explain processes productive of the data
it can be used as a research tool

(4) It can be built or be a mental construct.

(5) The use of analogy is a necessary characteristic. The model works through the principle of isomorphism - the representation in a medium different from the source. In the explanatory case, the model works by analogical transfer - it explains why the phenomena occurs as it does.

(6) A particularly high status is awarded to the explanatory (theoretical) model, as it articulates scientific knowledge which is the aim of scientific research.

(7) Some powerful models become archetypes.

5. CONCLUDING REMARKS

(1) General Observations

(a) It is extremely difficult to classify models into strict groups with which all three commentators would agree. Black's division into analogue and theoretical cannot be sustained by reference to all examples; and Harré's arrangement is based on criteria different from Black's. Watson makes no reference to any division of models at all. It may be of use for present purposes to draw a distinction between the function of models and their consequent use of analogy rather than work out detailed schemes which fail

to account for all cases.

i explanatory models

those accounting for the causes of given patterns in the observation of phenomena; and where statements made about the model are statements about the hypothetical mechanism. The model works by analogical transfer.

ii analogue models

those making intelligible a process or set of observational statements; where statements about the model are analogous to statements made about the source. The model works by argument from the analogy.

In both cases a source and model (a medium different from that source) can be identified; and in both cases, the principle of isomorphism is of paramount importance.

(b) The model is not the only method by which scientific discovery can be undertaken and theories made realizable. It remains as one method amongst many, and its development is strongly tied to the findings emerging from other methods of scientific research. This is not to say that the model is in any sense a 'last-ditch' method: it has value and status in its own right. Black has suggested that more work needs to be done to determine the conditions under which a model is an appropriate tool for research.

Our commentators suggest that the model is of inestimable value heuristically. Theoretical abstractions (like the DNA molecular

structure or the atom) become manageable through the use of the model: processes (like an economic system and variation in species) become intelligible and a medium of debate through a model.

(2) The scientific model in the writings of other commentators

The observations and summary above is based on the work of three sources. It was thought advisable to compare these conclusions with a selection of other writers in the area.

Other commentators agree that to employ a model in the explanatory sense is to explain outside the process of experimentation and deduction. Thus, the model is described by Ferré as a 'speculative instrument'[17]. Harré, however, is at pains to insist that the knowledge generated by a properly validated theory is still uncertain. Validation techniques reduce the likelihood of error, but do not eradicate it altogether. As will be seen, it is this question which is taken up by commentators on the theological issue. Much the same point is made by others, particularly Hesse, in her examination of the logic of analogy.[18]

Another point on which the commentators cited agree is that models in the sense defined above can be described as 'systematically developed metaphors'.[19] Although the terminology varies, all speak of an initial process and a model drawn from a diverse domain through which the process is further explored. Further, they all talk of the exploitation of a model through its relevant parts. By necessity, there are irrelevant (and neutral) features left unexploited. The drive of the discussion is to

talk of model and process relations rather than feature-by-feature identity. Hence, the distinction drawn by all between scale models and others.

It is frequently noted that some models can be described as 'abortive', some 'fruitful'.[20] For example, Barbour[21] cites the development of the wave-theory of light through the model of the wave properties of sound. An attempt was made to identify 'ether' which was assumed to be the medium of propogation. This search had to be abandoned as the evidence did not support the development of this aspect of the model. The important point to observe here is that models can be designated 'abortive' or 'fruitful' by reference to objective criteria: they work, or they do not.[22] The possibility of validating scientific models within the constraints of the fundamental nature of scientific knowledge is noted by other commentators.

Over classification, however, there is much divergence of opinion. For example, Hesse provides no typology at all. This is partly because she focuses on the model embodied in a theory.
Black and Barbour discuss all types of model irrespective of their explanatory (or metaphorical) role. There are two senses in which the qualifier 'metaphorical' can be applied to scientific models:-
where there is an identity between model and source
where there is an analogous relationship between process and model

One commentator, Barbour, has noted two other characteristics of scientific models; and these observations are applied to models

in theology. They are:-

(a) Principle of complementarity

From time to time, models which are mutually incompatible operate in tension to articulate theories.

(b) Cultural paradigm

Scientific models are organically related to a background of philosophic pre-conditions, scientific concensus and cultural factors.

SECTION (C)

A COMPARISON OF THE LITERARY METAPHOR AND THE SCIENTIFIC MODEL

The two issues to be explored in this section were:-

1. the metaphor-like qualities asserted of scientific models
2. the relationships of the model to other traditional techniques and the kind of cognitive response anticipated from models

1. THE METAPHOR-LIKE QUALITIES ASSERTED OF SCIENTIFIC MODELS

Selected sources and other commentators cited agree that the scientific model is a sustained metaphor, and it is meaningful to talk of positive, neutral and negative analogy.

There are two types of analogical treatment to be identified. In the case of the analogue model, statements made about the model are analogous to those made about the source. In the case of the explanatory model, statements made about the model are statements about the causal mechanisms giving rise to the data. An explanatory model begins its career as an analogue model.

In both cases, isomorphic relationships between model and source are of major importance. Point-by-point resemblances are of peripheral significance.

The source of a scientific model are the data: characteristically, patterns in observed events, sometimes mathematical formulae. Essentially, the knowledge generated is provisional and determined by

the data. Models validated by reference to the data are incorporated into a theory. It is possible for two models to operate in tension with the other.

2. THE MODEL AND TRADITIONAL TECHNIQUES: THE KIND OF MEANING GENERATED BY THE MODEL

The model is one way amongst many by which scientific knowledge is arrived at. Other techniques, like the photography and analysis of chemical structures described by Watson are also methods by which scientific knowledge is uncovered. The claim made by our commentators is that the model can be used as a research tool, as a way of making intelligible otherwise inaccessible processes and systems, and in some cases an indispensable means to the articulation of scientific claims. The positivists had asserted that only empirically demonstrable assertions were to be classed as 'knowledge': science is quoted as a notable example of a discipline which produces meaningful knowledge. Our commentators are making a very different claim: both analogue and explanatory models have cognitive worth. The explanatory model in particular aims to add to scientific knowledge. More than one writer asserts that these are held to be the case because they work, rather than because they are empirically demonstrable. The research model used by Crick and Watson was based on empirical facts; but these facts combined with imagination to infer a possible structure for the DNA molecule. Significantly, empirically based techniques demonstrated the accuracy of that inferred structure. The use of the model in science has been one of the ways by which a challenge to the positivist position has been delivered. Knowledge can be discovered by methods other than empirical experiment and the employment of deductive

techniques.

3. COMPARISON BETWEEN MODEL AND METAPHOR

It is now possible to compare the account of the scientific model with account of metaphor outlined earlier (pp. 74-76)A comparison of the accounts produced the following similarities and dis-similarities:-

(1) Identity of a metaphorical expression

In the case of metaphor, it was stated that two contexts were juxtaposed, and that one context was clarified through the other. However, it is possible to be more specific in the scientific case, about the nature of the two contexts. The source of the model is commonly to be found in observed phenomena, and a contributing source are other facts relevant to the problem. Alternatively, the source can be a system or process. These facts exert a controlling interest throughout the development of the model.

(2) How meaning is achieved

In the metaphorical case, meaning is achieved through the interaction of the two contexts, tenor and vehicle. In the case both scientific and metaphor it is possible to identify areas of positive, neutral and negative analogy, though in the latter the preferred term is isomorphic relations.

However, in the case of literary metaphor, it is the originator who is inviting his audience to perceive the intended connotations of the vehicle and apply them to the tenor. Metaphors can be plotted on a cognitive-emotive axis.

In the scientific case, it is the individual scientists(or group) who originates the model and develops the links between it and the source. Procedures followed are those characteristic of the and are developed in conformity with the constraints of the data. Scientific models are cognitive, not emotive, sustained and not brief. It is not appropriate to talk of 'connotations', but of isomorphic relations.

(3) Guides for interpretation

In the literary case, a metaphor is adjudged successful if there is a match between the intentions of the originator and the perceptions of the audience. There is inevitably a degree of subjectivity about how far this match is actualised.

In the scientific case, the model is held to be justified if it incorporates known facts, and is fruitful when applied to fresh situations. In this case, the grounds for subscribing success are objective.

Literary metaphors are of two basic types: epiphor and diaphor. The difference between them is to be found in the nature of the interaction which produces the meaning. In the scientific case, the difference in the nature of the interaction lies in the use made of analogy and affects directly the purpose of the model. The analogue model perhaps resemble the epiphor in so far as argument is made from analogy; but the analogue model is a cognitive device. The explanatory model remains the only way by which the causal patterns determining the phenomena can be represented, and works by analogical transfer. It is difficult

to compare it with any literary metaphor.

(4) Evidence for the creation of fresh meaning

Objective advice for the cognitive value of metaphor can be found in the presence in our language of 'plain' terms, which were once metaphorical. Some parables have inspired debate.

In the scientific case, objective evidence for the cognitive value of the model can be found in its continuing use and further refinement through experimentation. Such use and refinement generates further hypotheses. A successful model becomes incorporated into a theory.

(5) Variables

In both the literary and the scientific cases, there is difficulty in defining with any precision the interaction process itself and the consequent production of meaning.

In the literary case, the greater degree of subjectivity makes the process more elusive than in the scientific case. Variables which affect the hoped-for outcome, i.e. the creation of meaning can be complicated by a variety of factors which are all to some degree relative. Fundamentally, there must be a match between the intentions of the user of metaphor and the perception of these by the audience. Context, appropriateness of the vehicle to arouse the intended connotations, energy-tension generated are all variables which can affect directly the eventual force of the metaphor.

In the scientific case, it is possible to justify in objective

terms the intended outcome even though the interaction process still defies precise analysis. There must be a match between inferences made and known scientific facts. Variables affecting this match are the initial data, selection of appropriate validation procedures, the generation of further fruitful hypotheses, and the incorporation of the model into a theory. Acceptance by the scientific community of the knowledge-claims generated by the model can also affect its structure.

(6) Other characteristics to be noted

(a) Archetypes

In both the literary and the scientific cases, metaphors and models which have achieved status are accorded distinctive labels. A root-metaphor is one which inforporates other metaphors within its scope.

An archetype is a model which has been accepted by the scientific community and is incorporated into a well-established theory.

(b) Complementary principle

Conflicting metaphors are frequently to be found in the literary field. A distinction is to be drawn between a brief allusion and a sustained metaphor.

The phenomenon is met with in the scientific case, though in a more restricted sense. There are rarely more than two conflicting models where they are found, and their occurrence is unusual rather than normal.

(c) Cultural paradigm

Metaphors are clearly to be located in a cultural context.

These contexts can vary in scale enormously. A set of values shared by a small 'in-group' can function as the context for a metaphor; and so can universally recognized values.

As Barbour enunciates the concept, scientific models are also set against a cultural context. In this case, the context is the concensus within the scientific community of acceptable projects and procedures.

Other observations and concluding remarks

From what has been said above, it is possible to state why certain commentators regard scientific models as metaphor-like devices. In brief, two separate contexts can be identified; by the process of interaction a new meaning - an extension of knowledge - is generated. Such meaning can result only if correct links between the model and its source are made.

It may be recalled that the context in which this debate emerged was the on-going discussion about meaning (and meaningfulness). Positivists wished to assert that only empirically demonstrable statements were meaningful. Scientific-like statements were held to be meaningful in this sense, since they stemmed from observational data, and statements were arrived at through the exercise of deductive techniques.

The main plank of the model proponents was to show that in science, significant knowledge is achieved by the use of induction. As models behaved like metaphors, the status of metaphor as a medium of debate was revived.

In this context, one other point of similarity may be noted: the use of imagination is common to both the originator of the scientific and literary metaphor. Both Crick and Watson recognise the part played by this 'inductive leap' in their own researches, and the enterprise is essentially subjective, even though its development is controlled by objective criteria. The flash of insight occurs both to the scientist and to the artist.

The authorities cited state that in significant ways the scientific model is like metaphor. The implication is that metaphors can be held to be meaningful, or at least there is an area of meaningfulness common to both scientific and literary metaphor. The implication is that both scientific models and some metaphors are meaningful. By this term is meant that both can have a cognitive dimension. The positivists would have ruled metaphors meaningless by strict application of the Verification and Falsification Principles. The 'meaningfulness' attaching to metaphor must necessarily be of a kind different from that characteristic of scientific statements. The claim is now made by some scientists that the use of the model in science has shown that metaphors and models share common areas of meaningfulness. Metaphors with an express cognitive intention (and successful outcome) are the models of literary discourse.

The question now to be asked is whether the differences between scientific and literary metaphors are so wide as to render the equation of model-metaphor spurious.

The phrase most commonly used to describe a literary metaphor is

'apt/ill-judged'; that to describe a scientific model 'fruitful/abortive'. Both sets of these polar adjectives relate to outcomes. In the scientific case the explanatory model is held to be fruitful if it satisfies appropriate validation criteria and can be used as a predictor. The knowledge thus generated is properly speaking uncertain, and thereby to be distinguished from knowledge conforming to deductive processes. A theory is provisional until observed phenomena challenge it, but the facts are that scientific knowledge arrived at by these processes is increasing, and it works. (Further, the process by which a model becomes incorporated into a theory can be traced, and the reasons for its inclusion can be stated).

Words like 'apt/ill-judged', 'effective/useless' do not relate to specific and tested outcomes. Evidence of the success of a metaphor can be found in their incorporation into descriptive, plain language. Language from one point of view can be described as a 'collection of dead metaphors'. But the processes by which metaphors have made the status of plain speech cannot be traced with accuracy except in a minority of cases. However, the ones that have survived are evidence that a metaphor can be cognitive in its impact.

Further, the aims of metaphor-use are much more diverse than in the case of scientific models. Another way of testing the potential cognitive power of metaphor would be to cite examples of their use in intellectual debate. The evidence, though scanty, does suggest that parable and metaphor do provoke debate - e.g. the parable of the Invisible Gardener and the persecuted don. Furthermore, discussion goes forward without any 're-translation' of the parable. Likewise,

parable-novels have generated much fruitful discussion. There is a limited series of cases in which the cognitive dimension of literary metaphor can be put to the test. Metaphors are not necessarily intended to provoke a cognitive response; their appeal can be purely emotional. Further, it should be evident that the knowledge generated will develop these and related questions with special reference to the religious case. It is almost a truism to say that all religious traditions make extensive use of metaphor. One issue to be considered is whether or not religious metaphors can be construed as models, and how they relate to the scientific model. The issue is particularly important to scholars in religion as some religious metaphors claim to make intelligible concepts otherwise unrealizable. It is possible that the analogue and explanatory models have their counterparts in religious discourse. If parallels can be found, 'meaningfulness' is science and religion can share common characteristics. In this context, the concept of archetypes and root-metaphors will be found helpful. For example, there are many books like 'Pilgrims Progress', 'Animal Farm' and 'Lord of the Flies' which are woven round a central metaphor. It would certainly be possible in these cases to construct from each book a hierarchy based on the dominant metaphor with an arrangement of sub-categories in them. It may be possible to extend this principle to the structure of religious metaphor in general. Basic metaphysical archetypes might possibly be identified, with a pyramid-like arrangement of subsidiary metaphors dependent on them.

As religous educators necessarily make use of metaphor in the presentation of their material, the consequences of the discussion will be relevant to them, and implications of these findings will be indicated.

PART C

THEOLOGICAL AND RELIGIOUS MODELS

General Introduction

In the previous section, it was shown that the scientific model was akin to metaphor in certain essential respects. The characteristics asserted to be common to both were:-

the identity of two contexts
the relevance to both of a logic of analogy
the generation of meaning through the interaction of the two contexts

One important assertion made was that scientific knowledge itself was sometimes obtained through inductive processes.

In this section, the concept of the religious metaphor/model will be explored. Three authorities have been selected for comment, namely, Barbour, MacIntyre and Ramsey.

Of these, Barbour and Ramsey are both scientists and philosophers of religion; MacIntyre is a theologian. Both Barbour and Ramsey make special reference to Black's analysis. It will be shown, however, that their resulting theologies are widely disparate. MacIntyre is of value as he analyses the religious model in its own right.

The Part will take the following shape:-

Introductory

An account of 'religion' as qualifier to 'model'. The account referred to is:-

Martin, J. What do we do when we study religion?

SECTION (A): THE RELIGIOUS MODEL IN THE THREE SELECTED SOURCES

Brief accounts of the religious model as presented by:-

1. Barbour
2. MacIntyre
3. Ramsey

SECTION (B): THE MODEL IN RELIGION AND THEOLOGY

1. Characteristics of the religious model as agreed by the three commentators.
2. Comparison of conclusions with opening working definition.
3. Analysis of the chief differences between the three accounts of the religious model. It will be asserted that where the accounts are at variance with one another, such variance is due to differing theologies. A major line of division can be found between Ramsey on the one hand, and MacIntyre and Barbour on the other. Specialreference will be made to the account of the scientific model in Ramsey and Barbour to substantiate the view that a given theological viewpoint has consequences for the proposed model-structure. It will be observed that discussion by the three scholars is restricted to models in Christianity; for this reason, the term 'theological model' will be adopted.

4. Comparison of the theological model with the account of the literary/ scientific model defined in Part B.

SECTION (C): THE THEOLOGICAL MODEL AND THEMES IN RELIGIOUS EDUCATION

1. Comparison of the theological and model structure with the definition of themes in Part A.

2. Comparison of types of theme with the theologies described in Section (A).

   It will be asserted that:-
   the experience-theme is best accommodated by the Ramsey model structure
   the Christian/symbol theme is best accommodated by the model-structure of MacIntyre and Barbour.

3. The model-theme and developmental religious education.
   A proposed thwological model-structure will be presented incorporating insights from developmental psychology as identified in Part A, Section C.

Conclusions.

INTRODUCTION: AN ACCOUNT OF 'RELIGION'

The very use of the term 'religious model' presupposes that in certain respects such models differ from scientific models, historical models and so on. It is therefore worthwhile to begin this section with a proposed account of 'religion'. Any such account must be considered as provisional. After the discussion in sub-section 3 the account will be matched against those conclusions.

(1) A proposed working definition

J. Martin in his article 'What do we do when we study religion?'[1] offers a useful 'base-line' approach. He is cognizant of the difficulties inherent in proposing any definition, and attempts to provide an account which will be wide-ranging but not so vacuous as to be meaningless.

For him, to study religion is to study
'man's response to what is Ultimate in the human experience of existing in so far as the response is a conscious cultivation of one's form of conscious being' (p. 467).

Martin elaborates this statement in following way:-
Religion is:-

(a) located in human responses

Religious people are responding to the impact of someone (or something) which goes beyond life as ordinarily perceived.

Martin chooses the term 'Ultimate' to express this pervasive influence outside the world as empirically ordered. The 'Ultimate' ranges in scope from the final values held by an individual through a sense of an Unseen Power to a belief in a personal God. It is from this prior response that other religious expression emerges. Martin is, therefore, providing an account of religion as presently observed: he is not describing the process by which religion comes to be present.

(b) part of the human experience of existing

Martin leaves open whether or not response can take place at the sub-conscious level. What he is sure about is that the expression of religion is filtered through a conscious awareness of the Ultimate. Such expression is essentially active: the religious imagination produces appropriate symbols; the intellect produces appropriate Creeds, doctrinal statements and rationally ordered accounts of what is to be believed.

(c) concerned with the form of man's conscious being

Certain codes of behaviour are intentionally adopted. These codes can be specific actions or general principles which are applied in individual situations.

(2) Religious models

This account would imply that religious models should display the

following characteristics:-

(a) the two contexts

One context will be the 'Ultimate' however conceived; the vehicle will be the symbols and actions, intellectual formulations of the nature of this 'Ultimate'.

(b) logic of analogy

As religion is a responsive activity, the models will express a sense of the Ultimate. There must be some way in which this sense and the model interact. Symbols are derived from a response already made.

The functions of models will vary. Some will be cognitive, and will be most naturally found in formularies of belief. Some will be prescriptive, and will seek to influence behaviour in a certain direction. These will be found in codes of behaviour. Some will be evocative, and will seek to awaken or stimulate a sense of the Ultimate.

Models will range along the emotive-cognitive axis.

(c) generation of meaning

As some models are cognitive in intention, there must be some kind of meaning generated. Statements of belief will be the prime candidates for a consideration of the meaningfulness of religious models.

SECTION (A)

THE RELIGIOUS MODEL IN THE THREE SELECTED SOURCES

Barbour and Ramsey discuss the religious model in the context of the scientific model. MacIntyre writes from the point of view of a professional theologian. All make reference to Black.

Documents to be referred to are listed below:-

1.	BARBOUR, I.	Issues in Science and Religion	1966
		Myths, models and paradigms	1974
2.	MacINTYRE, J.	The shape of christology	1966
3.	RAMSEY, I.	Religious Language	1967
		Freedom and Immortality	1960
		Models and Mystery	1964
		Christian Discourse	1965
		Biology and personality	1965
		Paradox in religious language	1969
		Models for divine activity	1973

1. FIRST SOURCE

BARBOUR, I.	Issues in Science and religion	1966
	Myths, models and paradigms	1974

Barbour links his analysis of the theological model with his

discussion of the scientific model presented in Part B, Section (B)4, pp.100-105 . He finds parallels between the two types; and he also finds a theological counterpart to his concept of a scientific paradigm and principle of complementarity.

In the account given of Barbour's view, the term 'theological model' has been chosen in preference to 'religious model'. It is the Christian tradition which dominates Barbour's discussion, and it is from this tradition that most of his examples are taken. The issue of other religions is raised, chiefly in the context of deciding between paradigms; but no analysis of the explanatory model in relation to other faiths is undertaken. In addition, he quotes with approval the phenomenological approach which he considers of value in the study of other cultures, but this is not developed in relation to his account of the theological model.

Barbour takes as his starting-point a view of religion as an interpretation of life (1974, pp. 119-126, 1966, pp. 208-216). Religious models articulate this interpretation. Within the Bible, for example, the history of the Hebrews was interpreted as a pattern reflecting God's activity in history, the events as marks of God's Covenant with the Jews. The term 'Covenant' stands as a model interpretative of historical events conforming to that pattern (1974, pp. 56, 147-148, 229-230, cf. 1966, pp. 194-202, 215).

(1) Model structure

As interpretation is both a rational and emotional response, models are seen as both cognitive and non-cognitive (1974, pp.

50-51). The various models articulating 'God' are cognitive; for example, the clock-maker, King, Judge models aim to make statements about God (1974, p. 56). Non-cognitive models evoke a sense of wonder as part of the total interpretation pattern, or elicit a sense of commitment. Thus, a strong sense of the numinous is to be found in Isaiah's account of his vision in the Temple. The models of God on his throne and the flying seraphim are the vehicles modelling the sense of divine majesty (1974, p. 79)

'Pilgrim's Progress', on the otherhand, inspires to a certain style of behaviour; it re-inforces commitment (1974, pp. 58-59). To Barbour, expression of faith in action is an outstanding hallmark of the model, at least in Christianity (1974, pp. 54, 135-137, cf. 1966, pp. 243-248). He is most anxious to point out that even non-cognitive models emerge from cognitively based beliefs: by his use of the term 'non-cognitive' he means the function of that model at that particular point in time.

On this basis, he has delineated four kinds of religious model (1974, pp. 51-67):-

(a) those interpreting experience
(b) those expressing attitudes
(c) those evoking insight (a notion derived, though not uncritically, from Ramsey)
(d) metaphysical models (those co-ordinating various areas of experience)

(2) Metaphysical models

It is the metaphysical models that pose the most severe problems, dealing as they do with structures of reality. They have two main characteristics:-

(a) they are the most wide-ranging of the models

For example, Barbour espouses with enthusiasm the cause of 'Process' theology as a basis for the construction of metaphysical models (1974, pp. 138, 161-170). As explained by Barbour, God is shown through this model as involved in temporal process and as actively requiring the co-operation of mankind in the fulfilment of his will. Such a model makes a statement about the meaning of history in general and the role of mankind in the world; it is a 'co-ordinating analogy ....which can order a diversity of kinds of experience' (p. 64).

Non-metaphysical models are, by definition, subsidiary to the selected metaphysical model. Thus, the Covenant model referred to above has authenticity only within the broader context of this 'Process' model.

(b) they control the selection of other models

If a model is wide-ranging, it follows that potential models which operate in logical and substantive defiance of the

metaphysical model, must be ruled 'out of order'. The mechanistic 'clock-maker' model of God is inconsistent with the Process metaphysics (1974, pp. 166-167), so are monarchical 'authoritarian' images which allow no scope for human initiative (1974, pp. 156-157, 165-166). By contrast, man as agent of his action is a useful and logically coherent model for God (pp. 158-161).

(3) The religious paradigm

The main problem underlying this entire scheme is readily recognized by Barbour. On what basis is one metaphysical model accepted, and a competing one rejected?

For example, the 'Process' model is at conflict with the model of God as impassible and immutable descriptions which are to be found in the classical Greek tradition. Both these metaphysics can be justified in terms of biblical evidence and historically important pronouncements (1974, pp. 153-155). For Barbour, his religious 'paradigm' and principle of complementarity come to his rescue. Although he discusses the paradigms of other religions (1974, pp. 143-144), it is the Christian one to which he devotes particular attention (1974, pp. 147-170). The religious paradigm is 'a tradition transmitted by the memory of its historical exemplars' (p. 151): belief-systems based on the ordering of religious experience. A paradigm is essentially an interpretative stratagem; it incorporates both the sense of the numinous, patterns in the world and particular historical events as interpreted (1974, p. 125). For Barbour, the evidence is critical

as an expression of community interpretation. The undergirding experience reported in the Bible he sees as 're-orientation' and 'reconciliation'. This is spelled out as 'self-acceptance, liberation from bondage to self-concern, and internal integration instead of conflict' (1974, p. 150, cf. 1966, pp. 211-213).

Events and encounters which are reconciliatory and revelatory: through them is God's will revealed. As specific examples of such phenomena, he selects the Exodus sequence (1966, pp. 214-215) and the ministry of Christ. It is, however, the ministry of Christ which is the paramount example of reconciling activity (1974, pp. 150-151).

(4) The religious principle of complementarity

Barbour is also anxious to maintain the view that religious models can be complementary the one to the other (1974, pp. 71-91). Thus, personal and impersonal models of God can be held to operate in counterpoise the one group with the other: Hosea can talk of the impersonal canons of judgement administered through love (p. 85). Other complementary models he instances are the humanity/divinity, and the Logos/Word models of Christ (p. 86).

Summary: Criteria for evaluation of theological models

Based on the discussion above, these may be delineated as follows:

a correlation of biblical evidence

setting of these events in the widest possible context

illumination of areas of religious thought and action, sometimes new ones

production of fresh commitment

(5) The religious and scientific model

(a) Comparison of the two kinds

The bases on which Barbour analyses theological models as akin to scientific models are listed below. The criteria are important for he wishes to sustain the position that theological models can be congitive (1974, pp. 49-51, 1966, pp. 217-218):

(i) they require a logic of analogy to be properly analysed i.e. it is possible to talk of positive and negative analogy in both cases

(ii) they extend knowledge by eliciting rules of correspondence between the model and its source

(iii) they enable abstract formulae to be grasped as unitary wholes

The fact that religious models and scientific models vary significantly according to their respective cognitive and non-cognitive elements and according to their subjective and objective elements does not tell against this claim.

(b) The explanatory model

The different types of theological model are related to the explanatory model in very different ways. Presumably, it is the metaphysical models which are nearest to the explanatory models in so far as they seek to explain patterns in phenomena which are otherwise inaccessible: they constitute a metaphysical fiction. Barbour is quick to point out that the acceptance of a scientific paradigm implies itself a metaphysical viewpoint (1966, pp. 171-174). He also states that coherence and elegance are defining characteristics of both theological and scientific models (1974, pp. 115-116, 139-142). The metaphysical model shares characteristics with both the complementary model and the root-metaphor (1966, p. 263).

Other models like God as king are derived from these basic metaphysical models. Cardinal to the formulation of Christian models is the figure of Christ himself. On the assumption that the biblical record can be accepted, there is objective evidence for the existence of Christ, and this evidence is of a different order from the events in the universe from which metaphysical models are derived. There is a recognition in Barbour's writing that different kinds of model are based on different kinds of sources, and that their function accordingly will differ.

(c) The falsification principle

Because of his interest in the scientific model, Barbour considers some of this issues discussed by the logical positivists. One of these that has implications for the religious model is the falsification principle (1974, pp. 92-106, 1966, pp. 239-243, 249-252).

He claims that the falsification principle cannot be operated in science as stringently as some of its proponents would like to maintain. For example, discordant data is sometimes discovered, but the theory nonetheless stands, and later research has demonstrated the correctness of this accommodation. Further, a theory is usually abandoned only when an alternative is proposed, whether or not all the available evidence is conclusive (1974, pp. 100-102).

Positive evidence telling against the strict application of falsifiability principle is also afforded: simplicity and coherence are qualities that have sometimes convinced a scientist of the correctness of his theory. Further, as has already been seen, Barbour considers the cultural paradigm as one of the most powerful controls in the formulation of theories. For him a scientific revolution can be described as paradigm-shift.

His total view is to say that the falsification issue is not as significant for religionists as the positivists like to make out. Due weight must be given to evidence which counts

against religious claims, but discordant data does not necessarily mean abandonment of the proposition; it means a re-formulation of promising alternatives. Hence, for Barbour the Christian paradigm is of paramount importance in determining the proveneness of religious propositions (1974, pp. 147-155).

(6) The religious model and literary metaphor

Barbour also relates theological models to the literary metaphor. Just as different figures of speech like simile and paradox can be identified, so different kinds of theological metaphor can be described. Chief amongst these are symbol, myth and parable (1974, pp. 12-28).

Summary

For Barbour, religion is an interpretation of life. Certain types of model can be identified.

Metaphysical models make claims about the fundamental structure of the world. Other types of model are subsidiary to these and must be coherent with them. These are:-

experience models
attitude models
insight models

A special group which is to be found in all types is the Christological model.

Data which control the selection of models is to be found chiefly in biblical evidence. Reconciliation is the main interpretative theme to be identified. Other data are relevance to the life of faith, illumination of theological areas of thought and action, breadth of context.

Theological models can range from emotive to cognitive. Some models, notably the metaphysical type, resemble scientific models, and consequently are dependent on a logic of analogy for their operation. A theological paradigm and principle of complementarity can also be identified.

The principle of falsifiability is not seen as posing any real threat to the theological model.

2. SECOND SOURCE

MacINTYRE, J. The shape of Christology 1966

MacIntyre is a theologian with no professional scientific training at all, although he is aware of the intense debate over models that has gone on in scientific circles (pp. 62-63, cf. pp. 35-37). He states that he wrote this book after reading Ramsey's work[3], and this represents his reflection on that volume (pp. 58-59). He makes reference to Black (p. 53), but only through his reading of Ramsey. This book is of value as consideration is given to the theological model in its own right. The term 'theological' is applied to MacIntyre's analysis. Throughout his book, his concern lies with the model in Christian theology. The shape of his volume is dictated by his perception of the structure of any discipline. This, he states, is

dictated by three variables:-

(1) the given on which the discipline operates

(2) the selection of models employed in the organisation and interpretation of the given

(3) the methodology of the operation of models (p. 11)

In the rest of his book, he amplifies these three variables, by reference to two historical examples derived from Christology:-

the two-nature model of Christ as defined at the Council of Chalcedon in 450 (pp. 83-113)

the revelation model (pp. 145-171)

(1) The 'givens' and models

MacIntyre regards this issue in Christian thought as highly problematical, as there is no concensus on what is 'given' (pp. 11-28). His recognition of the complexity of the givens leads him to assert that the givens vary accordingly to the model under discussion, and to the type of model (p. 18). He rates them on a first- second- and third- order basis according to their propositional content. Reference to his account of the two-natures model and the revelation model will make his point clearer.

The two-nature model as defined at Chalcedon in 450 has been regulative in Christological thought ever since that time. The

formula was devised to provide an intellectually satisfying account of the divinity and humanity of Christ within one person. According to MacIntyre, the two-natures model has two fundamental sources of 'givens': one is Christ as presented in the Gospels (pp. 83-85), the other the nature of man as described by Aristotle (pp. 86-89). In this case, there has to be an accommodation between the interpreted evidence of the Scriptures, and the thought-forms of the environment (pp. 83, 86). It is a model of propositional significance: it asserts what is the case.

The revelation model is of a different order completely. It is a formal model and therefore content-empty. Content is derived from other models (pp. 166-167). Its structure is (pp. 147-148):-

A(x) reveals B(A) to C.

where A = the ordinary human life of Jesus

x = the reality known only to faith

B = God

(A) = totality of God's revelation

C = holy spirit (as the agent directing the believer to Christ)

Pre-supposed by the formula is the statement:-

God exists and reveals himself to man

MacIntyre goes to great lengths to demonstrate the unsatisfactory nature of this model if it is regarded as a set of content-filled propositions in its own right. He comes to the conclusion that the model finds its real use in a kerygmatic situation where faith

is pre-supposed (pp. 170-171) and whence it is possible to derive content. On the strength of this analysis, MacIntyre rates the revelation model as a second- or third- order model (p. 168).

MacIntyre's exploration leads him to make other assertions about theological models. First, once models have gained acceptance, they become compulsive in discourse (pp. 70-73). Thus, the Chalcedonian definition still has doctrinal force, even though twentieth century thought-forms are radically different from those of the fourth century (pp. 72-78).

Second, certain insights in the contemporary environment are matched for authenticity against the model, particularly if it is a control model, rather than a sense of what is theologically fitting. MacIntyre claims that the Aristotelian notion of substance (on which Chalcedon is based) is no longer tenable (pp. 103-108) and that much contemporary thinking is directed towards the humanity of Christ. Psychological theory is potentially invaluable in interpreting the person of Christ: at the same time, it does no violence to Christ as an object of faith. As long as the Chalcedonian definition is interpreted itself as a psychological model, it is not possible for a modern psychological model to be asserted (pp. 106-108, 141-143).

(2) The selection of models

Because MacIntyre is so convinced of the importance of models in Christian discourse and of the need to devise fresh, but authentic, ones, he specifies criteria for their use in Christology

(pp. 48-81). Those which maximise these criteria are those which should be given precedence in any discussion.

(a) those which are isomorphic with a wide range of central biblical material on the one hand, and with the life of the Church on the other. As an example, he cites the covenant model which brings together central traditions in both the Hebrew and Christian Scriptures. Its focus is to be found in the life of Christ; but it tracks back in history to the Exodus, forward through the prophets and finds contemporary expression in the proclamation of the Gospel through the Church (pp. 79-80).

(b) those which penetrate to the very centre of the Gospel. Such a one is 'Logos' (the 'Word' which links in a most subtle way the nature of God, the life of Christ and preaching within the Church. By comparison, a superficial model like 'Rabbi' reflects only an element in the life of Christ - namely, his teaching activity. Its scope is limited (p. 80).

(c) those which have a perceived immediate relevance to life and action. A notable example cited here is the biblical model, the 'eschaton': Christians believed that they were living in the last times and their actions were tinged with an urgency rarely felt amongst contemporary Christians (cf. Son of Man model). A biblical model with a modern slant is 'stewardship'; it has direct relevance to Christians' abilities and finance. It also leads Christians to think carefully about the dissemination of the Gospel, and

therefore, what the Gospel is (pp. 80-81).

(d) those which enrich faith and lead to further commitment. No examples are cited under this head (p. 81).

(3) Methodology of models

MacIntyre subscribes to the view that a soundly-articulated logic of analogy is required to lend structure to the working of theological models (pp. 65-67). He accepts their operation as a balance between the positive and negative aspects of two entities. Two types of operation are identified. In the first case, the area of positive analogy predominates over the negative, so that the model can stand independently. For example, the model of Christ as victor over evil powers is a self-contained model (pp. 65-66).

In the second case, the negative frequently predominates over the positive, so that models are employed in groups. It is their collective impact which is meaningful. A hymn here is cited as exemplar: Jesus is addressed by the models Shepherd, Husband, Friend, prophet, priest, king (pp. 66-67).

The point of fundamental significance is that there is no 'non-analogical' statement available of the positive analogy, or their collective force. The meaning lies in the metaphor(s) themselves. To employ models in this manner is to employ them in a descriptive manner. 'In the end of the day, our models are controlled and indeed authenticated by the reality, Christ, whom we have come to know about through them' (p. 68). One such controlling factor is

the Bible.

MacIntyre moves on to make a rather difficult distinction between models which operate in a negative-positive predication manner and those to which such analysis is inappropriate. Models like 'life' and 'truth' are non-analogical and fully descriptive terms, applicable to Christ. As such, they resemble logically in character such ascriptions as 'Being-itself'; likewise a non-analogical term (p. 69).

In his final chapter (pp. 172-176), MacIntyre produces his own summary of his main conclusions. First, his historical survey has shown that there is no one 'given' reflected in all significant models. Thus, despite the very early authority accorded to the Scriptures, many biblical models failed to stand the test of time; Son of Man, Logos, did not develop into accepted Christological models (p. 172). Environment, language, historical event can each be identified as a potential source for a model. Second, he asserts that model-usage in the past has suffered from an inadequate grasp of the kind of model considered. It is too easy to transfer the methodology of one model to another of a different logical type. The destruction of the pyschological model through the application to it of the logic of Chalcedon is a case in point (p. 173).

MacIntyre concludes his account with a few reflections on the potential use of models in contemporary Christianity. It is sometimes difficult to disentangle MacIntyre's description of the fate of models as revealed by historical research, and his

opinion as to what should have happened or what ought to happen with the benefit of hindsight. He asserts, for example, that imagination is crucial to the choice of an effective model, but that the imagination must be controlled by the requirements of faith. The faith criterion is not related to his discussion noted earlier of the actual criteria that have operated historically. From that discussion, it is possible to infer that other factors which should operate are the Bible (as interpreted by the concensus of biblical scholars) and the environment itself. Other traditions which inevitably influence model-selection are for him the various Protestant declarations of faith (pp. 20-21).

Despite this confusion, a strong plea is made for the value of the original model, and for the generation of an awareness of the differing logics of these available. Although some of MacIntyre's points are difficult to follow, this book has not perhaps received the attention it deserves. It pinpoints many of the problems attending the use of religious models; and the insights gained from the careful analysis of historical exemplars are most valuable for the more strictly philosophical approach adopted by the majority of writers on this subject.

Summary

MacIntyre's analysis is related only to the Christian tradition. God declares himself through revelatory events and experiences. For events to be perceived in this way, faith is a pre-condition. These events and experiences are the source-material from which appropriate metaphors are derived, and through which a sense of God is articulated.

A logic of analogy is necessary to the understanding of models. Types of model can be identified. In the case of the wide-ranging model, the selection of the appropriate elements of positive analogy are significant to its meaning.

In the case of the descriptive models, negatively analogous elements predominate; they become meaningful at the point of their joint intersection.

Models are of cognitive worth. Propositional statements are generated by them; codes of conduct emerge from these statements and are expressed in individual and corporate lives.

Models are arranged into first-order and second-order categories. MacIntyre designates the data by which models are to be ruled authentic or false as the Bible, particularly the Gospels, and immediacy of relevance to the life of faith. He has noted that models are very difficult to dislodge, once they have become established.

3. THIRD SOURCE

RAMSEY, I.	Religious Language	1967
	Freedom and Immortality	1960
	Models and Mystery	1964
	(1) Christian Discourse	1965
	(2) Biology and personality	1965
	Paradox in religion	1969
	Models for divine activity	1973[4]

Ramsey was trained as a scientist and later became a theologian at Oxford. In the 50s he became Bishop of Durham. Ramsey's work has survived in articles and books written over a period of some thirty years, and for very diverse purposes. Reference will therefore be made to a selection of his publications. Ramsey was working on a book on theological models when he died suddenly. This volume has now been published posthumously under the title 'Models for divine activity'. Although basically a collection of papers, it gives an indication in broad terms of the direction his thought was taking. Like other commentators in the area, Ramsey is concerned to challenge the empiricist tradition (1973, pp. 1-2). He has also followed keenly the debate on scientific models. As such, he knows the work of Black and quotes him with approval (1964, pp. 48-60, see further sub-section (3) pp. 151 - 152).

The positivist tradition rules out any kind of religious talk, Christian or otherwise, as meaningful. At first sight, it would appear that Ramsey is concerned with this wide-ranging implication as the terms 'religion' and 'cognates' appear frequently in his writings. However, closer examination demonstrates that it is to Christianity - with an occasional deferential nod in the direction of biblical Judaism - that these terms refer. Hence, the term 'theological' will be applied as qualifier to 'model'.

In his argument, Ramsey treats seriously the empirical basis of Christian experience and belief, what constitutes the verefiability of Christian claims.[5] Accordingly, there is a need to define Christian 'objectivity'. With the concomitant empirical interest in language, the linguistic forms through which Christian objectivity is expressed

also require investigation. Ramsey's case is developed therefore along two main lines:-

(1) what constitutes Christian objectivity

(2) the structure of Christian language

Ramsey's theory of the model is germane to both sides of his argument.

(1) Christian objectivity and models

For Ramsey, objectivity is to be found in what he calls 'disclosure' situations; and these situations are produced through models. Disclosure situations include within themselves discernment and commitment (1962, p. 49). They are produced through the 'observables' of life: events, as perceived, words, external behaviour patterns. These constitute the 'models' (1967, p. 1, 9). Objectivity is to be found in these observables; in the disclosure situation another object is disclosed which transcends the objectivity of the observables producing the disclosure. Set over against this two-pronged objectivity is the subjectivity of the person receiving the disclosure ((2), 1965, pp. 180-185).

Ramsey trusts to make all clear by the use of analogies, one or two stock ones will now be referred to. The disclosure concept will be considered first. It is possible for a disclosure to occur within a 'non-religious' situation. We are asked to imagine a man drawing a polygon with an ever-increasing number of sides, in such a way that their vertices are equi-distant from a fixed point. At some stage in the man's work something we will label 'X' will 'break-in' on him - or would be 'disclosed'. Later, the draughtsman discovers that 'X' is otherwise known as a 'circle'.

But the concept of a circle, as distinct from the label commonly given it, is part of a disclosure situation. Ramsey claims that the whole world is the focus of such a disclosure (e.g. 1973, pp. 64-65, 1967, p. 37).

A religious disclosure is distinguished by its revealing of mystery - to Ramsey, the central theological concept (1964, p. 1, cf. pp. 61-68). Commitment, as part of the disclosure situation, is a total commitment to God as the ultimate explanation. Discernment, the other component of the disclosure situation, is the disclosure to the person of his own true self (1973, p. 1, (1), 1965, pp. 60, 61).

Models are the means by which the disclosure situation is evoked. As such, a model is any event or word which in the final analysis is productive of a disclosure. Ramsey has described the process by which the model operates. Attached to each model is a qualifier which will evoke the disclosure. Thus, a model might be 'goodness'. Examples might occur of progressively 'good' people; beginning with the scarcely good, through the reasonably good (like David, King of Israel) to the intensely good (like Francis of Assissi). Finally, the point is arrived at whereby 'infinite' goodness is disclosed. 'Goodness' is the model, 'infinite' the qualifier which has guided mental activity until the disclosure situation is evoked, a situation which is different from all other situations (1967, pp. 64-65, 75-78). In so far as models evoke insight, so they also articulate mystery, and as such are to be found in Christian worship (1964, pp. 21, 45, 67).

Ramsey has also described types of models, based on Black's analysis. So-called disclosure models are akin to analogue models. His method of distinguishing between them is not always easy to follow. Picturing models are those that 'picture' what God is like, Rock, King, Judge, Tower (1964, pp. 4, 7). The disclosure is isomorphic with the situation it described: for example, God as 'loving father' (1964, pp. 9-10). More particularly, disclosure models evoke insight, though Ramsey's analysis is not altogether clear.

If all observables are potential models, some explanation is required to sccount for the situation in which some models are more popular than others in initiating and articulating mystery. Ramsey introduces here the notion of 'empirical fit'. A model is appropriate if it chimes in with the phenomena (1964, p. 17). The most potent disclosure-evoking situations are those emanating from 'comprehensive....coherent maps of the Universe' ((1), 1965, p. 82).

In his latest book, Ramsey was suggesting a hierarchy of models. The dominant one he considered was 'Activity' as demonstrating the most wide-ranging 'fit' with empirically observed data (1973, pp. 58-61). Other groups mentioned in this context are models based on the life of Christ (1973, pp. 2-4), impersonal and personal models ((1), 1965, p. 86). His picturing models are represented as occurring at the base of a pyramidal structure.

(2) The structure of language

Ramsey believes that models and their qualifiers are essential to disclosure and articulation of the Christian mystery, but their function and operation must be seen in the context of the logic and grammar of Christian discourse as a whole. The sketch he provides of this structure derives from his interest in the empiricist challenge to religious belief. One of the consequences of the empiricists' claims was to produce a renewed interest in the functioning of language - e.g. the classifying and identifying of statement-types. A related concept which has been developed in many thinkers is that of the language-game - the identifying of logical structures appropriate to any given discipline.

The basis of Ramsey's account is that religious language is logically odd in structure (1969, p. 144, 1967, pp. 53, 66, (2) 1965, p. 82, 1960, p. 65). Such a circumstance comes about because a truly religious situation - a disclosure event - contains both the facts and features of the observed world and the transcendence of God which is something over and above these facts and features. To Ramsey, in a disclosure situation God's objectivity is correlated with man's subjectivity. It has a self-authenticating character about it, and objectivity in this sense is to be distinguished from objectivity as commonly understood (1973, p. 61).

Appropriately qualified models serve the function of bringing together the two kinds of objectivity isolable in the disclosure situation. Models are content-full words which articulate

fundamental contentempty words (1967, p. 42, 1960, pp. 91-97). These Ramsey denotes as key-words. The most notable example is 'God' which operates like a 'Quinean theoretical term' (1967, pp. 53, 66): it is a 'cosmic individuation'. Keeping in mind what has already been said about the proposed hierarchical structure within models, we arrive at an arrangement like:-

key-word
dominant model
model qualifier (disclosure/restricted models)
model (picturing model)
piece of observation

Ramsey has also paid attention to the business of logical sorting between models. Some models are dominant, some restricted. Further, in any significant durable model, it is necessary to locate the mnemonic rule which determines its logic. He works out in some detail the models and mnemonics for the Father, Son, Spirit models of the Trinity. Ramsey regards the context as crucial in determining the logic of any given model. A word like 'Spirit' can, for example, be constructed as a dominant model, a restricted model, or a mnemonic according to the context (1973, p. 45).

In his consideration of the model as metaphor, Ramsey has been influenced by the discussions on the scientific model. He follows Black substantially in his analysis (1964, pp. 48-60) and describes models as 'metaphorical inroads' into God's transcendence. However, because of his views of the self-authenticating nature of the disclosure event, he parts

company with Black over the actual technique by which a metaphor works. Instead of noting the screening effect of the implied associations gathered round the subsidiary subject, he states that metaphors are born in the insight which is a defining characteristic of the disclosure situation (1964, p. 50). It is because of this view that Ramsey develops his theme of religious talk as 'unavoidably paradoxical'.[6]

(3) Models in science and theology

In this section, the word 'model' in application to Ramsey's thought, will be the 'disclosure' model, not the picturing type which he also allows. Correspondingly, the scientific model with which the disclosure model is compared is the analogue model of Black's analysis. Hence, when the phrase 'disclosure model' is used, it will be the Ramsean account that is in mind; when the phrase 'analogue model' is used, it will be the model in scientific usage as defined by Black.

Ramsey bases his account of the use of analogue models on a paper by Leo Apostel, read at Utrecht in 1960 (1964, pp. 11-14). As might be predicted, the work of both scientist and theologian is seen in the disclosure context: 'The ontological commitment arises in a disclosure, and the model, whether in science or theology, provides us with its own understanding of, and its own inroad into, what the disclosure discloses' (p. 20). Apostel's general conclusions are related to the disclosure pattern in Ramsey's account which follows. The disclosure pattern, common to both

types of model, the theological and the scientific, is the lynch-pin of Ramsey's comparison. Reference has been made previously to the concept of mystery believed to undergird all academic enterprise; and it is these two notions, disclosure and mystery, which will be kept to the fore in any consideration of Ramsey's work.

(a) The main uses of the scientific model

These are isolated by Ramsey as:-

(i) they provide a means of handling phenomena that have not, as yet, been appropriately validated. This is particularly the case with mathematical treatments, which become permissible and useful with an effective model.

Thus; light was treated through the 'model' of linear propogation; the theory was developed to cover reflection and refraction.

(ii) they may simplify complex phenomena by allowing fundamental properties applicable to the phenomena to be isolated, by this means reducing interference from immediately irrelevant or minor considerations.

Thus; the complex matter of heat conduction was studied through the simplifying model of harmonic oscillators.

(iii) they become representative for phenomena that cannot be treated in normal scientific ways.

For example; an object may be too small or too dangerous to be experimented on directly. The model stands in as proxy in such cases.

In each of the uses specified above, the model displays some sort of structural similarity, isomorphism, with the phenomena concerned. 'The model echoes and chimes in with, those phenomena, and is incorporated, with them in a disclosure' (1964, p. 12).

(b) Characteristics of a successful model

There are two further conditions which a successful model must fulfil:-

(i) empirical fit: the model must include within its scope the phenomena accounted for; or as Ramsey puts it, the model must 'chime in with' and 'echo' the phenomena. Under this fulfilled condition, at the intersection point of the model and the phenomena 'the universe discloses itself' and in this way 'itself authenticates a model' (1964, pp. 13-14).

(ii) proper validation: a method for determining the effectiveness of any model is in the number of deductions possible from it. These deductions must be exposed to the appropriate verification and falsification procedures.

(c) The main uses of the theological model

Ramsey proceeds to discuss three parallel ways in which successful models can articulate theological discourse (1964, pp. 14-17).

(i) they allow for articulation in areas of theological uncertainty. The examples Ramsey gives are the titles ascribed to Jesus as recorded in the early chapters of Acts - 'Holy One', 'Just', 'Prince of Life' and so on (cf. Acts chapter 2 v. 33, 3 v. 14). The implication is presumably that the impact made by the life of Jesus had still not received definitive treatment: the modes can articulate in areas of uncertainty. Ramsey is here making a distinction between the relative uncertainty when people are working out their faith, and the fundamental uncertainty in theology arising from the impossibility of validating in a predictive way theological 'articulations'. But these preliminary models do provide the necessary basis for later doctrinal formulations (1964, p. 14).

(ii) models make intelligible discourse in areas where there is a great variety of phenomena to be accounted for. There is a real danger that no-one will say anything at all. The model imposes a control on the discourse emerging. Thus, the model of the redemption of slaves will simplify otherwise baffling, wildly uncontrolled discourse about the Atonement. So much might be said, so that it is

difficult to know where to begin. The redemption model concentrates on certain features of the doctrine so that intelligible speech can result. In a like way, the model of the personal influence of human love will extrapolate from an overwhelmingly complex area like that of Grace.

(iii) they can render intelligible what would otherwise defy analysis: they stand in for what otherwise could not be grasped. Thus, we speak of God, otherwise inaccessible, through the models of Strong Tower, Rock of Ages, Mighty Waters, King, etc. (1964, pp. 15, 20, 59).

(d) Characteristics of the successful theological model

The two conditions are:-

(i) they must 'chime in with' the phenomena: they arise in a moment of disclosure. Thus, there must be something in a situation where a man finds himself in the presence of a king which is isomorphic with the cosmic situation revealed in a disclosure. The common features generate insight.

(ii) 'proper validation': it is at this point that the major difference between a theological and scientific model can be seen. There is no possibility of verifying any conclusions derived from the use of theological models. They are judged by their ability to incorporate the widest possible range

of diverse phenomena within a coherent scheme. In brief, therefore, both theological and scientific models evoke a disclosure: the differences are to be found in the methods by which the respective models operate.

Summary

Ramsey considers only the Christian case. Two contexts can be identified. The world whose focus in mystery is disclosed through an event or experience. All events and experiences - observation language - are potential vehicles for the disclosure.

Models evoke the disclosure. They achieve this function by being qualified in appropriate ways. There is a distinction to be drawn between models and between key-words and mnemonics. Models articulate the key-words.

Models can be grouped into dominant and restricted types. Meaning is shown by the life lived in faith, and the fact that there is a religious discourse.

Other comments

Models are arranged into dominant and restricted types. The restricted group depend for coherence on their appropriate dominant model. The most important dominant model is Activity. There is a special group of restricted models called disclosure and picturing models.

Christological models can be found in both types, and so can personal and impersonal models. The personal models are more significant than the impersonal.

A successful model will demonstrate qualities of empirical fit.

SECTION (B)

THE MODEL IN THEOLOGY AND RELIGION

1. CHARACTERISTICS OF THEOLOGICAL MODELS

There are certain features about the religious models which have been noted by all authorities cited. The comments which follow relate to Christian, i.e. theological models only.

(1) Models are best arranged in hierarchies

Both Ramsey and MacIntyre make reference to a structure of models on a hierarchical pattern. In Appendix C is represented a structure derived from each author.

Certain features are detectable:-

(a) the nearer the apex of the pyramid, the more abstract becomes the model. The converse holds: the nearer the base of the pyramid, the more concrete the model.

(b) the more abstract the model, the less easy it is to find alternatives to these. Thus, as MacIntyre has shown, single-control models exercise a compulsive force, and are decided only after the few available alternatives have been rejected. Ramsey places 'Activity' at the apex of his hierarchy as it subsumes other dependent models: he cites only a few alternatives to this, e.g. household, Depth. Conversely, it is very easy to find alternatives to those at the base of the pyramid, comparatively easy

to find alternatives to those in the middle.

(c) there is a relationship between the abstract/concrete character of the models and the function they serve.

It is noticeable that the concrete examples at the base of the pyramid are the ones that occur noticeably as aphorisms, parables, brief metaphors. The single-control, abstract model is most noticeably that which features in extended debate. In the case of single-control, its most characteristic appearance is in works of doctrinal significance. The same point may be made for Ramsey's favoured 'household' dominant model. A study of the middle group reveals that they are most customarily extended metaphors used typically in teaching situations. Both S. Paul and John demonstrate this tendency. An arrangement of their model-structure would produce the diagrammatic arrangement as shown in Appendix D.

These differences in aim have consequences both for the variety and length of the metaphors chosen. An innovator with a preference for metaphor will employ many and diverse images few of which will be worked out systematically. A 'second-generation' thinker will wish to systematize the insight of the founder. Accordingly, metaphors are selected and appropriate ones worked out in detail. Thus, in the examples given as demonstrated in the Pauline structure above, the most significant metaphors are sustained, the 'innovatory' ones briefly hinted at.
In the case of John, the signs like bread, water and light are sustained metaphorically to the virtual exclusion of

actual events in Jesus' ministry; this strategy produces a Gospel totally different in character from the incident-crowded Synoptic Gospels. Significantly, the parables of Matthew and Luke tend to be longer than their Markan counterparts, and they structure the teaching of Jesus in ways which suggest reflection by the Christian community for which they were intended. An innovator will characteristically refer to many images briefly; a consolidator will select from many and characteristically develop those chosen. Examples can be observed from historical theology: Luther's work is notoriously difficult to systematize, and crowded with metaphors. The consolidator Calvin presents us with a work careful in its logical structure, and resorting only to a few, but well-developed, models.

The profusion of initial models has, of course, been noted by both Ramsey and MacIntyre. Ferré also refers to the parable as the example 'par excellence' of 'epistemological immediacy'.[7] It is recognised that the point of intersection of these various and sometimes conflicting models is of significance in demonstrating their meaning. Barbour has noted that at more abstract and sustained levels, theological models operate in counterpoise the one against the other. This characteristic is called by him the principle of complementarity.

(d) Christological models are crucial to the arrangement of theological models. All commentators assign a special role to these models. Sometimes they are classified

typologically - as with MacIntyre. In Ramsey, however, they are seen as the focus of the whole model-scheme. It would seem that any model-structure which fails to include Christological models is seriously defective.

(e) both personal and impersonal models can be detected in theological models; but the personal take precedence over the impersonal. This feature has been noted by all commentators. No doubt the dominance of Christological models has facilitated this development. Ramsey states specifically that his dominant model 'Activity' is personal. A significant group that can be identified is the 'family' with a leading model of God as 'Father'. The apparently abstract signs of Johannine thought - light, water - focus round their human use rather than their physical properties. Authentic theological model structures should include a preponderance of personal models.

(2) Theological models, once established, are resistant to change

Two factors can be noted here deriving from the fact that Christianity is a religion of the book.

(a) models established because they are found in original writings. Such are the kingdom of God parables, essentially agricultural pictures, but still forming a reference group in our modern industrial society. Paul's sustained image of the Church as a body is still formative within the Church though usually with a revised biological understanding.

Other significant models like king and judge are derived ultimately from the Jewish corpus. The incorporation of these and other documents into the Canon has facilitated the popularity of these models.

Not all models sanctioned by the Canon became normative in later discourse. Thus, the significant Gospel model of 'Son of Man' appears only once outside the Gospels in its original sense.[8] Since very early times, it has disappeared from use. There is a case for supposing that the term 'Son of God' early lost its distinctively Jewish corporate ring in sub-apostolic times.[9]

(b) models sanctioned by influential councils or community census.

Reference has already been made to the Chalcedonian definition. Another candidate mentioned by Ramsey is the 'Economy' model which dropped out of use after the first Christian centuries. In the later Catholic and Protestant traditions, the same process can be observed. The so-called 'Aristotelian synthesis' brought to perfection by Thomas Aquinas is still influential in Catholic thought. The Lutheran model of the 'Word' bred for centuries a suspicion of visual beauty amongst many Protestants.

Both MacIntyre and Ramsey assert that it is very difficult to establish non-traditional models. The further up the hierarchy the model, the more tenacious its hold. Recent attempts to question old models or introduce new ones customarily meet with violent opposition. The most recent well-publicised example was the furore aroused when

'The myth of God Incarnate' was published.[10]

In all three commentators, pleas are made for the introduction of fresh models, and in all three cases, the concern is that models shall relate in some real way to contemporary social and intellectual conditions.[11] All realise that the enterprise is a hazardous one, and anticipate resistance.

Both Ramsey and MacIntyre realise the hazardous nature of the enterprise whether or not the new models are to be empirically fitting or faithful to the data. MacIntyre makes a plea for the application of the imagination within a spiritual context.

(3) The intended response to models can vary between the extremes of the emotive and the cognitive

Ramsey includes within his concept of disclosure the notions of discernment and commitment. The objective nature of the disclosure is meant to lead to the re-formation of life. In his other comments on models, he draws a distinction between the picturing and disclosure models, implying that the power of discernment commitment axis might vary in individual cases.

MacIntyre likewise divides his models into metaphysical and substantive. Some models are designed to consciously awaken feelings, others to induce thought. All must, in his judgement,

find true fulfilment in the life of faith. The emotive and cognitive functions of models are also noted by Barbour and Ferré.

Clearly, the hierarchical arrangement noted earlier has consequences for this function. The models at the bottom of the hierarchy are more likely to be emotive in character. They are uttered typically in preaching contexts where the emotive appeal is overt. The 'middle' group of models is typically cognitive: adherents are being asked to perceive likeness between the model and the immediate concept - a likeness which can be developed along the lines of positive and negative analogy. There may, of course, be emotive undertones, particularly in the use of models in ritual. Those models at the apex of the pyramid are wholly cognitive.

All three are convinced that a truly effective model will find expression in the life of faith. This judgement holds both at community (or Church) level, and at the individual level. It is based on a sophisticated view of the relationship between intention and act; but somewhere along the line, there must be contact from a basic theological viewpoint - through the model - to the intended (and observed) act.

Summary

Models can best be arranged in hierarchies. In general terms, the model at the apex of the hierarchy

tends to be abstract

operates singly

is durable

is cognitive in aim

demonstrates a kinship to the explantory model in science

The models in the middle of the hierarchy

are conceptual in intention

can operate in complementarity

are more easily adaptable to changing relevant environmental conditions

are both cognitive and emotive in aim, and, as such, are customarily employed as sustained metaphors

are derived from an abstract model or key-word

The models at the base of the hierarchy

are concrete in content

are many and various, and brief

are most easily adaptable to changing environmental conditions

are customarily emotive in aim; their cognitive impact is found at the respective point of intersection

original models are durable

are least likely to display affinity with the scientific model

Other characteristics of models

Christological models are crucial to any arrangement of theological models.

Both personal and impersonal models can be detected; the personal takes precedence over the impersonal.

Once established, they are resistant to change.

Intended response varies between cognitive and emotive; an effective model should find its expression in corporate or individual behaviour.

2. COMPARISON OF CONCLUSIONS WITH OPENING WORKING DEFINITION

The Part opened with a proposed definition of religion; it is now appropriate to compare the findings outlined in the previous Section with this definition. It should be remembered that Martin's account covered religion as a phenomenon: the three commentators cited restrict their comment to Christianity. The term 'theological model' will continue to be used in this section.

(1) The comparison

A comparison between the two accounts suggested that in significant ways, the model-structure likely to emerge from Martin's account was justified.

(a) The two contexts

Two contexts are identified by our commentators. The sense of the Ultimate is distinct from the models through which this sense is articulated. Ramsey marks the distinction by asserting that the key-word 'God' is of a logical order different from the models it fills with content. In Barbour, the sense of the ultimate is found in a metaphysical pre-supposition on which the metaphysical model depends; but that model becomes meaningful only when substantiated by further models. It is perhaps in MacIntyre that the distinction is least clear, as he prefers to retain the term 'model' throughout his discussion.

Nonetheless, he describes as a prime model 'Being-itself', somewhat confusingly described elsewhere as a 'non-analogical term'. Such a term gains meaning only by articulation through subsidiary models.

(b) A logic of analogy

All three describe a process by which the two contexts interact, though the nature of the interaction differs in each case. For Barbour, the logic of analogy appropriate to the scientific model is relevant. For Ramsey, the interaction process is described in terms of the model-qualifier pattern, and results in a disclosure. For MacIntyre, the concepts of positive, neutral, and negative analogy are seen as relevant.

(c) Function of models

All three commentators agree that models range along an emotive-cognitive axis. They are all equally firm that models in some way relate to convictions as expressed in behaviour.

Formulaes of belief, codes of behaviour, ritual and art designed to stimulate a sense of the Ultimate in adherents are to be found in Christianity. In the last resort, models are significant only in the light of human response.

(d) Meaning

All are agreed that models can be cognitive, and that therefore meaning can be generated. All three scholars give some account of the interaction process through which meaning is achieved.

(2) Comment

Martin's account is confirmed in broad terms. What is distinctive about theological models is that they articulate a sense of God, and that they are the only means by which this sense can be articulated. Barbour, MacIntyre and Ramsey would all agree that they are necessary to theological discourse. Further, models find their roles when issuing a consciously adopted life-style. Additional features of the theological model lie in their hierarchical arrangement, and characteristics within that framework have already been noted.

3. ANALYSIS OF DIFFERENCES BETWEEN THE THREE ACCOUNTS

The foregoing discussion indicates that there are very sharp differences in these accounts between Barbour and MacIntyre on the one hand, and Ramsey on the other. These differences are due to the very different theologies held by the respective writers. Such an observation is critical for those engaged in religious education. If the main thesis of this paper is true - that themes are models - then much of the confusion previously noted is due to a poor grasp of how the models introduced into the classroom are part of a total theological view.

It is asserted in what follows that the differences in model-structure are directly related to contrasting views of what constitutes knowledge of God. Questions of knowledge and belief in religion are very complex. What will be indicated below is the view of theological knowledge held, and the consequences of that view for the model-structure. As the three commentators refer to the Christian tradition

in their analyses, the term 'theological model' will be used throughout this sub-section.

(1) Knowledge of God, and its consequences for the model-structures

The three commentators agree that the models fundamental to theology make or pre-suppose certain statements about how the world is ordered. They have a cognitive dimension. At this point, however, they divide.

Both Barbour and MacIntyre are eager to assert that religious models differ in type according to the kind of knowledge they reflect. Both make a distinction between models that make assertions about the fundamental structure of the world, and those which depend upon these fundamental models, but derive their content from other sources.

The knowledge that is asserted in the metaphysical and formal models is a set of claims about how the world is ordered. This knowledge is arrived at by inferential processes, and known through the model. Evidence in their support can be adduced, but it is not conclusive, and is non-demonstrable by reference to strictly empirical criteria.

The other models (e.g. experiential, analogue, etc.) are dependent on these, and fill them with content. MacIntyre's strength has been to document from historical exemplars the sources of knowledge-claims made in these models. This knowledge is derived from data: MacIntyre lists these chief givens as

Scripture, Confessions and intuition. Both Barbour and MacIntyre label as 'mistaken' certain claims made about God in the past on the grounds that such claims are not to be found in the Bible. It is thus possible to sort between models; any potential model failing to reflect the data is deemed unsatisfactory.

To this general structure, Barbour has added the concepts of the principle of complementarity and of the religious paradigm which exerts pressure on the interpretation of the data and selection of models. In the selection of models, the interaction between imagination and what is perceived to be the data is critical.

Further, models are of prime importance in awakening and confirming emotional response, and in assisting cognition. The context determines which of these is predominant at any one time. Certainly for MacIntyre relevance to the life of faith is a necessary defining characteristic of a model.

Ramsey take a completely different line: for him, knowledge is not constrained by data, howsoever defined. It is self-guaranteeing, occurring as the focus of the disclosure/discernment/commitment event, articulated through the model which displays 'empirical fit' with the world as observed. Knowledge is relevatory in the sense that it comes at the moment of disclosure. The one way in which Ramsey finds himself in agreement with Barbour and MacIntyre is his insistence on the relevance to the Christian life of the knowledge evoked at the occurrence of the disclosure.

The model-structures presented by the scholars display apparent resemblance to each other. Thus, each envisages 'super'-models on which others are dependent logically and substantively. For Barbour, the super-model is his metaphysical model (determining his Christological and other interpretative models); for MacIntyre, it is his formal model (determinant of his single-control and descriptive models); for Ramsey, it is his dominant model (determinant of his restricted and disclosure models). On examination, this similarity turns out to be more apparent than real; and it is to be maintained here that the divergent views lead to the differences that can be observed.

For Ramsey, all observables are potential candidates for the evocation of a disclosure. Two criteria determine the position of a model in his structure; 'empirical fit' and the kind of qualifier modifying the model. Qualifiers of an absolute kind are nearer the disclosure than those of a partial kind. Barbour and MacIntyre have no parallel to this arrangement. For both, the data is critical in determining the authenticity of the models. They both dub models either satisfactory or unsatisfactory according to the degree of their conformity with the data. Not all observables, therefore, can qualify for the status of model.

The insistence on the primacy of the data in determining the selection of models means that there is no room in Barbour or MacIntyre for the qualifier-model pattern so central to Ramsey. Even though MacIntyre allows for 'empirical fit' as a characteristic of his models, and even though Barbour wishes to accord high status to contectually wide-ranging models, these

criteria must in the last resort be subsidiary to the data, and be controlled by it.

(2) The scientific and theological model

This serious disagreement is exemplified fully in Barbour's and Ramsey's respective treatment of the relationship between the scientific and theological model.

Barbour's approach is to stress the subjectivity of the scientific enterprise, and the objective character of much theological discourse. Hence, his insistence on the metaphysical pre-supposition of the scientific investigation, and his attack on the falsifiability criterion. For the religious side, he stresses the existence on initial data, the rational nature of interpretation of the data, and the importance of coherence and elegance in the construction of statements of belief.

According to Barbour, the disciplines overlap markedly in their use of the model: each has its own paradigm, its own sequence of complementary models, corresponding rules of analogy, and each utilises the principles of coherence and elegance in assessing the value of what is known through the model.

There is, however, an insistence that the disciplines do have distinct areas where similarity of knowledge cannot be asserted. In the last resort, much scientific discovery proceeds without reference to models or non-empirical considerations. The knowledge that science and religion have in common through the

model is the articulation in realizable form of the unseen mechanisms that are productive of the data observable. Where religion differs from science is to assert that there is an historical dimension to these mechanisms enshrined in the concept of revelation. Religion, therefore, has a relevance to behaviour of individuals in a way that science does not. Accordingly, many religious models evoke a sense of wonder or act as a spur to action, characteristics that are not found in scientific models of any kind.

A picture of a very different kind is presented by Ramsey. It is true that models enable what is unseen to be expressed in realizable form. The focus of his structure resides in the disclosure event in both the scientific and the theological case. Hence, empirical fit or isomorphism with observed events is as much characeristic of the scientific as of the theological model. It is interesting to observe that for Ramsey it is Black's analogue model that attracts his attention rather than the theoretical. Such an account pre-supposes some unitary view of the nature of knowledge: the scientist, mathematician and historian can all experience cosmic disclosure, and these seem, in essential ways, to resemble the theological disclosure. Ramsey's concept of the logical oddness of theological language is introduced to account for the differences between science, history, and theology. The route of the key-word/model structure is different from the scientific route of examination of observed phenomena; but the destination for the successful is the same.

The distinctive character of the scientific enterprise is to be

found in its predictive technique, altogether more certain than the theological strategy. Guarantee of objectivity is to be found in the disclosure/commitment/discernment event.

To summarise

For both Barbour and MacIntyre, knowledge-claims are decided by reference to the data. Models must conform to the data as determined. They are arranged according to a formal or metaphysical comprehensive model on which all others are dependent. Though there is a likeness between theological and scientific knowledge, there are nonetheless distinct areas of operation.

For Ramsey, knowledge is objective and found in the disclosure/commitment/discernment event. Scientists and theologians can be the recipients of a disclosure. Models are arranged according to a dominant-restricted pattern: the dominant one is that which exhibits empirical fit; the restricted ones are dependent on the dominant one. Model-qualifiers act as directives to the model.

The likeness between scientific and theological knowledge emerges from the existence of disclosure models in both disciplines: the difference is to be found chiefly in validation procedures and predictive possibilities.

(3) The theological model and metaphor in other commentators

Frederick Ferré is one other commentator who has examined the use of the model in both science and religion (op. cit., 1972,

pp. 54-96). He inclines more to the analysis of Barbour and MacIntyre than that of Ramsey. Thus, he describes a group called metaphysical models which function like the scientific explanatory model (p. 77). These are called by him logical models (p. 61).

Like MacIntyre, he describes a formal content-empty statement which models fill substantively (p. 82). However, like Ramsey, he regards the word 'God' as a theoretical term interpreted through the models (p. 77). Elsewhere, he analyses models according to the overlapping categories of type, status and scope (in science, pp. 60-66; in theology, pp. 79-83). More stress is laid on their function than on their type. Like other commentators referred to, he regards theological models as cognitive (pp. 84-86).

In a paper on a related issue, Hesse[12] is anxious to reject the historically sanctioned view that the knowledge of science and religion is dichotomous. While claiming that theological assertions are naturally concerned with meaning and value, she challenges the belief that scientific knowledge is wholly objective. She makes especial reference to the human sciences in her article, and asserts the need for the introduction into them of moral and theological categories (pp. 392-393, 398-399).

Other commentators on the theological metaphor per se support the proposition that it has cognitive power.[13]

(4) Observations; a suggested typology of models

There is great discrepancy over nomenclature. The discussion has revealed, however, that there is a distinction to be drawn between the most fundamental models and others which are derived from them. All three commentators isolate such fundamental models: i.e. metaphysical, formal and dominant. They pre-suppose beliefs about how the world is ordered, they derive meaningfulness from other models. It is proposed that the term 'presiding model' be used in reference to the fundamental models, the term 'derived model' for those dependent upon them. In terms of our commentators there would be observable differences in structure:-

Barbour

Presiding model = metaphysical model of Process

Source of the model is an explanation of how the world is ordered. This model resembles the scientific explanatory model, and consequently displays a like logic of analogy.

MacIntyre

Being Itself = non-analogical term

Presiding model = revelation (reconciliation)

Source of the model is an explanation of the ordering of the world.

Ramsey

key-word = God

Presiding model = Activity

Source of the model is a cosmic disclosure.

All other models, i.e. the dependent models, derive their status from the presiding model. They have as their characteristics:-

they pre-suppose the prior acceptance of a presiding model
they fill with content the presiding model
their source is to be found in the observables of life
they resemble the scientific analogue model

For Barbour and MacIntyre, the concepts of positive, neutral and negative analogy are relevant in describing their operation.

For Ramsey, these models appropriately qualified evoke a disclosure. They behave in the same way as scientific or analogue models.

It will be observed that this account of models is based on function rather than type. The function relates to the position occupied by the model in a hierarchy. There are wide discrepancies in the views held about the Christian faith: but all are agreed that there underlie all statements about the faith certain basic pre-suppositions of universal significance. These fundamental assertions take the form of a 'cosmic disclosure' or an Ultimate statement enshrined in the data. It would therefore seem reasonable to draw a distinction between such statements and others which are dependent on them; and to mark this distinction by the application of different labels. The hierarchical arrangement of models described in the preceding pages is one necessary to the structure of religious language, and the dependent models in the hierarchy point in the last resort to the presiding models.

Some parallel to this arrangement can be found in the scientific and metaphorical fields. A successful model or archetype becomes embedded in a theory and thereby subsumes within itself other

models. The literary root-metaphor likewise receives meaning from subsidiary, dependent models.

However, whereas such arrangements are to some degree optional in science and literature, they are necessary to theology. In science, models are not necessary to all scientific discourse; and while it has been alleged that science proceeds on basic assumptions, within that framework models can stand independently of each other, whether singly or in groups. In literature, the case is even more clear-cut. It is perfectly possible to utter a metaphor which arises out of a specific set of circumstances. It is also possible to base, e.g., a novel round a central metaphor; subsidiary metaphors feed into the meaning of this central figure. Thus, the presiding model of Golding's 'Lord of the Flies' could be asserted to be the Beast (objectified by the pig's head) as symbolic of the soured relationship between the boys: the ritual dances, the vicious killing of the pigs are subsidiary metaphors reflecting the projection of the boys' own weaknesses to the 'Beast'.[14] It is open to any artist to possess strong personal convictions about life which act as a root-metaphor reflected in works of art produced. Such a root metaphor arrangement is inescapable in theological language.

Kinds of metaphor in theology

It has already been observed that Ramsey categorises the whole of religious language as paradox. All commentators in the area agree that there are certain kinds of metaphor peculiar to religious

expression. Mention has already been made of parables. Another notable form has been identified as myth.[15] Religion also has its own collection of symbols.[16] This study has been concerned very largely with verbal metaphor: but myth and symbol in their commonest form of representation were non-verbal. Myths were acted long before they were written down, and Christian symbols dominated Christian art until the time of the Renaissance. In modernist painting and in stained glass and sculpture,[17] they are enjoying something of a resurgence. It is therefore possible to assert that visual art-forms can be metaphorical in character, (cf. Ferre, F., op. cit., p. 80). This statement has been applied to music by Leonard Bernstein in a television broadcast.

Summary

A typology of theological models has been produced, namely:-

presiding models
those at the top of any given hierarchy or models
those which provide an explanation for the world as observed
they resemble the explanatory model in science

dependent models
those which fill the presiding models with meaning
those whose source-material is the world as observed or experienced
they resemble the analogue model in science

Models may be verbal or visual
Types of metaphor of particular significance to theology are myth, symbol and parable

4. A COMPARISON OF THE MODEL/METAPHOR ACCOUNT (PART B, SECTION (C) pp. 113-117 WITH THE THEOLOGICAL MODEL

A comparison will now be made between this account of the theological model and the scientific model/literary metaphor presented earlier. The aim is to indicate in what ways the theological model resembles the scientific model, in what ways the metaphor and what are its own distinguishing characteristics.

(1) Identity of a metaphorical expression

In all cases, it is possible to identify two contexts which are in juxtaposition the one with the other. As in the scientific case, the source can be identified, namely, a sense of the Ultimate, or in the specifically Christian case, a sense of God. All models relate in some way to this sense.

(2) How meaning is achieved

In all cases, meaning is achieved through the interaction of the two contexts. From the point of view of Barbour and MacIntyre, areas of positive, neutral and negative analogy can be identified in conformity with both the literary metaphor and the scientific model. Ramsey prefers to speak of a qualifier directing his model.

Theological models resemble the literary metaphor on two counts:- the originator is inviting his audience to perceive the intended connotations of the vehicle and apply them to the tenor.

Models can be structured on an emotive-cognitive axis.

(3) Guides for interpretation

Theological models resemble both the literary and the scientific case, but in different ways.

They are like the literary metaphor in so far as the desired aim is a match between the intentions of the originator and the perceptions of the audience.

They resemble the scientific case in so far as they are adjudged justified if they are isomorphic with data. This position is explicitly asserted in Barbour and MacIntyre who define the data. Thus, there are some grounds for asserting objectivity in the religious case. Ramsey also asserts that objectivity characterises the theological model. The unusual feature of the theological model is that it is held to be fruitful if it lends insight to changing environmental conditions.

Two types of theological model have been identified. The presiding model resembles the explanatory model, descriptive models resemble the scientific analogue model and the literary metaphor. Within that context, the theological model resembles more closely the literary case in so far as other figurative forms of speech like simile, paradox, allegory, symbol can be identified.

There are kinds of figurative speech found within theological

discourse. Others are peculiar to it, at least in terms of origin, e.g. myth, parable.

Diaphor is an interesting case. There is a point of view which maintains that the whole of religious language is diaphoric in character.

(4) Evidence for the creation of fresh meaning

Theological models resemble literary metaphor in so far as these form the basis of theological discourse. They resemble scientific models in so far as through continued use they interact with the environment to produce new insights. The unusual feature of theological models is that successful ones are accepted by the theological community, and become regulative in debate and ritual. Further, evidence for successful models can be found in the life-style of adherents, though such an assertion is hedged about with intractable difficulties.

(5) Variables

In all cases, there is difficulty in defining with any precision the interaction process itself, the means by which the correct links between the two contexts are made, and the consequent production of meaning.

Variables affecting the meaning of theological models might be described as follows:-

the degree of match between the intention of the user of the model and the perception of the audience.
knowledge by the audience of the connotations intended by the originator.
energy-tension generated.
quality of the insight generated when applied to novel situations.

Peculiar to the theological model are decisions made about what constitutes the data.

(6) Other characteristics to be noted

(a) Archetypes

The unusual feature about theological models is that the presiding model is central to any arrangement, and all other models are subsidiary to it.

(b) Complementarity principle

In the theological case, models frequently interact with one another one with the other. Large numbers of these can be found at the base of the hierarchy, fewer as progression up the pyramid is made. The presiding model frequently acts as a single-control model.

(c) Cultural paradigm

Theological models operate against the social environment of the time. There is potential for conflict between these

two categories.

Concluding remarks

The summary above demonstrates that the religious model has characteristics in common both with metaphor and the scientific model. This holds true both for the general structure of religious models and for the more particular MacIntyre type and Ramsean-type structure. The importance of showing that metaphors are like models is to show that in certain conditions the disciplines whose claims are verifiable make use of speculative strategies. The way is open for metaphors sharing those characteristics to claim to be cognitive devices. It is physics which according to commentators has provided the majority of explanatory, speculative models. The models or metaphors in religion closest to these are the abstract or 'control' models from which other descriptive or disclosure models are derived. Models in religion vary both in cognitive and emotive force; for their form they are dependent both on historical and contemporary environmental factors.

So far as the religious educationist is concerned, the following issues are of importance if the conclusions above are adapted to the school situation:-

(1) Durability of models

Models generated by the data tend to become accepted as regulative even when environmental conditions have changed their force. This is the case even with models at the base of the hierarchy where risks of

offending against accepted beliefs would be slight. Children lead their lives very much in the present. If their imaginations are to be stimulated, educationists have a creative role to play in selecting from the contemporary social setting alternatives to the traditional biblical images.

(2) Visual models

What is true of the structure of verbal models most of the discussion in this study has concerned verbal metaphor. It was noted earlier that theological art could also be construed as metaphor. What is true of the typology of verbal models is therefore true of non-verbal models. They can range from highly abstract art or literalistic, representational productions. There should, therefore, be a place for them on any given hierarchy of models; and there is scope for the introduction of theological concepts into the classroom through the use of visual representation of theological statements.

(3) Models and other religions

It has already been noted that whereas Martin's definition was of 'religion', the three commentators restrict themselves to an analysis of the Christian tradition. Only Barbour recognises that any model-structure as proposed for Christian theology has implications for non-Christian religions. Educationists have to face up the practical problems of presenting other faiths to school pupils, and of coming to terms with the beliefs and value-systems of children from ethnic minorities.

SECTION (C)

THEMES AND MODELS IN RELIGIOUS EDUCATION

1. COMPARISON OF THE THEOLOGICAL MODEL STRUCTURE WITH THE DEFINITION OF THEMES IN PART A

Themes were introduced within the context of religious education, and models within the context of religion. It will now be shown that a theme is a model with a specifically educational use.

(1) Types of theme

A theme was previously defined as

an area of experience of human life through which religious responses are aroused (p. 17).

Two basic types of theme were identified:-

the experience theme

this takes its starting point an area of experience known to the child

e.g. travelling

the Christian/symbol theme

in this case, the theme is used as a method which focuses on the religious and secular uses of the chosen area of experience

e.g. light

(2) The theme as educational model

The categories of the model/metaphor account as defined in Section (C) 4 (pp. 181-184) apply with equal force to the theme. What distinguishes the theme from the model is its educational purpose.

(1) Identity of a metaphorical expression

Two contexts in juxtaposition the one with the other can be identified; the aim of promoting reflection on travel or light is to awaken a religious awareness with the pupils.

(2) How meaning is achieved

A meaningful religious response is achieved through the interaction of the two contexts.

(3) Guides for interpretation

It is the educator's intent to produce a match between conviction that religious awareness is best aroused when an appropriate degree of isomorphism between the theme and the sense of the Ultimate can be identified. This holds true whether the theme itself is the educative medium, or whether it is a useful method to apply to selected areas of human experience.

If these three categories are the case, other aspects will also hold. Themes, as models, will form the basis of theological discourse. They will, through interaction with the environment and with the use of imagination, produce new insights.

They will conform to a hierarchical arrangement, will be consciously constructed against the contemporary setting.

A theme is a model with a specifically educational use.

The one quality of a model which is not applicable to the theme is the desired outcome in certain behaviour styles predicted of the models. Such an outcome is inappropriate for a State-financed educational system.

2. COMPARISON OF TYPES OF THEME WITH THEOLOGIES OUTLINED IN SECTION (A)

It is to be asserted here that the experience-theme approach is best accommodated by the Ramsean structure, and the Christian/symbol theme approach by the Barbour/MacIntyre structure.

(1) The experience theme: Ramsey

> The ordinary events of life adequately qualified give rise to a disclosure event. In the same kind of way the ordinary experiences of the child are organised in such a way as to evoke religious insight.

The equation of the terms 'disclosure event' and 'religious insight' might be problematical. If, however, attention is focused on the actual operation of the models, it will be possible to demonstrate a kinship.

Ramsey has organised his models along the model-qualifier line, and has grouped these models into hierarchies. Such hierarchies are customarily organised round a unifying concept (like Spirit). The theme is likewise a collection of disparate material which depends for its coherence on a selected area of experience, e.g. home, play. One of the problems associated with the thematic approach is its tendency to lose the 'religious' centre. If, however, such themes were structured along the model-qualifier hierarchical lines, the centre could be more easily maintained.

A theme would introduce the pupils initially to material remote from religiously insightful situations, and move to material potentially full of religious insight. The London material on 'Hands' detailed earlier (p. 19 and Appendix A) might be structured in this way, and a possible scheme is set out in Appendix E.

The progression is straightforward: children study the physical structure of their hands, and move through material depicting increasingly complex use of the hands to material illustrating the 'hand' of God. Such a structure resembles the model-qualifier pattern as described by Ramsey in which movement is made from the less religiously observables to the 'disclosure' type

observables. The advantage for the would-be lesson designer is that the theme is faithful to its description, but at the same time displays a conscious structure.

It must, however, be noted that the focus of the Ramsean structure lies in the evocation of a disclosure; and contained within the concept of disclosure is commitment. Further, as has been seen, the recipient is passive until the disclosure is perceived. The problems arise for those non-confessionalists who accept Ramsey's view. The focus of the Ramsean structure lies in the evocation of a disclosure; contained within education is the process of learning; learning is an active, and not a passive, process. The 'hands' scheme as set out in Appendix E is a model-qualifier scheme minus the commitment dimension and with an active involvement of the pupil imposed on it. The 'child-centred' approach turns out to be in conflict with the theologies underlying it.

It has to be recognised that the life-theme approach is an adaptation for educational purposes of the Ramsean view. It still seems of great value in lending order to a form of religious education much in need of it.

It is not to be supposed that only Ramsey's theology would provide an appropriate locus for the life-theme. Tillich,[19] for example, would provide another model. Phenix[20] might well be another candidate. What is important is that the life-theme should be consciously structured round a sympathetic viewpoint.

Another feature of educational importance in the structuring of themes lies in the hierarchical structuring. Movement is from the concrete to the abstract. Goldman, through Piaget, has indicated how important it is to keep in mind the possible developmental stages of children when courses were being designed. Younger children could study the more concrete exemplars of the model which would prepare the way for more formal handling of the concept in the secondary-age pupils.

One other observation can be made; Ramsey does not indicate how other faiths can be imported into his structure. In the theme 'City and Community' in the Birmingham syllabus ((b) 22-25), exemplars from the concept are introduced at the concrete levels. Perhaps some scheme is needed where one over-arching key-word is avoided; but where the dominant model is an extrapolation from restricted models reflecting the same base experience. Thus 'light' is a dominant model in all faiths, and could stand as the presiding model from which Christians, Islamic, Sikh and Jewish usages could be built up as sub-hierarchies. This is an area requiring further investigation. It seems likely that some models are more apt for this treatment than others, e.g. depth. It is likely to be the case that some are unsuitable because they are specific to a given religious tradition; the 'household' one of Ramsey is a case in point.[21] Clarification of this issue would greatly assist those who feel that some education in non-Christian religious traditions is a necessary component of contemporary religious education.

(2) The Christian/symbol theme: Barbour & MacIntyre

The chief characteristic of this theme is that thematic content derives from a method rather than a way of tackling theology. Thematic teaching is a way of organising material whose theological pre-suppositions are distinct from it.

It is here asserted that in general the symbol-type theme is better accommodated within the MacIntyre/Barbour structure than in Ramsey. The basic pre-supposition in this schema is that there is a division between sacred and secular. Models thus serve to bridge the gap between the two dimensions. Models function analogically: it becomes possible to identify positive, negative and neutral analogy. Again, MacIntyre follows this line of analysis when describing the functioning of models.

The hierarchical structure will be headed by a dominant religious model; those remotest from the apex model will be secular examples. The Birmingham (Grimmitt) scheme on LIGHT would look something like the structure in Appendix F if plotted hierarchically.

It should be noticed that:-

(a) movement is again from concrete to abstract, but the movement is based on different principles, i.e. the models at the base of the hierarchy are concrete examples nearest to the pupils' own experience.

(b) examples from other faiths are included, as the aim is to show how the symbol is treated both in a secular and a sacred manner. There is no disposition to focus on any

specific religious tradition within the method itself.

(c) because the theology is separate from the method, the question of commitment does not necessarily arise.

Indeed, a philosophic technique has been adapted for use in schools to counteract this very problem, namely, the phenomenological approach as defined by Ninian Smart. Religious belief and practice are divided into two kinds; explicit and implicit. By explicit religion is meant its external aspects capable of empirical description. Smart has defined six dimensions into which religion as empirically observed can be described.[22] By implicit religion is meant the commitment of adherents. Smart asserts that this can be approached via the imagination. A pupil can enter imaginatively into the conviction of a religious person without prejudice to his own set of values. The technique is akin to that of identifying with a character in a novel.

The method, like all others, has its detractors. It is offered here as an attempt made by a professional philosopher/theologian to bring together the two areas of religion and religious education.

It has been an aim of this study to examine how best the two types of theme isolated can be provided with a theological rationale. It is perhaps significant that the symbol-type theme has received more professional attention than the life-theme. However, it is possible for the approach to be of positive value, and for the material to be kept under control. Much more work

could be done on the history of actual models - as Ramsey has undertaken with his study of 'household'.

The 'word' is a classic Protestant model that could well stand further historical and theological investigation. Whichever of the two structures is adopted, educationists could be more adventurous in the selection of lower order models, as long as the content derived from the presiding model. All could be more open to the imaginative devising of fresh presiding models in which both Ramsey and MacIntyre have provided a lead.

3. THE MODEL-THEME AND DEVELOPMENTAL RELIGIOUS EDUCATION

The foregoing section has indicated how the types of theme identified in Part A can be given a theological structure. This final section aims to show how the insights of developmental psychology can be incorporated into this scheme. In Part A, too, the work of Goldman was introduced. He claimed that in their religious development, children passed through the same stages of growth as in cognitive development, i.e. intuitive, concrete and formal stages (pp.
He advised that the work of children in religious education should be programmed with these factors in mind.

The model Goldman selected for his experiments was Piaget. Strangely, Goldman applied a statistical instrument to his findings:[23] Piaget himself has used a non-statistical analytic tool. Indeed, it has been asserted that he is to be regarded primarily as an epistemologist rather than a psychologist.[24] Nonetheless, comments in the literature surveyed concentrate on the stages of cognitive development in

children and omit any real reference to the mental structures pre-supposed by the identity of the stages.

In this final section, it is to be shown in what ways potentially certain aspects of Piaget's work can be made relevant to the use and structure of models as previously defined in reference to his own techniques.

(1) The Piagetian stages

These stages are described in terms of 'operations' and 'transformations'.

Both terms relate to the mental capacities of the child, and his attempts to manipulate his environment through the utilization of the mental capacities available to him. The capacities achieve practical expression in what the child does and what he says.

Piaget's experiments are designed to tease out the nature of these capacities; and any observed order of their development. An 'operation' can be said to exist if the problem presented to the child is solved. The appropriate action necessarily pre-supposes the availability of its matching mental capacity or 'operation'. One such operation is the ability to classify. In one of his experiments testing for this operation, Piaget presented to children a number of rods of differing lengths. In other perceptual ways, they were identical. Each child was asked to arrange these rods in order. The operation was held to be present if the rods were correctly assembled, that is, in serial order of

length.[25] Seriation is held to be a specific example of the operation of classification. Some children could not arrange the rods in the required order; they placed them in random groups of twos or threes. In these cases, it is asserted that the operation of classification, at least as indicated by the ability to seriate, is not available to them.

The term 'transformation' is given to the actual action the child performs in attempting to solve the problem. In terms of the example given above, the transformations would consist of the child's activity in arranging the rods, and any comments made by him while handling them. Transformations need not necessarily be physical actions; they can be imagined ones. Piaget is very fond of setting up apparatus, and asking children to predict possible outcomes when the apparatus is moved. For example, children were presented with a horizontal rod 20 cm long, placed on a piece of paper. They were asked to draw the position of the rod after it had moved through an arc of 180°. In other words, they had to imagine its position and its shape without touching the actual rod.[26]

Piaget has identified three main stages of development; the earliest when there are no operations available to the child, and two characterized by operational achievement. Each stage is sub-divided into sub-stages, but for the present purpose the main divisions only will be discussed. The stages are labelled in English as follows:-

(a) Pre-operational stage ca CA 0-5 years

The transformations characteristic of this stage reflect an ability to classify or anticipate possible consequences

of transformation.

(b) Concrete operations ca CA 5-11 years

The example given above, seriation falls into this category. Transformation characteristic of this stage demonstrate an ability to classify objects on a relational basis, to conserve movements of apparatus, and to anticipate possible consequences of movement of the apparatus from a fixed position. The operations are labelled 'concrete' because to classify, to conserve, to anticipate in the senses described above is to deduce from a given set of circumstances expressed experimentally. The pupil can solve a problem if the clues to the solution are contained within the apparatus; his thinking is typically deductive in character.

(c) Formal operations ca CA 11 years-onwards

At this stage, the subject's thinking is 'hypothetico-deductive'.[27] When presented with a problem, the child is able to construct hypotheses, that is, he is able to frame possible solutions to the problem, and devise appropriate means of verifying his hypotheses. In the transformations characteristic of this stage, he is no longer limited by what he observes. The operations are performed, not on the apparatus but on the propositions posited in the form of hypotheses.[28]

Such a strategy implies that the young person can stand aside from the problem, can apply to its solution information gained from extraneous sources, and can frame a possible solution in words. The effect of this approach is to rid the transformations of their hit-and-miss, trial-and-error quality, and to endow them with an ordered, systematic attack.

The stabilizing factor allowing for the hypothesing strategy is the concept of 'all things being equal'. For example, Piaget describes an experiment in which a variety of objects of different volume and size are assembled together with a large bath of water. The subjects are asked to predict which objects will float, and which ones sink.[29]

Recognising as true the statement 'all wooden objects float' and 'all other things being equal', enables the child to work round to the notion of specific gravity. For a large plank of wood will simk in a small volume of water. On observing this variable a child will calculate what are the 'equal' conditions.

It is important to observe that Piaget's experimental apparatus consisted exclusively of everyday objects so that no children were prevented from solving the problem because they lacked the appropriate vocabulary.

(2) Analysis of thinking at the concrete stage of operations

The alleged basis of concrete operations is the ability of the child to classify on deductions made from observed resemblances, and arrange into classes. The particular theory used to analyse classification is the 'set' theory.[30]

The principle of the 'set' theory is to arrange objects into inclusive classes. Thus, a class C might include within itself smaller classes of A and B. Such classes are arrived at on the basis of observed resemblances - a strategy characteristic of the

concrete stage of development. A very straightforward example might be:-

Class C = musicals

Class B = Gershwin musicals

Class A = Porgy and Bess

We thus arrive at the formula:-

$C > B > A = A < B < C$

(where $>$ is greater than, $<$ is less than).

Each class is capable of sub-division; these are denominated by the addition of ^{1}, ^{2}, etc. Normally, the larger of the sub-groups stands first; that is, A^{1} would be larger than A^{2}, which in its turn would be larger than A^{3}, and so on. To take another example:

let Class C = the British Labour Party

Class B = the Parliamentary Labour Party

Class C = 'centre' group of MPs

Sub-class A^{2} = 'left' group

Sub-class A^{3} = 'right' group

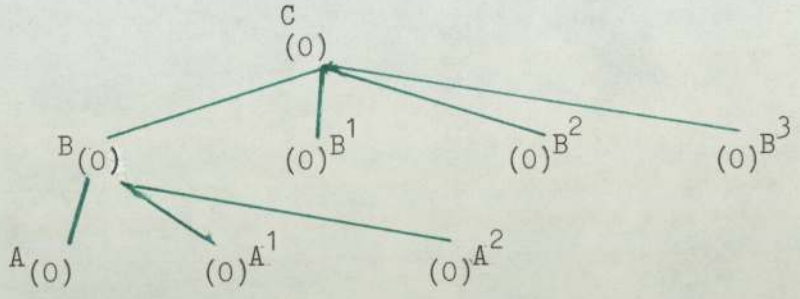
Sub-class B^{1} = could be fully paid-up Party members

Sub-class B^{2} = could be partly paid-up members

Sub-class B^{3} = could be associated Party members

It is clearly untidy to represent these groupings as set out above; and Piaget has adapted the so-called lattice structure derived from Boolean algebra to schematise the class inclusion form.

For the sake of simplicity, we will assume that the sub-classes as specified above, are the total defining characteristics of their larger class; that is, that centre (A^1), left (A^2) and right (A^3) make up the whole of Class B (the Parliamentary Labour Party). The lattice would look like this:-



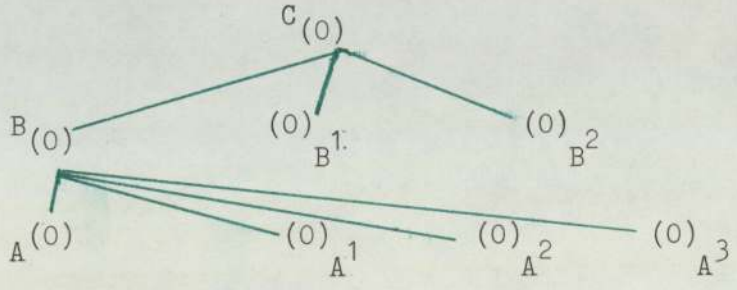
The lattice structure is strongly reminiscent of the theological model hierarchy presented in Part C. A clear example of such hierarchy would be the parable models used by Jesus.

Class C = the model of the kingdom of God

Class B = parables based on agriculture

Class A = parables based on wheat farming

The lattice structure should look something like this:-



A = parables based on wheat farming

A^1 = seed growing secretly

A^2 = wheat harvest

A^3 = sower

B = parables based on agriculture

B^1 = trees parable (mustard seed, fig)

B^2 = farm parables

B^3 = vineyard parables

C = the kingdom of God as modelled by observation of the countryside

(Other structures from the Gospels could be worked out:-
e.g. Jesus' contact with the down-and outs on the basis
of observed resemblances)

It should be noted that the concrete examples, which are the more numerous, appear at the bottom of the pyramid. These point cognitively towards the more abstract point at the top of the pyramid.

(3) Analysis of thinking: propositional-type operations

For his analysis of the hypothetico-deductive propositions, Piaget makes use of symbolic logic; and he has identified four operations working in a closely co-ordinated manner.[31]

In the experiments described by Piaget, the hypotheses are of the

true/false variety, and are susceptible to empirical testing. Religious propositions are not of this kind: they cannot be tested empirically. Piaget's work for the religious educator is valuable if the logico-mathematical processes described by Piaget are regarded as a 'model' or paradigm of all thought activity. In Part B it was asserted that scientific thinking relied on a mixture of inductive and deductive rational styles. The use of the model was produced as key evidence in support of the assertion, so Piaget's account may be held to be valuable to the religious educator if acceptable on other grounds.

The stage of propositional thought is, for Piaget, the desired end and final outcome of movement through the prior stages. He is at pains to emphasize that these stages must be negotiated sequentially; the concrete stage must be passed through before the formal stage becomes possible. There has been considerable discussion about the ways in which progression through these stages can be facilitated. According to Piaget and other sympathetic workers, there are two chief ways by which movement through the stages can be facilitated, each of them of relevance to thematic teaching in religious education. These are:-

stimulation of the affective domain[32]

encouragement in the use of language[33]

activity[34]

Religion has both its explicit and implicit aspects. It is the implicit which relates most strongly to the affective domain. If Piaget is correct in his belief that stimulation of the affective-implicit aspect will facilitate the arrival of the

formal stage of thought, the visual and audial arts can be found a place within the Piagetian scheme. By introducing pupils to the artefacts of religious conviction which can have a cognitive reference anyway, the pupil should be stimulated to accepting the more wholly cognitive elements in religious education.

A beginning could be made by introducing pupils at the concrete stage to representational art and music, to prepare them for the more abstract painting and music appropriate to closer analysis at the formal level of operations. Piaget states that people tend to think in images,[35] and the use of them as a means of introducing concepts could be exploited more fully in the classroom than it appears to be at present.

For the religious educationist, the status of the model is thereby enhanced. Models can take the shape of verbal metaphors. The more 'representational' of these - diaries, simple stories - can be used as a useful introduction to the more abstract types like myth. Symbolic type novels could form another important source for the religious educationist wedded to the thematic method and the Piagetian framework.

In the case of this kind of teaching, it would be necessary to identify the proposition pre-supposed by the hierarchy of models which substantiate it. A possible structure is presented in Appendix G, based on the model-structure of Light in Appendix F. But this structure remains at the level of a primitve suggestion only. This is an area requiring much more investigation.

The adoption of a mixture of stimuli would encourage the use of a variety of presentation techniques and learning strategies in the classroom. If Piaget's theories are correct, increased activity of the child in the lesson should hasten the breakdown of the ego-centrism and deductive-type thinking typical of the child at the intuitive and concrete stages of development. The activities, however, should not be random, but controlled by the ultimate concept or proposition at the head of the hierarchy.

CONCLUDING SUMMARY

What this study has aimed to demonstrate is that models can be a cognitive device, and can so be applied in the classroom. It has proposed a structure for theological models, and has set these within divergent theological contexts. It has also sought to demonstrate that models can be developmentally structured, and suggests that recourse to Piaget's own methods of analysis are potentially a productive source of future development. While the thematic method is valuable, the recognised dangers can be avoided if the teaching is provided with an adequate structure.

It should be noted that this entire scheme depends upon a prior acceptance of a theory of metaphor, of a specific theology and of the Piagetian pre-suppositions. If any of these is challenged, then the scheme will founder. The aim of the study has been to show a possible way of structuring the thematic method; it does not claim to be prescriptive in stating that this is the only way the thematic method can be endowed with a theoretical underpinning.

Despite the criticism received, Goldman helped to inject new life into the teaching of RE. The debate in this area is still a very lively one, and imaginatively produced materials are still reaching publishers and the schools. Many of these reflect the impact made by the thematic method; the study of other religions is customarily approached through themes such as the use of colour, dress, sound in differing traditions. These enterprises are worthwhile in terms of their social value, aside from any 'discipline' value they may have: in many schools, RE is still the only subject in the curriculum in which pupils are asked to come to terms with the existence of non-Western contemporary cultures. For this reason, if for no other, any practical or theoretical help that can be given to teachers which will make

their work more effective is of value. It is to be hoped that this study has gone a little way in providing a structure for a potentially fruitful method.

It is not being advocated that in any way should teaching by themes become the sole vehicle for religious education. The personal dimension, the accounts of the impact that religious belief has had on a person's life, is a very important aspect of religion that is in danger of being neglected through a wholesale acceptance of the thematic method. Teaching by themes should take its place alongside other proven methods, but with its own rationale from which appropriate methods and content spring.

Some Illustrations of Developed Thematic Work

Hands

A considerable number of developments are suggested for this theme in order to illustrate something of the range of useful ideas which can emerge in a study. In practice, only a few of the many suggestions offered should be used at one time. Experience will show that many other developments are also possible.

Most areas of the developments suggested are capable of extension into religious teaching and moral insight. The first three sections can lead into a study of 'God who created me'. 'Metaphors about hands' should raise a number of problems about responsibility for others and relationships, with children who are sufficiently mature to tackle this section. 'The language of hands' can be used to lead into a considerable discussion about prayer and prayers; at this stage, children are discovering different types of prayer (praise, thanksgiving, adoration, confession, intercession, petition) and are capable of writing prayers for use in school assembly.

'Kind hands' is designed to indicate to junior children the compassion of Jesus and it is important that in the healing stories the compassionate element should be stressed. Ideas of magic still linger in the minds of children and stress on the miraculous at

A proposed theme - Hands
London, 1968, pp. 47-49

this stage is liable to bring fundamental misconceptions of Jesus as a wonder-worker, making it probable that in adolescence a growing scepticism will bring a total rejection of these ideas. The theological issues arising from the miracle stories of the Gospels are too complex to be dealt with at this stage.

'Hands that work' leads not only into useful Bible background, but also to the realisation that work is part of God's plan of life. In the Gospel according to the Hebrews, an apocryphal work, is added to the story of the man with the withered hand, 'I was a mason, seeking a living with my hands; I beg you, Jesus, restore my health to me, so that I need not beg for my food in shame'. 'Cutting off your hand' is a stern picture of strong self-discipline which is useful with older pupils. 'Empty hands' leads to a study of social service.

Teachers may find that one section alone provides sufficient resources for a complete unit of work.

Using our hands
Learning to use our hands—watch a baby grip, then lift an object, later learn to feed himself, clap hands, wave his hand; learning to use our hands in a new skill.

Explore the variety of manual skills the children themselves possess, e.g. writing, drawing, painting, modelling, using tools, playing musical instruments, playing games, lifting, gripping, carrying, blessing.

Touch
Explore the use of our hands for feeling for size, shape, weight, texture; finding out how things work; stroking, soothing, prodding, tickling; the blind man's use of touch—Braille; work for the blind; assurance of help—'hold my hand', or of friendship —shake hands.

Understanding our hands
A scientific study of the function of bones and joints; blood-vessels and muscles; skin and nerves, and their function in the sensations of touch, hot/cold, rough/smooth.

Care of hands, washing hands, barrier creams and hand creams, nail varnish.

Metaphors about hands
Clean hands and innocency; a hand of cards (and gambling); take in hand; have a hand in; keep your hand in; wash my hands of it; a helping hand; empty-handed; I've got my hands full; a big hand.

The language of hands
Waving, pointing, beckoning, stopping (like a policeman on point-duty); shaking hands; ideas of the use of left and right hands; saluting; clapping hands; the clenched fist; an outstretched hand; hand in hand; hands together—prayer and grace; hands laid on in confirmation or blessing or spiritual healing; hands joined in marriage.

Other people's hands
Baby's hands—clutching; mother's hands—tending; father's hands—competent; doctor's hands—healing; workman's hands—skilful; artist's hands—sensitive.

Clever hands
Some of the following paragraphs may be dealt with fully or most of them briefly touched upon:

Hands that work
Skill of craftsman, mechanic, carpenter, dressmaker, watchmaker, farmer, cook, typist.

Bible background—the potter, the farmer, the carpenter, grinding corn, catching fish, ploughing and sowing. The man with the withered hand (*Mark 3 : 1-5*); (for older pupils—*Matt. 5 : 30; also Matt. 25 : 14-30*).

Hands that write
Writing through the ages; clay and wax tablets; scrolls, parchment, papyrus, books, printing; writers of the ancient world; modern writers, authors and journalists; letter writing; pen-friends; keeping in touch.

An Old Testament book—*Jer. 36 : 1-32.*
Making the New Testament—letters of Paul; writing the gospels.

Hands that make music
Musical instruments we know and play; the modern orchestra; other forms of music—dance music, pop, folk, Indian music, West Indian; ancient music and music in the Bible; Psalm 150; praise; Church music; the organist; famous choirs; famous musicians and composers.

Hands of the artist
Modern artists and their work; art through the ages; stories of great artists; the arts in church—Michelangelo, Graham Sutherland and Gilbert Scott.

Hands of power
The human hand that controls the mechanical hand —cranes, bulldozers, lifting machines; remote handling of dangerous radio-active materials; atomic power and its uses for good and evil.

Empty hands
Needs of refugees; famine areas; poor and deprived; people with no hands at all—limbless children, writing with your feet, painting with your mouth; organisations that help.

Famine in the Bible, e.g. *Gen. 41 : 46-57 : 5; Ruth 1 : 1-3; Joel 1 : 4,* etc. (See also theme on Food page 52)

Suffering hands
Deformed and maimed; arthritis; paralysis; leprosy; modern help for these sufferers (is it adequate?); how can we help?

Jesus' hands
That blessed, healed, helped, suffered (e.g. *Mark 1 : 40-42; 6 : 1-6; 10 : 13-16; Luke 13 : 10-13; John 20 : 26-29*).

The hand of God
(A study of an idiom which should lessen anthropomorphic thinking.) His power, e.g. *Deut. 3 : 24; Acts 4 : 28, 30;* his creation, e.g. *Ps. 95 : 5; Heb. 1 : 10;* his care and protection, e.g. *Ps. 31 : 5; John 10 : 28-29;* his guidance, e.g. *Ps. 78 : 72;* his presence, e.g. *1 Kings 18 : 46; Acts 11 : 21.*

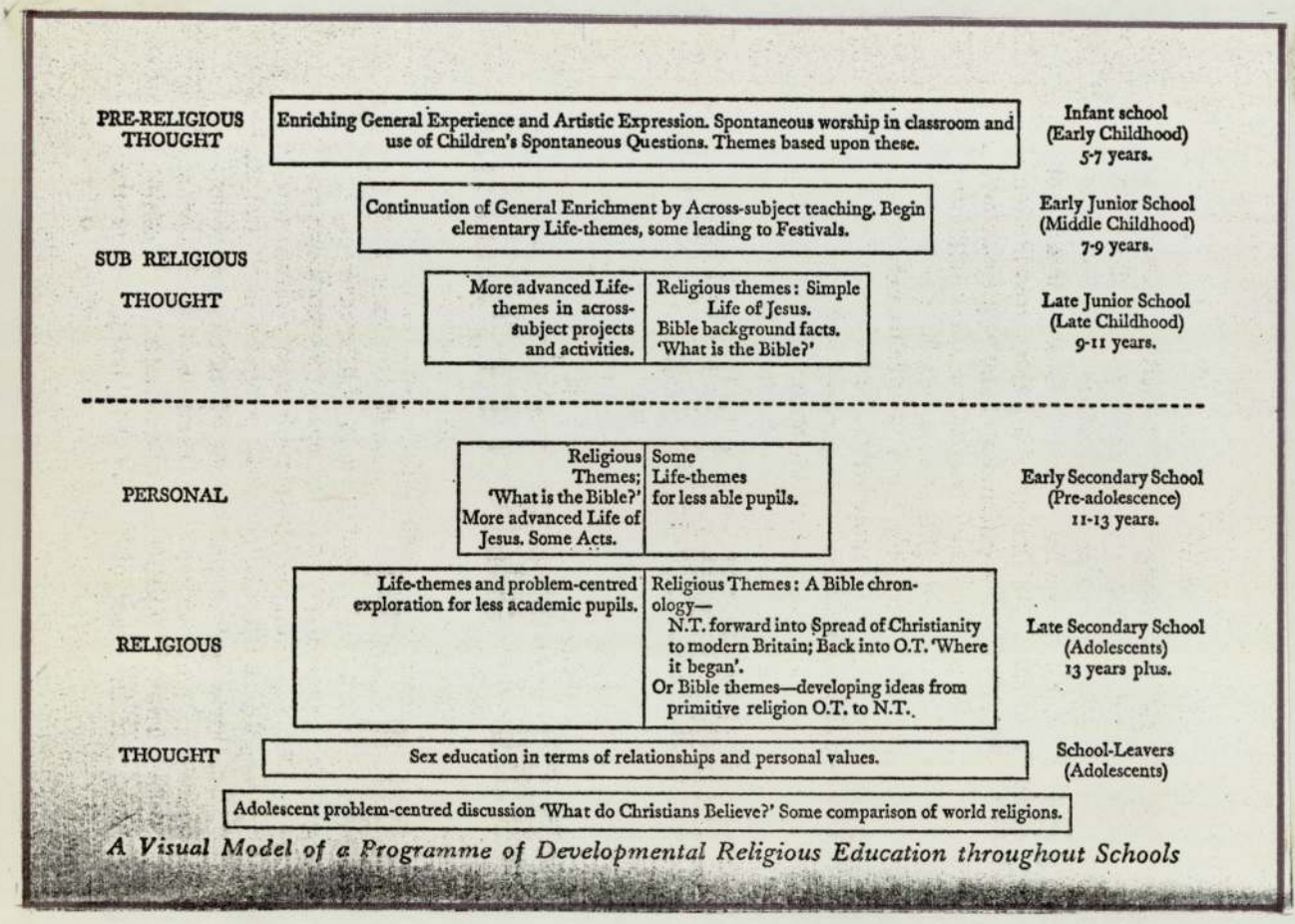
Helping hands
(Recapitulation) What do we do with our hands each day? Helping? Hindering? What can we make? Can we give anyone a helping hand? A friendly hand? 'Take my hands and let them move at the impulse of thy love.' 'Ours are the hands to do his work.' *Eccl. 9 : 10.* In how many ways do we use our hands in the course of one day? Let's do something—what helpful activity has come out of the study?

Bible passages
In addition to suggestions made in the sections above, other biblical material may be used. Among many suitable passages are the following:

Gen. 27 : 1-41	A story of rough hands
Ex. 31 : 1-11	Bezaleel the craftsman
2 Kings 11 : 12	Applause
Ps. 24 : 4	Clean hands
26 : 6	Innocent hands
134 : 2	Hands in praise
143 : 6	Hands in prayer
Prov. 31 : 20	Generous hands
Is. 49 : 16	Hands that remember
59 : 3, 6	Violent hands
Matt. 27 : 24	Washing hands of responsibility
Mark 10 : 16	Hands in blessing
Acts 6 : 6	Hands in ordination
9 : 8	Led by the hand
9 : 36-42	Dorcas, full of good works
20 : 34	Paul supports himself (cf. *1 Cor. 4 : 12*)
Gal. 6 : 11	Written with my own hand (cf. *Philemon 19*)

APPENDIX B

Developmental Religious Education
Goldman, 1965, p. 196

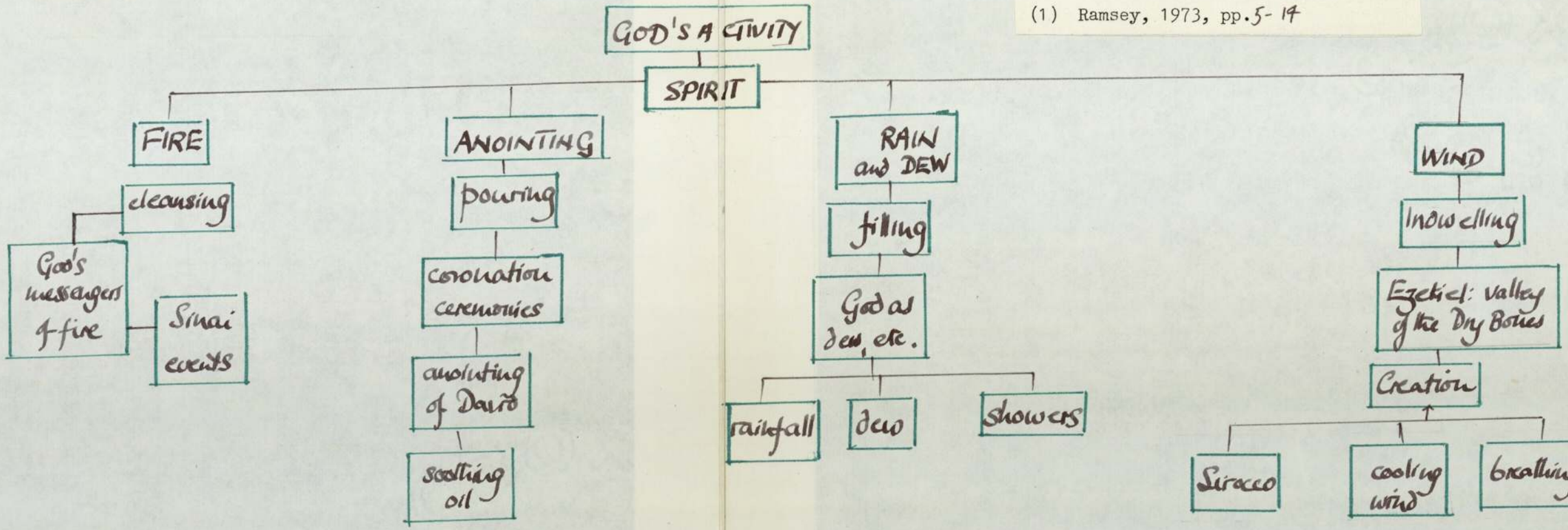


A Visual Model of a Programme of Developmental Religious Education throughout Schools

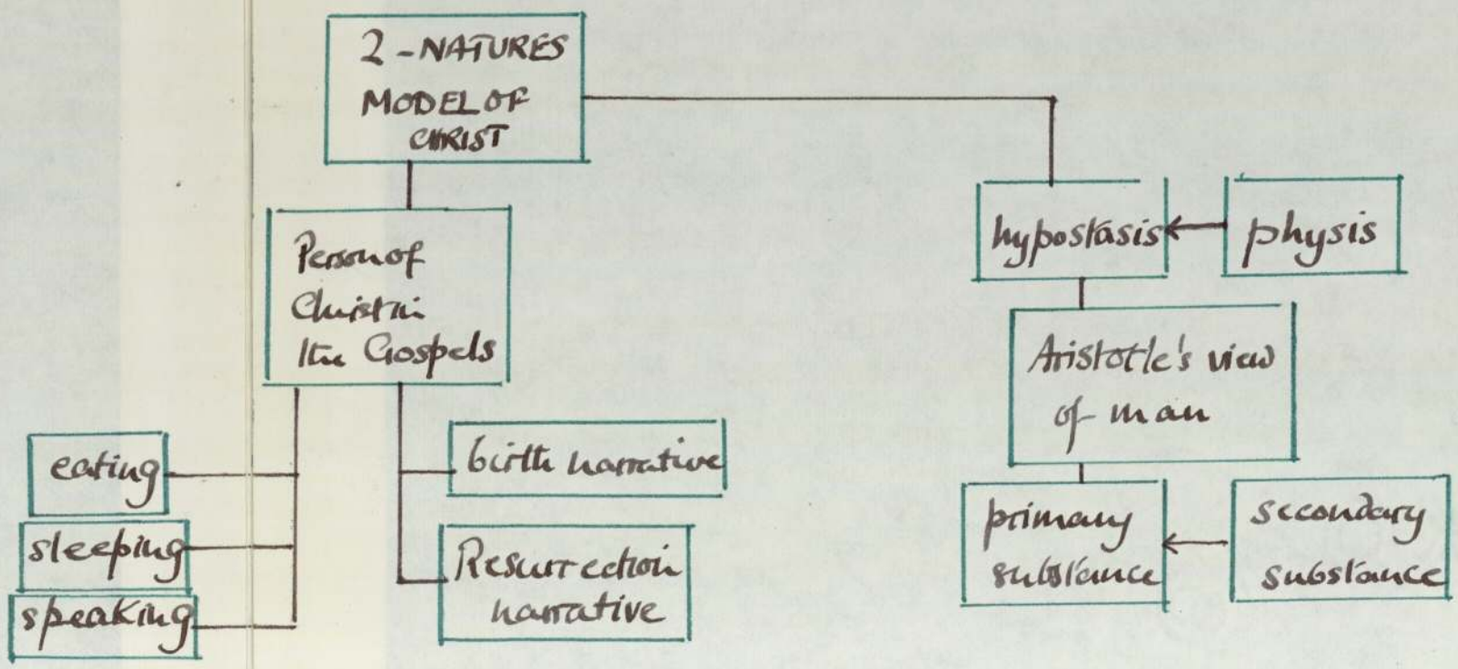
APPENDIX C

Proposed model hierarchies, based on:-

(1) Ramsey, 1973, pp.5-14

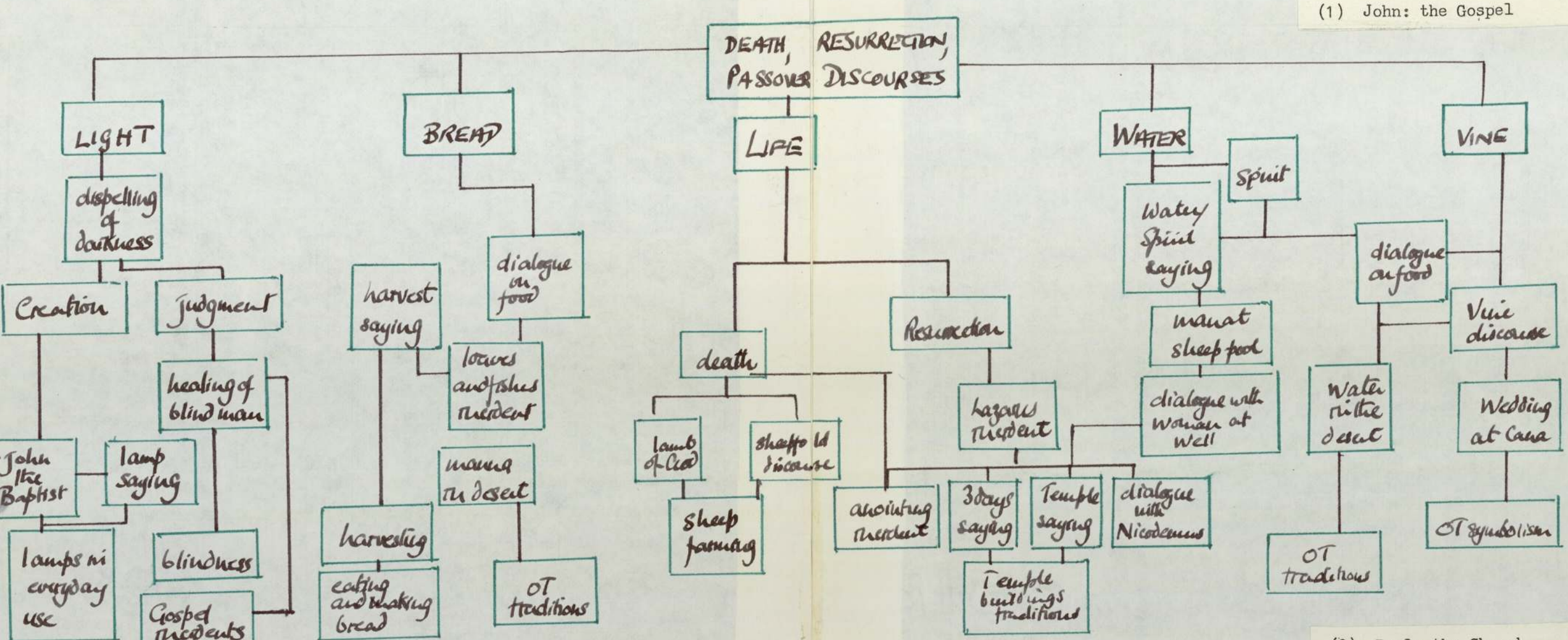


(2) MacIntyre, pp. 83-89

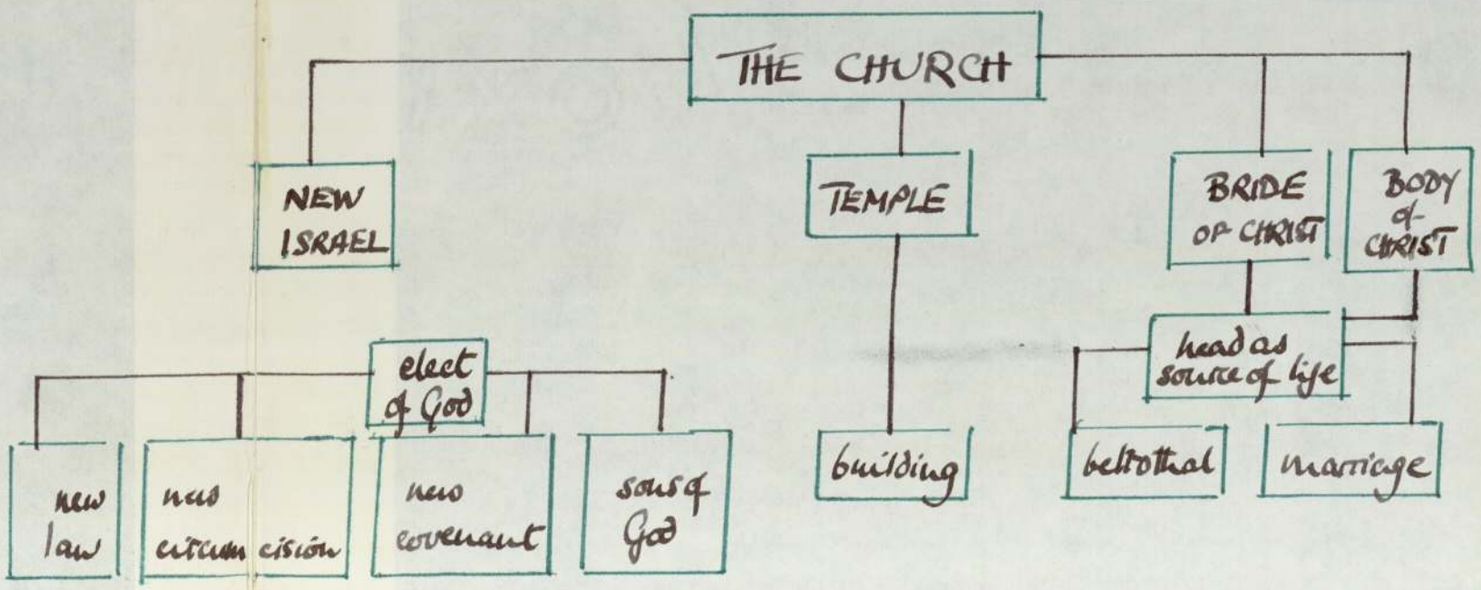


Proposed model hierarchies

(1) John: the Gospel

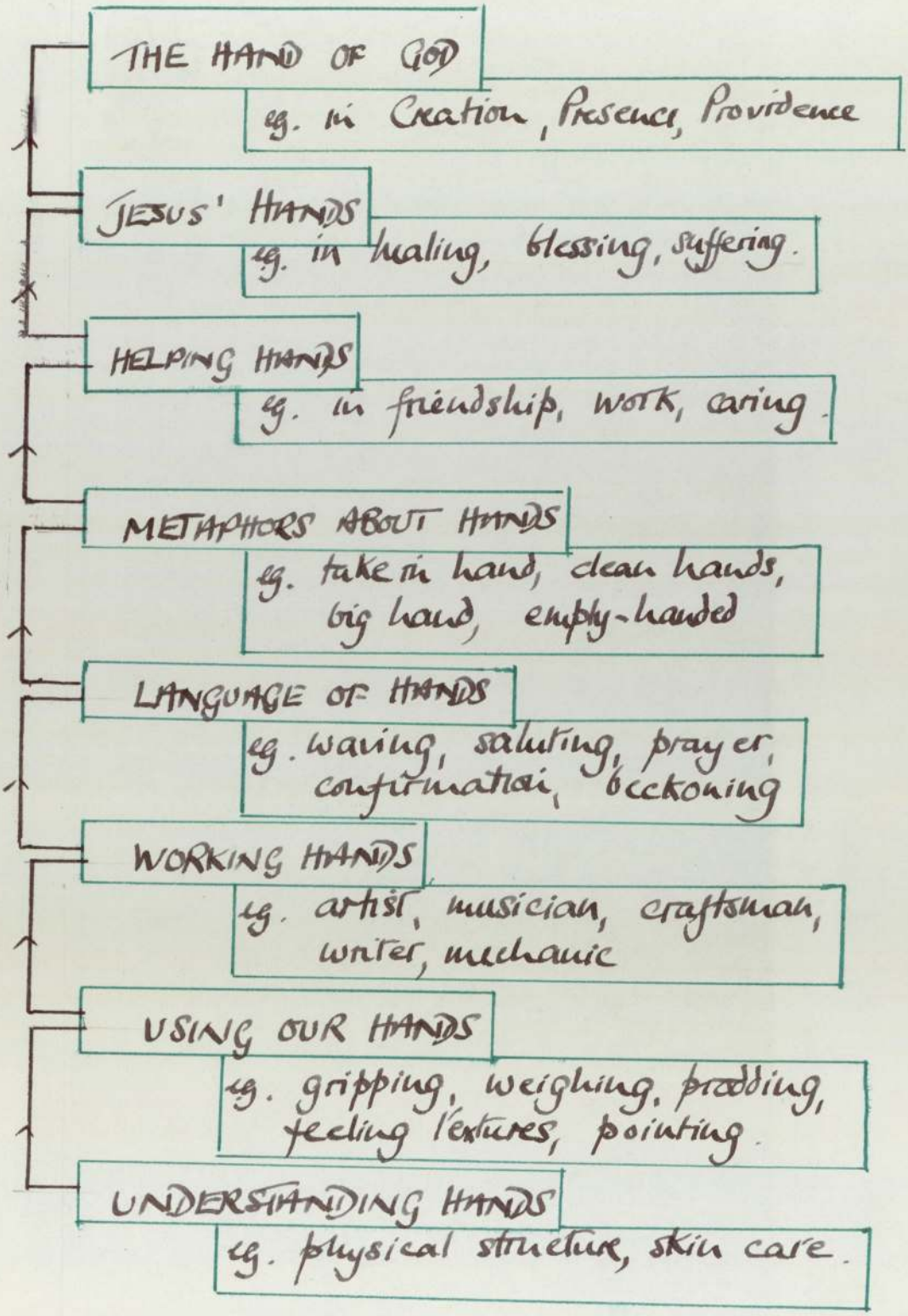


(2) Paul: the Church



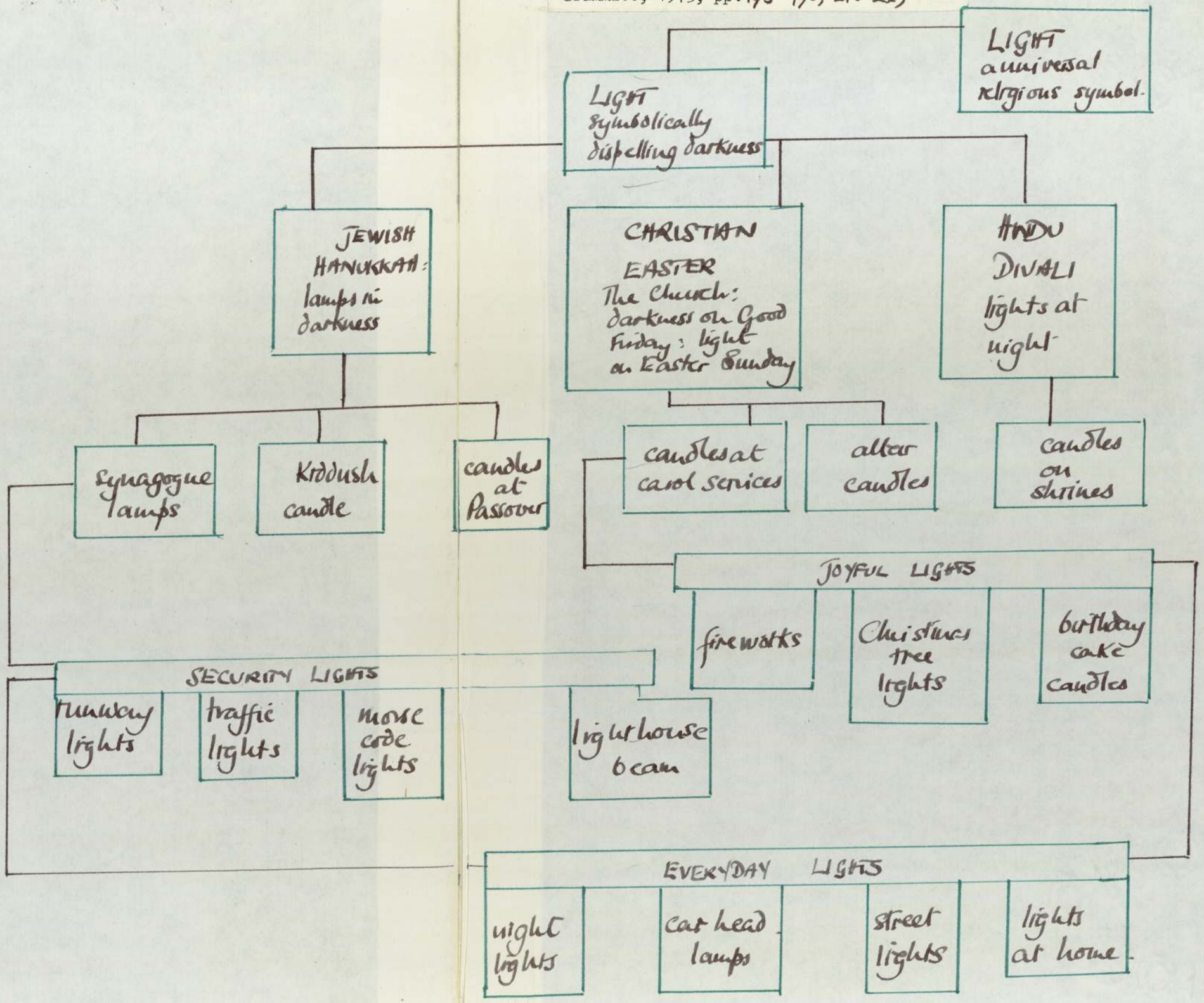
APPENDIX E

Proposed theme structured according to the model-qualifier pattern



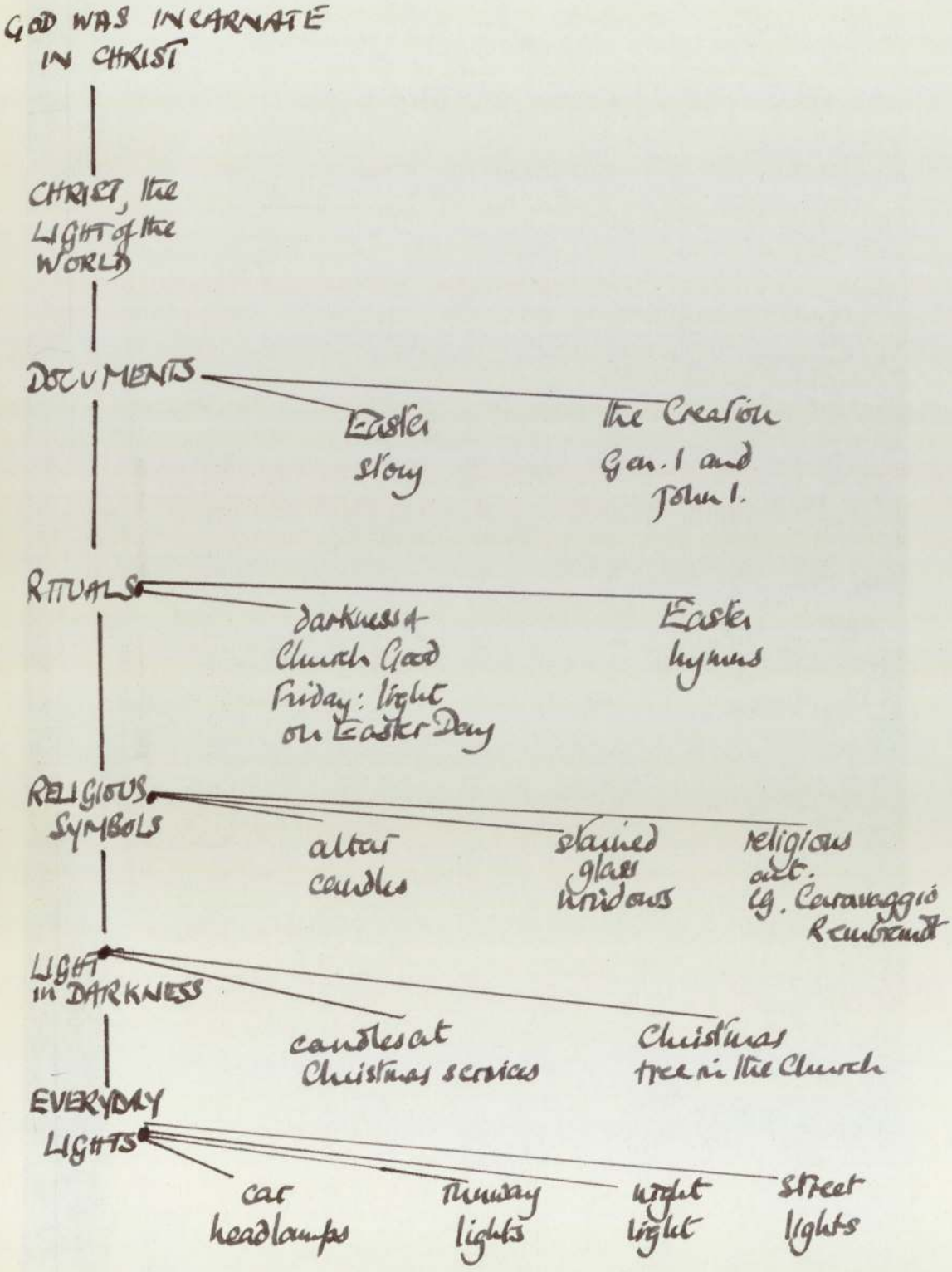
APPENDIX F

Proposed model-theme hierarchy: Light
Grimmitt, 1973, pp. 195 - 196, 216-225



APPENDIX G

A proposed model hierarchy: Light, structured according to Piagetian classification procedures



REFERENCES : PART A

1 CAMBRIDGESHIRE, Religious Teaching for Schools, 1949, p. 143. (1951 re-issue).

2 City of Birmingham Education Committee, Living Together, 1975, p. (b) 8.

3 Education Act, 1944, 7 & 8 George VI chap. 31 (Part II section 29 pp. 24-25 cf. section 25(2) p. 21, section 26(2) p. 22). The preferred term for the subject in the Act is 'religious instruction'.

4 ibid., Fifth schedule, pp. 96-97.

5 e.g. Cambridgeshire had produced a syllabus in religious education in 1924. The West Riding produced one in 1904 and revised it in 1922.

6 see further Hull, J., Agreed syllabuses, past, present and future in Smart, N. and Horden, D., (eds), New Movements in religious education, 1975, p. 99.

7 re-issued 1951, 1962 and 1966. Adopted, for example, by Wiltshire. A further measure of its status may be gauged by the fact that the accompanying Handbook was written by Basil Yeaxlee, a leading educational psychologist of the day.

8 Religious Education Press. Revised and reprinted 1954, reprinted 1960, revised and reprinted 1967.

9 University of London Press. Second edition 1956, third edition 1958, reprinted 1961.

10 published under the title 'Learning for Life'.

11 This book suffers from the disadvantage that it deals only with younger children. It was chosen because it is the only one on this topic that has crossed the writer's path and published at the same time as the London syllabus. Another book which may be used as a check in matters of doubt is Evening, M., Approaches in Religious Education, Hodder & Stoughton, 1972. (Cited in Hogbin, J., An approach to religious education, CEM, 1973. Reviewed in Learning for Living, Vol. 12 no. 1, Sept. 1972, p. 31).

Ferguson is cited in West Riding Agreed Syllabus, Suggestions for Religious Education, 1971, p. 18. City of Birmingham Agreed Syllabus, Living Together, 1975, pp. (a)26, (b)10.

12 published by Ward Lock. Reviewed in Learning for Living, Vol. II, no. 1, September 1971, pp. 35-36. Cited in CEM mailing list, 1972. Lord, E., and Bailey, C., A Reader in Moral and Religious Education, SCM, 1973, p. 234. Grimmitt, M., What can I do in RE?, Mayhew McCrimmon, 1973, p. 249. City of Birmingham, op.cit., 1975, p. (a)7.

13 Published under the title 'Living Together'. It should be noted that it is the original edition to which reference is being made. Certain sections (those on Humanism and Communism) were later removed by order of the City Council.

14 Published by Mayhew McCrimmon. Cited in City of Birmingham op. cit., 1975, p. (b) 10. Schools' Council, Discovering an Approach, 1977, p. 78. Learning for Living, Vol. 13, no. 4, March 1974, pp. 163-164.

15 Published by Oxford University Press. Cited Schools Council, op. cit., p. 78. Reviewed Learning for Living, Vol. 15, no. 2, Winter 1975, pp. 75-76.

16 An important source monitoring the direction of change are the teaching materials produced by the CEM. Regular mailings are currently produced under the heads, 'Primary Resource Material', Secondary Resource Material' and more rarely 'RE in the Middle School'. Many special series are also produced from time to time (e.g. 'Probe', a series of booklets investigating contemporary issues).

17 see further, Holm, J., Life-Themes: what are they?, Learning for Living, Vol. 9, no. 2, November 1969, pp. 15-18.

18 Thus, in a section entitled 'Stories from the lives of great Christians' there is a sub-section 'Children' by which is meant work undertaken for

children by certain Christians. The emphasis lies on what was done by the individuals, rather than the children themselves. See Cambridgeshire, op. cit., pp. 80-82.

19 Thus, in Avery, M., op. cit., 1951, there is no heading in the index for theme, topic or related word. Despite a substantial section entitled 'The technique of the Scripture lesson' (pp. 104-186) there is an absence of thematic material.

In Youngman, B., op.cit., 1953, a search of the index reveals the word 'Topic', but an examination of the pages cited shows that this is an extension of the 'lecturette' i.e. a pupil-based talk on some matter of interest.

20 Evening, M., op. cit., 1972, pp. 17-42. The chapter consists of an introduction (pp. 17-18) and some examples, e.g. 'the home' (pp. 28-30), 'journeys' (pp. 30-33).

21 Dean, J., op. cit., 1971, pp. 34-51. She divides themes into two basic types: those about feelings (e.g. my friends, coping with myself), and those about physical development (e.g. heredity, my body). Examples given are accounts of what has been done in classrooms.

22 London, op. cit., 1968, pp. 54-55. Suggested customs are:-
Christmas in London today
Christmas cards
Secular customs at Easter
Easter customs in Western and Eastern churches.

23 West Riding, Suggestions for Religious Education, 1966, pp. 9-35. Examples are (for 4-7 year olds) Homes and Families (pp. 10-11); (for 8-9 year olds) Wells and Water (p. 23). Nearly all themes are prescribed for pre-adolescent pupils. It is interesting to note that Goldman was a Consultant to the Drafting Committee.

24 In the theme 'Discovery and Discoverers', the section 'Courage' instances Rama; in the theme 'Living together in the City Community', there is a section 'Communities within the Community', a reference to ethnic minorities. Birmingham, op. cit., 1975, pp. (b) 21, 24.

25 Including, e.g. for infants, work-card packages 'Sheep and Shepherds', 'Bread'; for juniors topic booklets 'Myself'; for secondary school pupils a set of four booklets 'Symbols', printed in large, clear type

with frequent line-and-colour block illustrations, they effectively brought about the demise of the large, close-printed 'text-book'. Collaborators were e.g. Norman Bull, Constance Parker, William & Inger Bulman, Eric Rolls.

26 Included in the original texts were three pictures reflecting Christian activities. Consideration of these has been excluded from the present study on the grounds that attitudes were being tested, and the material did not necessarily feature on teaching of the time.

27 see further, e.g. Mathews, H. F., Revolution in Religious Education, Religious Education Press, 1966.
Howkins, K. G., Religious Thinking and religious education, Tyndale Press, 1966.
Hubery, D., Christian Education and the Bible, Religious Education Press, 1967.
Smith, J. W. D., Religious Education in a Secular Setting, SCM, 1969.

28 Attfield, D., articles in Learning for Living, A fresh look at Goldman: the research needed today. November 1974, pp. 44-49.
Conceptual research in religious education, Spring 1976, pp. 01-95.
A taxonomy of religious concepts, Winter 1976, pp. 68-75.

29 Acland, R., We teach them wrong, Gollancz, 1963.
Acland, R., Curriculum or Life, Gollancz, 1966.

30 Loukes, H., Teenage Religion, SCM, 1961. New Ground in Christian Education, SCM, 1965.

31 Alves, C., Religion and the Secondary School, SCM, 1968. Other research documents and commentaries published within this period included: Ramsey, I., (chairman), The Fourth R, Report of the Commission on Religious Education in schools, National Society and SPCK, 1970.
Hyde, K., Religion and slow learners, SCM, 1969.
Cox, E., Sixth Form Religion, SCM, 1967.

32 Working Paper No. 2, Raising the school-leaving age.
Working Paper No. 11, Society and the young school-leaver.
Cited in London, op. cit., 1968, pp. 63-64.

33 Schools Council Working Paper No. 36, Religious Education in Secondary Schools, Evans/Methuen, 1971.

34 currently being published under the title 'Journeys into Religion'.

35 Schools Council, Discovering an Approach, MacMillan, 1977. In this book, the study of other faiths is recommended for primary school pupils.
Schools Council, Groundplan for the study of religion, 1977. In this discussion pamphlet, a curriculum model for the study of religion is presented. The presence of other religions is assumed.
e.g. Copley, T. & G., First School RE, SCM, 1978, p. 27, where a scheme for other religions is recommended for infants.

36 e.g. Bouquet, A. C., Comparative Religion, Pelican, 1941.
Anderson, J. N. D., (ed), The World's Religions, Inter-Varsity Fellowship, 1950.
Hilliard, F. H., How men worship, Routledge Kegan Paul, 1965.

37 So Birmingham, op. cit., 1975, pp. (b)55-60, Guru Nanak, equivalent in space to Muhammad, pp. (b)44-47.
cf. Cole, W. Owen, (ed), World Religions: a handbook for teachers, Community Relations Commission, 1976, where both Buddhism (pp. 103-105) and Sikhism (pp. 160-166) are featured - though Buddhism with notably fewer pages!

38 Edwards, D., The Honest to God debate, SCM, 1963.
Robinson, J. A. T., The New Reformation?, SCM, 1965.
The original book had run through 13 impressions by 1967.

39 Glaucon, The aims of education, Pitman, 1950; revised in 1955 and reprinted in 1957, 1960, 1961, 1963, 1964.
Beyond Neutrality was published by Pitman in 1955.

40 Known as the phenomenological approach (see later in study pp.194)
A summary of this view is found in Smart, N., The Religious Experience of Mankind, Scribners, 1969, pp. 3-12. A much fuller account is to be found in Smart, N., Secular Education and the logic of religion, Faber, 1968.

41 City of Birmingham, op. cit., e.g. p. (c) 37, R. Pannikar,

p. (d) 9, R. K. Narayan, C. Achebe, N. Farooki.

42 City of Birmingham, ibid., pp. (d) 3-4, e.g. MacQuarrie, J., and Smart, N. ibid., p. (a) 7.

43 Phenix, P. H., Realms of meaning, McGraw Hill, 1964.
Dearden, R. F., Philosophy of primary education, Routledge Kegan Paul, 1968.

44 e.g. Hardy, D. W., Truth in religious education, British Journal of Religious Education, Spring, 1979, pp. 102-107, 119.
Meakin, D. C., The Justification of Religious Education, ibid., Winter, 1979, pp. 49-55.
Webster, D., Creativity within Religious Education, ibid., Summer, 1980, pp. 129-135.

45 see further Hull, J., The theology of themes, CEM, 1972.

REFERENCES : PART B

1 Shibles, W. A., Metaphor: an annotated bibliography and history, Language Press, 1971, pp. 1-21.
Searle, J. R., Expression and meaning, Cambridge University Press, 1979, chap. 4.
Leech, G., A Linguistic Guide to English Poetry, Longmans, 1968, p. 161, cf. pp. 156-163.
Hawkes, T., Metaphor, Methuen, 1972, p. 1.

2 Leech, G. ibid., p. 163.

3 Published by Cornell University Press.
Referred to e.g. in
Barbour, I., Issues in Science and Religion, Prentice Hall and SCM, 1966, p. 160.
Myths, models and paradigms, SCM, 1974, pp. 12-13, 42-43.
Ramsey, I. T., Models and mystery, Oxford University Press, 1964, pp. 6, 9-10, 49, 54.
MacCormac, E. R., Metaphor and myth in science and religion, Duke University Press, 1976, pp. 73, 93-100.
Hesse, M., Models and analogies in science, University of Notre Dame Press, 1966, pp. 157-166.
Teselle, S., Speaking in parables, SCM, 1975, pp. 43-44.
Jeffner, A., The Study of religious language, SCM, 1972, pp. 44-48.

4 Leech, G., ibid., p. 9.

5 Barfield, O., Poetic Diction, Faber and Guyer, 1928, pp. 113-126.

6 see Flew, A., and MacIntyre, A., New Essays in philosophical theology, SCM, 1963, pp. 96-103.
Barbour, I., Myths, models and paradigms, SCM, 1974, pp. 51-52, 146.
Ayers, R. H., and Blackstone, W. T. (eds.), Religious Language and Knowledge, 1972, p. 1.
MacCormac, E. R., Metaphor and myth in science and religion, Duke University Press, 1976, p. 43, 84-92.
Hick, J., Philosophy of Religion, Prentice Hall, 1963, pp. 96-97.
Donovan, P., Religious Language, Sheldon Press, 1976, pp. 18-19.

7 cited in MacCormac, E. R., op. cit., pp. 84-92.
Teselle, S., op. cit., p. 71.

8 In what follows I am indebted to Ferré, F., Language, logic and God, Fontana, 1970, (first published 1962), particularly pp. 17-37.

9 published by MacMillan.

10 see further, Harré, R., The Philosophies of Science, Oxford University Press, 1972, pp. 171-172.

11 see Barbour, I., Issues in science and religion, SCM, 1966, pp. 34-44.
MacCormac, E., op. cit., 1976, pp. 96-97.

12 published by Weidenfield and Nicolson.

13 see further, Barbour, I., op. cit., 1966, pp. 319-322.

14 published by Prentice Hall, 1966. First British edition published by SCM, 1966.

15 published by SCM.

16 the other two sub groups are called 'scale' and 'working' models. Both represent on a different scale, the proportions of an original.

17 Ferré, F., Mapping the logic of models in science and theology, in High, D., (ed.), New essays in religious language, Oxford University Press, 1969, p. 73.
cf. Hesse, M., Criteria of truth in science and theology, Religious Studies, Vol. II, no. 4, December 1975, pp. 388-391.

18 Hesse, M., Models and analogies in Science, Notre Dame Press, 1966, pp. 57-129.

19 Hesse, M., ibid., pp. 170-177.
Ferre, F., op. cit., pp. 66-68.

20 Hesse, M., ibid., pp. 11-28.
MacCormac, E., op. cit., chap. 1.

21 Barbour, I., op. cit., 1966, p. 159.

22 see Ferré, F., ibid., p. 91.
Barbour, I., op. cit., 1966, p. 159.

REFERENCES : PART C

1 Religious Studies, Vol. II, 1975, pp. 467-472.

2 Note that the issue is considered from a strictly scientific viewpoint. Hick claims that there is available a form of theological verification, i.e. eschatological verification. See Hick, J., Faith and knowledge, MacMillan, (2nd edition), 1968, chap. 8, pp. 186-189.

3 in particular, Ramsey, I., Models and Mystery, Oxford University Press, 1964.
Cited MacIntyre, J., The shape of Christology, SCM, 1966, pp. 56-59.

4 drawn from the list as in Evans, C. F., Ian Ramsey on talk about God, Religious Studies, Vol. 7, 1971, no. 2, pp. 125-140; and no. 3, pp. 213-226. Publication details as follows:-
Religious language, MacMillan, (reprint of a version originally published in 1957).
Freedom and immortality, SCM.
Models and Mystery, Oxford University Press.
Christian Discourse, University of Newcastle-on-Tyne Press.
Biology and personality, Blackwell.
Paradox in religion, in High, D., New essays in religious language, pp. 138-161.
Models for divine activity, SCM.
This sample can be held to be representative of Ramsey's thought.

5 For an introduction to an account of the empirical basis of Ramsey's thought see Gill, J., To speak responsibly of God, Allen & Unwin, 1975, pp. 17-32.

6 notably in his paper Paradox in Religion, op. cit., Ramsey subscribed to the view that a distinction can be drawn between avoidable paradox and unavoidable paradox. In the case of avoidable paradox, the logic of the figure can be unravelled. An unavoidable paradox is a statement which is logically inaccessible. Hence, his description of religious language as 'logically odd'.

7 Ferre, F., Mapping the logic of models in science and theology, in High, D., op. cit., p. 74.

8 in Acts chap. 7, v. 56. By the time of the second century the term was used of Jesus as part of the 'Adam' (original man) concept. See Irenaeus 'Against heresy' quoted in Bettenson, H., Documents of the Christian Church, Oxford University Press, 1963, (second edition), pp. 42-43.

9 see Exodus, chap. 4, v. 23 and e.g. Jeremiah, chap. 31, v. 9, where the phrase is used of the nation Israel. The same corporate use is found in inter-testamental literature, e.g. Wisdom of Solomon, chap. 18, v. 13, Jubilees, chap. 2, v. 20, Psalmns of Solomon, chap. 18, v. 4. To a Jewish reader, the Voice at Baptism (Mark chap. 1, v. 11 and parallels), and Transfiguration (Mark chap. 9, v. 7 and parallels) would carry corporate overtones. In early Christian thought, the term 'Son of God' was applied to Christ as 'pre-existent Being', probably under the influence of the 'Logos' concept. See Davies, J. G., The early Christian Church, Weidenfield and Nicolson, 1965, pp. 51-52.

10 See Hick, J., (ed.), The myth of God incarnate, SCM, 1977. As the title suggests, the book is a series of essays by different scholars who apply the category of myth to such doctrines as the Incarnation. In the same year a 'response' document was produced - Grech, M., (ed.), The truth of God incarnate, Hodder and Stoughton, 1977. Another 'follow-up' work was written the following year: Goulder, M., (ed.), Incarnation and myth, SCM, 1979.

11 i.e. Barbour proposes the process model, MacIntyre the psychological model. Ramsey proposes 'Depth'. See Ramsey, I., op. cit., 1973, pp. 25-26.

12 see Hesse, M., Criteria of truth in science and theology, in Religious Studies, Vol. II, no. 4, December 1975, pp. 385-400.

13 see MacQuarrie, J., God-talk, SCM, 1967, pp. 97-98.
Jeffner, A., The study of religious language, SCM, 1972, pp. 52-56.
Teselle, S., Speaking in parables, SCM, 1975, pp. 44-47.
Donovan, P., Religious Language, Sheldon Press, 1979, p. 29.
For a special study of the Incarnation as a cognitive symbol, see Williams, H. A., Incarnation, model and symbol, in Theology, Vol. 79, no. 667, January 1976, pp. 6-18.

14 Golding, W., Lord of the Flies, 1954 (Faber edition, 1975), pp. 151-152, 157-159 which describe the setting up of the pig's head as a 'gift for the darkness': pp. 167-168 for the succeeding, magic ritual dance.

15 MacQuarrie, J., op. cit., 1967, pp. 168-191.
Barbour, I., op. cit., 1974, pp. 19-28.
MacCormac, E., op. cit., 1976, pp. 102-134.
Ayers, R. H., Religious discourse and myth, in Ayres, R. H., and Blackstone, W. T., (eds.), Religious Language and Knowledge, University of Georgia Press, 1972, pp. 76-96.
A short contemporary by Steen, S. The peach-seed monkey is quoted in Teselle, S., op. cit., 1975, pp. 20-21. Golding's novel has a strongly mythical quality about it.

16 MacQuarrie, J., ibid., pp. 192-211 (on the symbol of light).
Barbour, I., ibid., pp. 14-16.
Dillistone, F. W., Traditional symbols and the Christian world, Epworth, 1968.
Tillich, P. Symbols of faith, in Santoni, R. E., (ed.), Religious language and the problem of religious knowledge, Indiana University Press, 1968, pp. 136-145. Tillich has written extensively on religious symbolism, and makes a clear distinction between the 'partaking' synbol and the 'non-partaking' sign.
Very full discussions can also be found in Cope, G., Symbolism in the Bible and the Church, SCM, 1959.
Ricoeur, P., The symbolism of evil, (trans. Buchanan, E.), Beacon Press, 1969.

17 e.g. windows by Chagall in Jerusalem, Hutton and Piper in Coventry, sculpture by Epstein, Henry Moore.

18 Hirst has given some notable answers in this field. See further Hirst, P., Knowledge and the curriculum, Routledge, Kegan Paul, 1974, particularly pp. 54-100 has given a notable lead in this field. See also Whitfield, R. C., Disciplines of the curriculum, McGraw Hill, 1971, for the comments of individual educationists on the value of their own discipline.

19 cf. study p.147-151 and Tillich, P., op. cit., which give some idea as to how his theology in general would accommodate to this type of theme.

20 Phenix, P., Realms of meaning, McGraw Hill, 1964, particularly pp. 3-49, 244-252.

21 Ramsey, I. op. cit., 1973, pp. 15-25.

22 For a summary see Smart, N., The religious experience of mankind, Fontana, 1971 edition, (first published by Scribners, 1969), pp. 11-33. A more detailed discussion can be found in Smart, N., The Phenomenon of religion, MacMillan, 1973, pp. 39-48, 53-78.
For a discussion of its relevance to education, see Gates, B., A proper humanism, London Educational Review, Vol. 2, no. 3, 1973, pp. 55-61.
The six dimensions are the ritual, mythical, experiential, doctrinal, ethical and social.

23 i.e. the Guttman scalogram. See Goldman, R., Religious thinking from childhood to adolescence, Routledge, Kegan Paul, 1964, p. 48.

24 Bruner, J., Toward a theory of instruction, Harvard University Press, 1967, p. 7.

25 Piaget, J., and Inhelder, B., The psychology of the child, Routledge, Kegan Paul, 1969, (first published 1966), pp. 101-103.

26 ibid., p. 72.

27 Piaget, J., and Inhelder, B., The Growth of Logical Thinking, Routledge, Kegan Paul, 1966, (first published 1958), p. 251.

28 ibid., pp. 253-254.

29 ibid., pp. 20-21.

30 This description is based on an article by Mays which forms an introduction to a volume of lectures delivered at Manchester University by Piaget.
See Mays, W., Introduction to Piaget's logic, in Piaget, J., Logic and pyschology, University of Manchester Press, 1953, pp. ix-xvi. The article is based on Piaget's own 'Traite de logique', an account of the theoretical base of his work.

31 The so-called combinational system (the INRC group of operations). The four components are

I = Identity operator
N = the inverse
R = the reciprocal
C = the correlate

See further Mays, W., op. cit., 1953, p. xiv.
Piaget, J., and Inhelder, B., op. cit., 1966, pp. 134-135, 253-254.
In relation to an experiment, pp. 119-120, and Piaget, J., and
Inhelder, B., op. cit., 1969, pp. 132-136.

32 Piaget, J., and Inhelder, B., op. cit., 1969, pp. 57-59.

33 ibid., pp. 88-91.

34 ibid., pp. 158-159.

35 ibid., p. 70. See also Bruner, J., (ed.), Studies in cognitive growth, Wiley, 1966, pp. 8-24, 40-48,,where he asserts that thinking in images is important in both children and adults. For a translation into practical syllabus terms, see Bruner, J., and Stenhouse, L., Man, a course of study, American Educational Development Agency, 1970.

This is a programme of work for 10 year-old children making extensive use of the kinds of imagery discussed by Bruner in conjunction with the 'symbols' of language. The project is introduced in Bruner, J., Toward a theory of instruction, 1967, chap. 4.

BIBLIOGRAPHY

Acland, R. — Curriculum or life?
Gollancz, 1966

Acland, R. — We teach them wrong
Gollancz, 1963

Alves, C. — Religion and the secondary school
SCM, 1968

Attfield, D. — A fresh look at Goldman; the research needed today
Learning for living, Vol. 14, no. 2, November 1974 pp. 44-49. Conceptual research in religious education, ibid., Vol. 15, no. 3, Spring, 1976, pp. 91-95. A taxonomy of religious concepts, ibid., Vol. 16, no. 2, Winter, 1976, pp. 68-75

Ausubel, D. — The psychology of meaningful verbal learning
Grune and Stratton, 1963

Ausubel, D. — Readings in school learning
Holt, Rinehart and Winston, 1969

Avery, M. — Teaching Scripture: a book on method
Religious Education Press, 1951
(revised and reprinted 1967)

Ayers, R. H. and Blackstone, W. T. (eds.) — Religious language and knowledge
University of Georgia Press, Athens, 1972

Barbour, I. — Issues in Science and Religion
SCM and Prentice-Hall, 1966

Barbour, I. — Myths, Models and Paradigms
SCM, 1974

Barfield, O. — Poetic Diction
Faber and Gwyer, 1928

Beard, R. — An outline of Piaget's developmental psychology for students and teachers
Routledge, Kegan Paul, 1969

Bettis, J. (ed.) — The phenomenology of religion
SCM, 1969

Birmingham, City of, Education Committee — Living together
A teachers' handbook of suggestions for religious education, 1975

Black, M. — Metaphor; models and archetypes in Models and metaphors
Cornell University Press, 1962

Brooke-Rose, C. — The Grammar of Metaphor
Secker and Warburg, 1958

Brown, S. C. — Do religious claims make sense?
SCM, 1969

Bruner, J. S. — Towards a theory of instruction
Harvard University Press, 1967

Bruner, J. S. (ed.) — Studies in Cognitive Growth
Wiley, 1966

Bruner, J., Goodknow, J., Austin, G. — A Study of thinking
Wiley and Sons, 1962

Bruner, J. and Stenhouse, L. — Man, a course of study
American Educational Development Agency, 1970

Cahn, S. M. — The philosophical foundations of education
Harper Row, 1970

Cambridgeshire Education Committee — Syllabus of religious teaching for schools
Cambridge University Press, 1949

Campbell, J. I. — The language of religion
Bruce Publishing Company, 1971

Child, H., and Colles, D. — Christian symbols, ancient and modern
Bell and Sons, 1971

Coburn, R. — A neglected use of theological language
Mind, Vol. 72, 1963, pp. 369-385

Cohen, A., and Garner, N. — Readings in the history of educational thought
University of London Press, 1967

Cole, W. Owen — Texts within contexts: the Birmingham syllabus and its handbook
Learning for living, Vol. 15, no. 4, Summer 1976, pp. 127-128

Cole, W. Owen — World religions: a handbook for teachers
Community Relations Commission, 1976

Cope, G. — Symbolism in the Bible and the Church
SCM, 1959

Cox, E. — Changing aims in religious education
Routledge, Kegan Paul, 1966

Cox, E. — Sixth Form religion
SCM, 1967

Cox, E. (Chairman) — What future for the Agreed Syllabus? A Report
Religious Education Council, 1976

Davies, J. G. — The early Christian Church
Weidenfield and Nicolson, 1965

Dean, J. — Religious education for children
Ward Lock, 1971

Dearden, R. F. — Philosophy of primary education
Routledge, Kegan Paul, 1968

De Silva, W. A. — Concept formation in history through contextual cues
unpublished Ph.D. thesis, University of Birmingham, 1969

Dillistone, F. W. — Traditional symbols and the Christian world
Epworth, 1968

Donovan, P. — Religious language
Sheldon Press, 1976

Education Act, 1944 — 7 & 8 George VI, chap. 31
HMSO

Edwards, D., — The Honest-to-God debate
SCM, 1963

Erwin, E. — The concept of meaningfulness
John Hopkins University, 1970

Evans, D. — Ian Ramsey on talk about God
Religious Studies, Vol. 7, 1971
no. 2, pp. 125-140
no. 3, pp. 213-226

Evening, M. — Approaches to religious education
Hodder and Stoughton, 1972

Farrer, A. — The Glass of Vision
Dacre Press, 1948

Ferguson, J. — To do and to know
Religious Education Press, 1968

Ferré, F. — Language, Logic and God
Fontana, 1970
(first published by Eyre and Spottiswoode, 1962)

Ferré, F. — Mapping the logic of models in science and theology in High, D., (ed.), New essays in religious language Oxford University Press, New York, 1969, pp. 54-96

Flew, A. and MacIntyre, A. — New essays in philosophical theology SCM, 1963 (first published 1955)

Gates, B. — A proper humanism London Educational Review, Vol. 2, no. 3, 1973, pp. 55-61

Gill, J. — To speak responsibly of God Allen and Unwin, 1975

Golding, W. — Lord of the Flies Faber edition, 1975 (first published 1954)

Goldman, R. — Readiness for religion Routledge, Kegan Paul, 1965

Goldman, R. — Religious thinking from childhood to adolescence Routledge, Kegan Paul, 1964

Goldman, R. — Topic Books: me, homes, books
Lutterworth Educational, 1971
Readiness for Religion: symbols
light
What is the Bible?
sheep and shepherds
wells and water
Rupert Hart-Davis, 1966-67

Goulder, M. (ed.) — Incarnation and myth SCM, 1979

Green, M. — The truth of God incarnate Hodder and Stoughton, 1977

Grimmitt, M. — What can I do in RE? Mayhew McCrimmon, 1973

Hardy, D. — Teaching religion: a theological critique Learning for living, Vol. 15, no. 1, Autumn 1975, pp. 10-16

Hardy, D. W. — Truth in religious education British Journal of Religious Education Spring 1979, pp. 102-107, 119

Harré, R. — An introduction to the logic of the sciences MacMillan, 1967 (first published 1960)

Harré, R. — The Philosophies of Science
Oxford University Press, 1972

Harré, R. — The principles of scientific thinking
MacMillan, 1970

Harré, R. — Theories and things
Steed and Ward, 1961

Hawkes, T. — Metaphor
Methuen, 1972

Hebblethwaite, B. — The philosophical theology of I. T. Ramsey
Theology, Vol. 76, no. 624, pp. 638-645

Helm, P. — The Varieties of Belief
Allen and Unwin, 1973

Helmore, G. A. — Piaget: a practical consideration
Pergamon Press, 1969

Hesse, M. — Criteria of truth in science and theology
Religious Studies, Vol. II, no. 4, December 1975, pp. 385-400

Hesse, M. — Models and analogies in science
University of Notre Dame Press, 1966

Hick, J. — Faith and Knowledge
MacMillan (2nd ed.), 1966

Hick, J. — God and the universe of faiths
MacMillan, 1973

Hick, J. — Philosophy of religion
Prentice-Hall, 1963

Hick, J. (ed.) — The myth of God incarnate
SCM, 1977

Hilgard, E. and Atkinson, R. C. — Introduction to psychology
Harcourt Brace, New York, 1970

Hirst, P. — Knowledge and the Curriculum
Routledge, Kegan Paul, 1974

Holm, J. — Life Themes: What are they?
Learning for living, Vol. 9, no. 2, November 1969, pp. 15-18

Holm, J. — Teaching religion in school
Oxford University Press, 1975

Hubery, D. (Chairman) — Religious education in county schools, a discussion document
Free Church Federal Council, 1976

Hull, J. — The theology of themes
SCM, 1972

Hull, J. — What is theology of education?
Scottish Journal of Theology, Vol. 30, no. 1, 1977, pp. 3-29

Hyde, K. — Religion and slow learners
SCM, 1969

Inner London Education Authority — Learning for Life
Agreed Syllabus for religious education, 1968

Jeffner, A. — The study of religious language
SCM, 1972

Lawton, D. — Social change, educational theory and curriculum planning
University of London, 1973

Leech, G. — A linguistic guide to English poetry
Longmans, 1969

Lord, E. and Bailey, C. — A Reader in moral and religious education
SCM, 1973

Loukes, H. — New ground in Christian education
SCM, 1965

Loukes, H. — Teenage religion
SCM, 1961

McClendon, M. J. and Smith, J. — Ian Ramsey's model of religious language
Journal of the American Academy of religion
Vol. 41, no. 3, September 1973, pp. 413-424

MacCormac, E. R. — Metaphor and myth in science and religion
Duke University Press, 1976

MacCormac, E. R. — Scientific and religious metaphors
Religious Studies, Vol. 11, December 1975, pp. 401-409

MacIntyre, J. — The shape of Christology
SCM, 1966

McPherson, T. — Assertion and analogy
in High, D. (ed.), New essays in religious language
Oxford University Press, New York, 1969, pp. 198-214

MacQuarrie, J. — God-Talk
SCM, 1967

Martin, J. Arthur — What do we do when we study religion?
Religious Studies, Vol. 11, 1975, pp. 467-472

Mays, W. — Introduction to Piaget's logic
in Piaget, J., Logic and psychology
Manchester University Press, 1963

Meakin, D. C. — The justification of religious education
British Journal of Religious Education
Winter, 1979, pp. 49-55

Nygren, A. — Meaning and Method
Epworth, 1972

Owen, H. P. — The philosophical theology of I. T. Ramsey
Theology, Vol. 74, no. 607, pp. 67-74

Paivio, A. — On the functional significance of imagery
in Psychological Bulletin, Vol. 80, 1973,
pp. 385-392

Palermo, D. S. — Imagery in children's learning
in Psychological Bulletin, Vol. 80, 1973,
pp. 415-420

Peel, E. A. — The nature of adolescent judgement
Staples Press, 1971

Penelhum, T. — Problems of religious knowledge
MacMillan, 1971

Perrin, N. — The interpretation of a biblical symbol
Journal of Religion, Vol. 55, July 1975,
pp. 348-370

Phenix, P. H. — Realms of meaning
McGraw Hill, 1964

Phillips, D. Z. — Faith and philosophical enquiry
Routledge, Kegan Paul, 1970

Piaget, J. — The child's conception of the world
Routledge, Kegan Paul, 1967
(first published 1929)

Piaget, J. — The language and thought of a child
Routledge, Kegan Paul, 1959
(first published 1926)

Piaget, J. (trans. by Mays, W. and Whitehead)
Logic and psychology
Manchester University Press, 1953

Piaget, J.
Mental imagery in the child
Routledge, Kegan Paul, 1971
(first published 1966)

Piaget, J. and Inhelder, B. (trans. by Pardons, A. and Milgram, S.)
The growth of logical thinking from childhood to adolescence
Routledge, Kegan Paul, 1958

Piaget, J. and Inhelder, B. (trans. by Weaver, H.)
The psychology of the child
Routledge, Kegan Paul, 1969
(first published 1966)

Prozesky, M.
Context and variety in religious language
Scottish Journal of Theology, Vol. 29, 1976
pp. 201-213

Ramsey, I.
Biology and personality
Blackwell, 1965

Ramsey, I.
Christian Discourse
University of Newcastle on Tyne, 1965

Ramsey, I.
Freedom and Immortality
SCM, 1960

Ramsey, I.
Models and Mystery
Oxford University Press, 1964

Ramsey, I.
Models for divine activity
SCM, 1973

Ramsey, I.
Paradox in Religion
in High, D., New essays in religious language
Oxford University Press, New York, 1969,
pp. 138-161

Ramsey, I.
Religious Language
SCM, 1957

Ramsey, I. (ed.)
Words about God
SCM, 1971

Ramsey, I. (Chairman)
The Fourth R: Report of the Commission on Religious Education in schools
National Society and SPCK, 1970

Reese, H. W.
Imagery and contextual meaning
in Psychological Bulletin, Vol. 80, 1973
pp. 404-413

Richmond, P. G. — An introduction to Piaget
Routledge, Kegan Paul, 1970

Ricoeur, P. (trans. by Buchanan, E.) — The symbolism of evil
Beacon Press, 1969

Robinson, J. A. T. — Honest to God
SCM, 1963

Robinson, J. A. T. — The New Reformation?
SCM, 1965

Saltz, E. — The cognitive bases of human learning
Dorsey Press, 1971

Santoni, R. E. (ed.) — Religious language and the problem of religious knowledge
Indiana University Press, 1968

Schools Council — An approach through religious education, Humanities for the young school-leaver
Evans/Methuen, 1969

Schools Council — Discovering an approach
MacMillan, 1977

Schools Council — Ground plan for the study of religion
1977

Schools Council — Journeys into religion
Granada Publishing: Hart-Davis, 1976 et. seq.

Schools Council — Raising the school-leaving age
Working paper no. 2
HMSO, 1965

Schools Council — Religious Education in Primary Schools
Working paper no. 44
Evans/Methuen, 1972

Schools Council — Religious Education in Secondary Schools
Working paper no. 36
Evans/Methuen, 1971

Schools Council — Society and the young school-leaver
Working paper no. 11
HMSO, 1967

Searle, J. R. — Expression and meaning
Cambridge University Press, 1979

Sharpe, E. P. — The phenomenology of religion
Learning for Living, Vol. 15, no. 1,
Autumn 1975, pp. 4-9

Shibles, W. A. — Metaphor
Language Press, 1971

Smart, N. — The phenomenon of religion
MacMillan, 1973

Smart, N. — The religious experience of mankind
Fontana, 1971
(first published 1969)

Smart, N. — Secular education and the logic of religion
Faber, 1968

Smart, N. and Horder, D. — New Movements in Religious Education
Temple Smith, 1975

Smith, J. W. D. — Religion and secular education
St Andrews Press, 1975
(first published under the title Religious education in a secular setting, SCM, 1969)

Smith, K. N. — Themes in religious education for the 9's to 13's
MacMillan, 1969

Taylor, D. — Explanation and Meaning
Cambridge University Press, 1970

Teselle, S. — Speaking in parables
SCM, 1975
and Fortress Press (USA), 1975

Tillich, P. — Symbols of faith
in Santoni, R. E. (ed.), Religious language and the problem of religious knowledge
Indiana University Press, 1968, pp. 136-145

Tooke, J. (ed.) — Religious Studies
Blond, 1972

Watson, J. D. — The double helix
Weidenfield and Nicolson, 1968

Webster, D. — Creativity within religious education
British Journal of Religious Education, Summer, 1980, pp. 129-135

West Riding of Yorkshire Education Department — Suggestions for Religious Education
1966

Wheelwright, P. — The Burning Fountain
Indiana University Press, 1954

Wheelwright, P. — Metaphor and reality
Indiana University Press, 1962

Whitfield, R. — Disciplines of the curriculum
McGraw Hill, 1971

Wilkerson, T. E. — Seeing-as
Mind, Vol. 82, 328, October 1973, pp. 481-496

Wilson, J. — Taking religious education seriously,
Learning for living, Vol. 16, no. 1,
Autumn 1976, pp. 18-24

Williams, H. A. — Model and symbol
Theology, Vol. 79, no. 667, January 1976,
pp. 6-18

Youngman, B. — Teaching Religious Knowledge
University of London Press, 1953