

VOL I

Research in Architectural Education

Part I

With emphases on aspects of : Teaching Methods , Design Methods ,
and Methodology for teaching History of Architecture

Carlos Vera Guardia

D. Phil. 1975

Supervisors Professor Robert Macleod Stuart Sutcliffe

INSTITUTE OF ADVANCED ARCHITECTURAL STUDIES , UNIVERSITY OF YORK

twenty years ago, I possessed the absolute truth ...
ten years ago, I still knew most of the answers ...
today, at forty five... I have only questions ...
what about tomorrow ...?

My deepest thanks by their indirect or direct support and/or help to:

University of Zulia

Professor Robert Macleod

Stuart Sutcliffe

University of York

I.A.A.S. staff and members

R.I.B.A. Board of Education Secretariat

Staff and students interviewed in the following Schools:

- Architectural Association. School of Architecture
- University College London. School of Environmental Studies
- University of Cambridge. School of Architecture
- University of Bristol. Department of Architecture
- University of Newcastle. School of Architecture
- Leeds Polytechnic. Department of Architectural Studies
- Portsmouth Polytechnic. School of Architecture.

Messrs John Lansdown, Panos Tzonos

Mrs Dorothy Dunn

CONTENTS

INTRODUCTION

chapter 1

THE RESEARCH AND ITS METHODOLOGY

chapter 2

SCHOOLS OF ARCHITECTURE

chapter 3

OBJECTIVES ON ARCHITECTURAL EDUCATION

chapter 4

SOCIAL CONCERN IN ARCHITECTURAL EDUCATION

chapter 5

TEACHING METHODS

chapter 6

DESIGN METHODS

chapter 7

HISTORY OF ARCHITECTURE

chapter 8

RESEARCH

chapter 9

EDUCATIONAL PHILOSOPHIES

chapter 10

CONCLUSIONS

INTRODUCTION

INTRODUCTION

- a. Motivation
- b. The work
 - . Part I
 - . Part II
- c. Reasons for the introduction
- d. Comparison between influences on architectural education
in Great Britain and Venezuela.
 - . Historical reasons
 - . Cultural environment
 - . Physical environment
 - . Development, present and future.
 - . Political influences
- e. SUMMARY
- f. CONCLUSIONS
- g. References

a. Motivation

The original, and prevailing, motivation has been to learn about three different subjects, linked by the common denominator of architectural education :

- Theory of Design in Architecture
- Methodology for teaching History of Architecture
- Teaching methods on Architectural Education,

in order to be able to improve my teaching capacities as senior lecturer on architectural history and tutor of design, for final projects of last year students of architecture on the above mentioned university.

It has not been my intention to analyse or criticise the schools of architecture of Great Britain in order to find weaknesses or virtues, nor to present conclusions about the schools studied, but simply to learn about the subjects already named. The study of the schools resulted naturally being placed where the development of those subjects has mainly occurred and where most of the expertise is on the staff.

b. The Work.

The work, considering its nature and extension, has been divided into two parts.

• Part I. Part I is contained in two volumes, one of which is the appendices, and it is the main part of the research done about the subjects of interest and the Schools of Architecture selected.

The subjects of interest, mentioned above, are treated comparatively at the same level.

The information contained in this part basically covers until 1973, and some of its analysis, synthesis and conclusions are used for Part II.

• Part II. Part II developed mainly during 1974 and 1975, contains a deeper look into the teaching of History of Architecture in the Schools of Architecture, considering: objectives, courses contents and methods.

The analysis of the knowledge acquired in Britain and the author's own experience will be used to propose the development of a course, based on general values, which could eventually be applied in Venezuela.

c. Reasons for the introduction.

Many doubts have come to my mind 'the moment of Truth' arrived, as my supervisor once called it - that is the moment to start writing this work. Doubts mainly concerning this chapter which, apparently at least, seems not to have direct relation to the research and its results. It was a matter not only to decide about the orientation of the chapter but whether to put it as an introduction or to leave it out altogether, specially afterwards I have accepted, gladly enough in spite of my direct interest, not to try to compare British and Venezuelan schools of architecture, because of the difficulties of presenting a clear enough picture of the Venezuelan situation so as to allow the examiners a strong frame of reference to judge the accuracy of my analysis, what would be a 'weakness' for the academic work, according to my supervisor.

Even so, I believe there to be arguments to try to establish a first chapter in which the differences between architectural education in Britain and in Venezuela are presented with reference to the architectural profession, and the realities of both countries, in a general way, so as to serve as perspective in which to consider the position of the author of this work, trying to learn the best of British architectural education with his experience, and in some way his mind, in Venezuelan reality.

In June 1973 I was kindly asked to explain, at a tea-time talk, the work done so far (started in September 1972) and being at that moment in the analysis stage. I decided to explain it through examples of some schools of architecture, and immediately came to the conclusion that it would be difficult to speak about a Venezuelan school of architecture without first presenting some aspects of the reality that is permanently influencing architectural education. That conclusion produced the first draft of this chapter and the summary that was distributed to the people invited on that occasion (1) the content of which is about the same as the introduction which follows.

This introduction has two main purposes: first, when the moment comes to translate this work into Spanish, to serve as a very general introduction to the development of the architectural profession and the architectural education in Britain, from which any interested reader may decide to proceed further, making use of the bibliography; secondly, to give the examiners or any other possible reader a brief insight of Venezuelan reality and its architectural education.

d. : Comparison between influences on architectural education
in Great Britain and Venezuela.

Architecture is, in many ways, a reflection of the society in which we live and therefore we cannot look at it as a profession or as education without considering many different factors influencing it and receiving its influence.

The differences between Venezuela and Great Britain are, in fact, so deep and varied as to have nothing in common in the past and very little in the present, consequently their architectures - in practice and in education - are very different as well in spite of a certain international formalism. For this brief comparison we will consider the following important factors :

- historical reasons
- cultural environment
- physical environment
- development present and future
- political influences
- Historical reasons.

The study of the history of the architectural profession is extremely interesting, and is closely related to the development of architectural education, it being important to understand it. For that reason as Appendix I in the respective volume, there is a short review of that history, which is presented here in a summarised way.

Although the first references to architects in some books are to 'medieval architects' the first clear influences in architecture as a profession may be found in the master masons of

the XVIth century.

Inigo Jones has been described, and accepted, as the first professional architect at the beginning of the XVIIth century. That same century experience in the Office of Works was a basic step towards becoming an architect, but the influence of the Office was shortlived.

After Jones, Webb and Pratt, and later Wren became symbols of the profession, establishing at the end of the century the trend of the 'gentlemen architects'.

The XVIIIth century brought important changes to the development of the profession. At the beginning the patronage of the Crown was the main source of work by one side, and by the other the best architects opened their offices to the pupilage system. After that the patronage passed from the Crown to the political parties which were winning importance.

Towards the middle of the century the 'amateur architect' flourished, later the industrial revolution meant not only new patrons but new kinds of buildings as well.

During the XIXth century several Societies of architects were formed, at first with more social than professional interest. At the same time the pupils, after office hours, started to attend evening classes, mainly of drawing and artistic matters.

In 1834 the Institute of British Architects was founded, after that several provincial societies were formed and in 1837 the Institute obtained a Royal Charter that meant an important recognition to the body and to the profession.

Voluntary examinations were established by the Royal Institute of British Architects, with relative success, in 1862.

From 1871 to 1887 the RIBA held important conferences in which architectural education was considered. In 1882 statutory examinations were set to become a member of the Institute.

In 1894 the first School of Architecture in the country was created at Liverpool, at the same time the Registration Bill was battling its way through Parliament.

The beginning of the XXth century saw the appearance of several new schools of architecture mainly as part of schools of arts.

In 1931 the Registration Act was approved and reformed in 1938, bringing into existence the Architects Registration Council of the United Kingdom (ARCUK) as an independent body.

During the early fifties architectural education tended to become more technological than artistic, although the teaching of the classic styles lasted until the late fifties.

After the Oxford conference on architectural education in 1958, the requirements for entry to the Schools of Architecture were set at the same level as that of other disciplines in universities, and it was decided that teaching should be based on research, and that the Schools should be in Universities; the influence of science became important in architectural education.

Between 1968 and 1970 the newly formed Polytechnics started forming Schools or Departments of Architecture, and have contributed to architectural education and brought the number of schools recognised by the RIBA to more than 30.

The positive influence of the Royal Institute of British Architects since the last century until our day cannot be denied, although not always praised.

The relationship between the architectural profession and architectural education is clearly established, although some practitioners and educationalists accept the principle but do not agree with the form.

In Venezuela the architects have always been, and still are, under the dominance of engineers who started years before as a professional institution. Engineers of all specialities, and architects, must be affiliated to the Venezuelan College of Engineers(*) to be able to act as such. A society of architects (**) under the name of Venezuelan Society of Architects has been fighting for years to gain official recognition, that must emanate from parliament, in order to become the Venezuelan College of Architects with full rights and independent of the engineering profession.

This is due mainly to the fact that schools, first, and then Faculties of Engineering came into being before schools of architecture, which started as the second or third school within those faculties. Engineering at the very beginning meant only Civil Engineering until some 15 or 20 years ago when diversification began and mechanical and oil engineers' schools followed. Over the last 6 years or so Chemical Engineers schools have been created and the next, before very long, will certainly be electronical engineering.

In 1830 the Academy of Mathematics was created (43) to teach this discipline at university level. Some years later, in 1860, an official decree was originated to rule the Academy in which the existence of a union of engineers was mentioned. This union, under the name of 'Colegio de Ingenieros de Venezuela', was officially recognised in 1861. (*)

(*) Engineering College of Venezuela

The Academy, which was autonomous, was integrated with the University (*) in 1893 as the Faculty of Exact Sciences and was reorganised in 1895 with four different branches: Military Engineering, Agronomical Engineering, Civil Engineering and Architecture. (44) This being the first architectural school depending on an engineering environment, the pattern was to be repeated in future schools.

In 1946 the Faculty was reorganised and the name changed to Faculty of Physical Sciences and Mathematics, with 3 established schools: Engineering, Architecture and Sciences. This organisation was to be changed again in 1953 when this Faculty divided itself into two faculties: The Faculty of Architecture and Planning, and the Faculty of Engineering, with five schools: Civil, Industrial, Geological, Mining and Metallurgical Engineering.

The official law regulating Engineering, Architecture and other allied professions was promulgated only in 1958, as the 'Law for the Engineering College of Venezuela'. (**) The meaning of the word College being in this case more like the expression trade union in England or syndicate in the USA. The organisation has at this moment (1973) about 11,500 members, of which about 1,200 are architects.(45)

That school of architecture was followed by two more in 1960 and 1962 at two regional universities and more recently (1972) by a fourth also in Caracas, the capital city.

(*) Universidad Central de Venezuela (Central University of Venezuela)

(**) Ley del Colegio de Ingenieros de Venezuela.

• Cultural Environment.

So far as cultural environment is concerned, the conditions are even more different. Great Britain is a country with a long history full of glorious traditions whose history until the eleventh century received different influences by war or peace, and since that time has developed as a very particular country influencing large parts of the whole world by trade, war and peace.

The architectural profession, as we have seen, developed at the beginning as a prestige career orientated mainly to the imposing buildings of nobility and depending very largely on a high patronage. The good taste, or barely the taste, of the patron influenced the outlook of the building, the autonomy of the architect being very limited or non-existent, which was very often more important than the function and only compared to the importance of the solidity and quality of materials employed. The pupilage system, exclusively first and accompanied by classes later, mainly in drawing, were the architectural training for more than a century lasting well after formal courses and schools were functioning in France and even in the United States of America.

Schools of architecture came into existence at the end of the last century and the beginning of this principally in Schools of Art, and only in the late fifties in Universities, and when the new Polytechnics were created (1968-69) into them as well.

Architectural education followed the scientific and technological trend of this highly developed and industrialised country, but, as far as I can see, it was rarely if ever the spear-head of this evolution.

Venezuela is a young country conquered by a handful of uneducated Spaniards during the sixteenth century, but we can hardly

say that the Venezuelan culture as we know it today started at that moment. The colonialism lasted until the second decade of the nineteenth century when independence was won by a deadly bloody war. So during this time, less than 300 years, the country, not defined as such until well after independence, passed from a primitive culture somewhere in the stone ages to the Spanish-European culture, with very few Spanish people and some thousands of natives in a very thinly populated region larger than England.

During the first quarter of the nineteenth century the cultural environment was very much influenced by Spain, but at the same time opposed to it by natural resentment, and always some 15 to 20 years late in respect of European developments.

Until the end of the last century, and even the first decades of this, all those who could afford it came to France to study a profession, although in Latin-America, in Mexico and Peru, there have been universities since the fifteenth century, and since the seventeenth century at Venezuela itself, probably for the same reasons that some Englishmen did, as Robert Macleod points out:

"... since the 1860's, during which time an increasing number of bright young men had been going to France for their architectural education. The centre of European culture - indeed the centre of western culture - was, in the second half of the 19th century, France: and the prime place in which formal architectural education was then being established was the Ecole des Beaux Arts in Paris."... (46).

This European trend in education which in many ways has

stayed to our day at primary and secondary level, (47)
remaining as a humanistic rather than generalistic education, (*)
changed abruptly to the American (U.S.A.) influence, particularly
on higher education, with the advent of the oil industry in the
1920's, and increased with industrialisation from the 50's onwards.

Architectural education and the architectural profession
has always been, in Venezuela, university based with European and
North-American influences, but with its own strong characteristics
due to the evolution of the Universities as institution in a
'milieu' very strongly politically influenced in which it has been
a stronghold of autonomy, freedom, and also revolution.

In fact, since 1918, the Latin-American universities, with
student movements that increased their representation on the Board
of Directors, and the permanent concern on political and social
facts of countries deeply involved in development, have become a
different type of University that cannot be compared either with
the French-Napoleonic type, nor the German, nor the American-
department orientated, nor the English-college orientated. (48)
Although structured in faculties like the French type, in whose
image it was created, it has incorporated in some way the department
of the American university, but instead of being knowledge orientated,
'cognocentric', it has kept the man, human being, as the central
focus of its attention, 'anthropecentric', with a great emphasis on
the social role of the university and its end product, the qualified
professional in society.

In spite of the enormous territorial extension of the
thinly populated Latin-American countries, the resulting long
distances between cities and capitals and the rather incipient

(*) Slightly changed towards specialisation in 1972.

net of communications, they share many common roots and the advantages and disadvantages, in different degrees, of the above mentioned influences.

Great Britain, with the success of its Empire and the industrial revolution of 1760 (49), more often gave than received influence. Later on, with the end of colonialism and the progressive economic independence of the new countries, it has kept its links with the world but remains very much an island, which is very strongly reflected in education - specially architectural education - if we compare it with European countries, only a few miles apart, with different kinds of institutions and educational patterns.

• Physical Environment.

As said before, even in moments of greatest involvement with the world, because of the extension of its Empire, Great Britain has proudly remained an island. A European country, although isolated when convenient, has had all the advantages of the high points of civilization.

Geographically placed in the 30°N . to 60°N . in which are located the most developed countries of the world due partially to its races but mainly to the climate, temperate and slightly cold, with the four seasons clearly established.

Great Britain has relatively good soil, no big mountains, good rains, fairly good woodlands and is densely populated.

Latin-America belongs to the so called third of under-developed countries of the world and although Venezuela, by its extreme natural richness, is well above the average of most South-American and Central-American countries, it has a tropical climate,

extremely arid lands and deep almost unknown jungles in the Upper Orinoco river. The south of the country, probably the richest area potentially, is unpopulated in a generally thinly populated country, cities and towns are only placed on the coast with their backs to the land.

The climate is the same all year round and its soil varies from some of the richest in the world - a depth of 7 to 8 meters of vegetable soil - to the desert.

These tremendous differences in the physical and environmental conditions produces completely different requirements for architects and architecture, although unfortunately not always reflected in the external and formal appearance of buildings, specially when they are relatively new. Later on the environment imposes itself over the buildings that - very often badly - must become part of an area or a city, here or there.

o Development, present and future.

Great Britain is placed among the well developed countries of the world with a highly advanced technology that has naturally influenced architecture as well as any other field of every day life. Although it is convenient to remember that, at the same time, it is a country and a people with deep traditions and somewhat 'conservateur' spirit, particularly true in architecture in spite of some leading outstanding tendencies, internationally well known.

This development of technology and science - specially research - meant a new orientation on architecture and on architectural education that passed from an artistic orientated profession, based on project work following the influence of inspired masters, to a more scientific research based education that

has developed lately towards the environmental concern. The scientific research awareness is still there, but the very specific and detailed focus has left the way open to a more wholistic concept of environment, not only physical but also social and cultural.

In this milieu the schools of architecture in Universities and Polytechnics have good staff, excellent equipment, good physical facilities and a sufficient budget, and are extremely lucky to be able to keep the student population down to small groups of 30 or 40 or even less, which allows teaching methods like: seminar, discussion, individual tutorials, and a good studio work system. In fact the schools population varies between 150 and 300 students, with only one exception in the 500 range.

Perhaps the time is right to explain that in Great Britain in the schools of architecture, using the name in a generic way, are formed not only architects but also planners, builders, landscape architects, environmentalists (*), and a closely related profession, unknown in Venezuela, the Surveyor. This great variety, within what very broadly speaking can be considered the architectural profession, reflects a trend towards diversification more than specialisation. And also that from one school to another, even if they have supposedly the same objective, to train architects, there are big differences in studies and on emphasis that denotes a great freedom existing in education in general and besides, I have been told, that no one knows for sure how an architect should be trained.

Venezuela, on the contrary, depended until 1920 on the culture of cocoa - the agricultural age - then on oil - the first

(*) Some schools have separated departments

mineral age - and since 1950 on iron-steel and manufacturing industries - industrial and second mineral age, - in spite of which, because of the last century's influence on education from France, the universities still have about 65% of the student population on humanities, 2% on agricultural studies and 33% (*) on technological studies (50). This proportion tends to be changed towards a more technologically orientated, but that will apparently take at least a decade to be achieved significantly.

The schools of architecture in Venezuela are currently influenced by some of the fashionable departmental organisations of the USA universities that have been, most unfortunately, imitated without the conditions in which the system can be operated, within the completely different frame that the feudal concept of faculty represents.

Perhaps the most important factor at the schools of architecture is that they are deeply socially, and also politically orientated, and the main problem, general to the university, is the tremendous annual increase in the student population that makes physical facilities, staff, equipment and money continuously scarce. Although no architectural school in Venezuela has reached the proportion of Buenos Aires, Argentina - 12,000 students - or Mexico City - 5,000 students - the faculty in Caracas at the U.C.V. (**) has more than 2,000, and the other two (***) have around 400 students each with an annual increase of between 25 and 30%, which means doubling in 3 years...

(*) Includes Health (Medicine, Odontology)

(**) Universidad Central de Venezuela. The principal in the country.

(***) University of Zulia and University of Merida.

The three schools mentioned above belong to national universities and because of that they cannot control or restrict the number of students coming in from secondary education.

Until now in Venezuela the schools trained only one kind of professional, 'the architect', who must fulfill the tasks that in England do architects, landscape architect, planner, and often builder and surveyor, depending on his interest, although these two last tasks are mainly done by engineers. This demands of the schools a very broad approach with all kinds of advantages and disadvantages.

With all the risks and difficulties involved to foresee possibilities and venture opinions about the future in the field of architectural education, it is really difficult to avoid and certainly not a very responsible thing to do, because the future architects, starting their education today, will be out of the schools in 6 years time in Venezuela, and 7 or 8 in Great Britain, reaching positions of importance in some 12 to 15 years there and perhaps 20 or 25 here, which means that even the responsibilities to the future of the profession are different in time measured as they are in quality and quantity.

Before going any further in any views about the foreseeable future I should like to quote some architects and educationalists who are thinking and talking very responsibly about the subject.

"... A reunification of education and practice would help to prevent architecture from becoming an irrelevant academic discipline and restore confidence in the profession's ability to provide leadership during a period of social change". (51).

"... But an architecture based on the studies in design process, the psychology of perception, the sociology, and the environmental science now taught in many schools of architecture will almost certainly be more comfortable and more acceptable to the public than most of that which is currently built." (52)

"...What I do suggest, however, is that the nature of the profession will change, that the criteria by which we admit people to it will have to be enlarged, and that one of the terms on which people will enter it is the acknowledgement of whole areas necessary to the building process in which they have no competence. The need of the future is for a professional structure with an awareness of the necessity for mutual dependency: something we have not in the past acknowledged." (53)

In Great Britain it is easy to detect a growing awareness for the conservation of buildings and areas of historic value, or simply with a certain character, a tendency to mistrust and even oppose the international modern 'style', and in certain levels of the architectural profession and education a big emphasis on the necessity to design buildings and environment considering primarily human physiological and psychological needs for which the variables are relatively easy to identify and measure, at least in what concerns physiological conditions, but very difficult, not only to measure but even to identify, when we come to psychological variables, specially their inter-relations. This trend will certainly prevail for a few years and then ... probably new standards for housing will develop, the building process will set new constraints

on architects as Macleod says, and also new standards for leisure, being as it is the leisure time, running parallel with better economical conditions, the big conquest of our time will bring architecture closer to a natural environment.

Architecture in Venezuela is still following the way of the formalistic international style with little, if any, concern about the environment and the concept of the building as climate and behaviour modifier. Planners usually have or show little respect for public opinion and reaction to new plans and buildings, although at the same time, the social concern is very deep on housing, schooling and other programmes developed at schools of architecture and official bodies, and certainly it is a real government preoccupation to try to solve this problem reflected in growing deficits. What will happen next?... some kind of diversification and specialisation is needed, some control of the quality and quantity of architects 'formed' and almost surely an orientation towards what is the current trend in Great Britain, but, most probably, in a very latin and quick way which will produce a new 'style' of buildings in a short time.

Architecture must have its place, and an important one, if we understand our role in society, trying to find the answers we need, and there is for sure not only one but several answers to the needs of human beings in our troubled civilisation.

• Political influences.

No matter how big or deep are or may be the differences briefly described so far, there is no doubt that the main difference between Great Britain and Venezuela is the political influence on

higher education and consequently on architectural education.

Political problems in Great Britain are important, they form part of the day to day life and the communication media take due care of them, but they do not affect the life of the people in so deep and complete a way as they do in Venezuela.

In Great Britain there are official plans, proposals, and big political lines on higher education; universities and polytechnics are supposed to have different objectives - though sometimes these are difficult to visualize. The right to go into the university is controlled by some requisites, like levels on previous education, a selection is done, the ratio of candidates to accepted students can be as high as 1:20.(*). Usually this selection is an autonomous process depending only on the university criteria and without political interference. The students' campaigns are more for better grants for those who get into the universities than for better facilities to get more students admitted.

Although the students are politically concerned, party orientated and naturally in the opposition, no matter who is governing, their activities are very varied and numerous, and rarely interfere with the academic calendar or prejudice the programmed or expected level of studies.

Most of the fiercest battles, that seem like a 'park promenade' compared with the day to day activities of students at Venezuelan universities, are concerned with welfare or economic facilities, like the rent strike or the grants campaign. The exception was the world wide movement of the late 60's for more participation that is, in fact, almost non existent in Great Britain judged by Venezuelan standards.

Venezuelan universities have been and still are today, by tradition, the political focus of the main violence. Political parties openly use the easily inflammable youth, not only of universities but of secondary education as well, to promote and originate violence and riots, sometimes really dangerous. Many times an entire city has been paralysed by the students threatening and even fighting face to face with military forces.

The struggles are not for economical conditions - the studies are free, although there is no grant system - but for more freedom to get into the universities which is practically unrestricted today, and for more and more power for the already well represented student bodies, at all levels within the university. Political parties press for free access to the universities on behalf of democracy and ask the government for more money to keep pace with the population increase. This problem, an eminently political one, becomes an academic nightmare when the population doubles in 3 or four years and the budget augments only 25 to 30%; staff is difficult to find, and building facilities remain more or less the same during that time.

Besides that, political violence severely disrupts the academic order to a point that in certain years - 1969 and 1972 for example - only 60 to 70% of the scheduled time was fulfilled and, again, political pressures avoid any measure to recover time.

This means that while in Great Britain the schools of architecture are getting groups of about 40 students, with high levels as entry requirements, that can be taught almost individually on a tutorial basis, with good physical facilities and enough equipment that augments year by year, the schools in Venezuela are getting students with all kinds of levels, without any specific requirements, from 200 to 800 in the first year alone, with buildings

conceived for only 50 to 100 students - and equipment extremely scarce - that could be taught only by very highly technological and sophisticated methods just now being developed and for which the staff is not prepared.

The possibilities of changing this situation in Venezuela are as slim as the possibilities of changing the political conscience of peoples and parties to allow the university to look for its own orientation. Probably before that there will necessarily be a critical moment of stand still, a moment that, by the way, may be very close.

e. Summary

Great Britain and Venezuela are countries belonging to two different worlds, the old and the new, with different ethnological roots and cultures, all influencing its respective architecture and architectural education that in spite of the present world wide society - in many respects - remain distinct from one another.

Appendix 2 represents an effort to synthetise the influencing differences.

f. Conclusion.

To be able to compare architectural education from two different countries, its architecture and all environmental factors - physical and cultural - as well as historical precedents must be considered, because in spite of clear formal similarities and apparent levelling of cultures they still count heavily.

GREAT BRITAIN (54) Architectural Profession and Education.

Profession	Architecture	Education
Medieval Architect	Perpendicular Gothic	
master-masons influence	Tudor 1500-50 Elizabethan 1550-1600	XVI th C
Inigo Jones 1st Prof.Arch. Office of Works Webb Pratt Wren Gentlemen architects	Classic Jones 1600-60 Wren 1660-1700	XVII th C.
Crown patronage Pol.Parties patronage Amateur architects Industrial Revolution New buildings and patrons	Early Georgian classic 1700-60 Late Georgian classic 1760-1800	Apprenti- XVIII th C. ceship Pupilage
Several Societies 1834 Inst.of B.Arch. Provincial Societies 1837 Royal Charter 1871 RIBA Conferences 1887 Registration Bill Battle	Regency classic 1800-37 Victorian- Revivals 1837-1900	XIX th C Drawing and evening classes A.A. classes 1847 Voluntary Exam.1862 RIBA Statutory Exam.1882 RIBA Liverpool Sch.of Arch.1894
1931 1938 Registration Act. ARCUK	Edwardian Revivals 1900-09 Georgian Revivals 1909-39 Modern Architecture 1939-	XX th C Arch.in Sch.of Arts 1958-60 Schools in Univ. Tech.SCI. 1968-70 Schools in Polys. Soc.Env.

Figure 2

VENEZUELA (55) Architectural Profession and Education

Profession	Architecture	Education
	Discovery of America	
	Spanish colonialism	XVI th C.
	Fortress Age - Italian engineer- Military Engineering 1674. Caracas Cathedral	XVII th C.
	1760 Colonial Style American Baroque	XVIII th C.
1861 Engineering College of Venezuela	Canaries inf.housing Independence War	XIX th C. 1830. Academy of Mathematics 1860 Academy of Mathematics Official regulation. 1895 School of Engineering Architectural branch.
1948 Venezuelan Society of Architects. 1958 Law of Eng.Coll. of Venezuela	European Influence -French - Italian - 1930 Modern Style 1945/50 American inf. technology	XX th C. 1946 School of Architecture Caracas 1960 School of Architecture Zulia Merida

REFERENCES

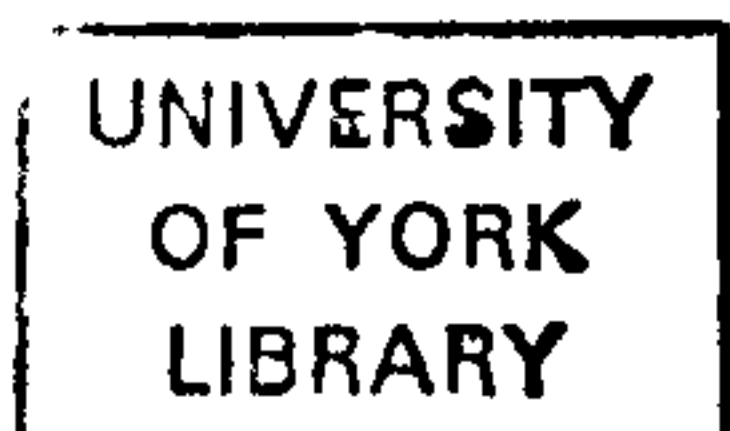
CHAPTER 1.

1) APPENDIX 2. Vera Guardia, Carlos. Comparison between differences on architectural education in the United Kingdom and Venezuela. Notes for Research Group meeting. I.A.A.S. York, June 1973.

OBS References 2 to 42 correspond to APPENDIX I

- 2) Kaye, Barrington. The development of the architectural profession in Britain. p.36
- 3) ibid p.33
- 4) ibid p.52
- 5) Jenkins, Frank. Architect and Patron. p.69
- 6) Kaye, Barrington. op.cit., p.45
- 7) Jenkins, Frank. op. cit., p.86
- 8) ibid p.90
- 9) ibid p.107
- 10) Kaye, Barrington. op. cit., p.48
- 11) ibid p.45
- 12) ibid p.58
- 13) Jenkins, Frank. op. cit., p.114
- 14) ibid p.191
- 15) ibid p.195
- 16) Kaye, Barrington. op. cit., p.60
- 17) ibid p.61
- 18) ibid p.61
- 19) ibid p.63
- 20) ibid p.66
- 21) Jenkins, Frank. op. cit., p.115

- 22) Kaye, Barrington. op.cit., p.62
- 23) Jenkins, Frank. op. cit., p.169
- 24) ibid p.167/8
- 25) Kaye, Barrington.op. cit., p.97
- 26) ibid p.98
- 27) ibid p.98
- 28) Macleod, Robert. Style and Society. p.89
- 29) Kaye, Barrington. op. cit., p.100
- 30) ibid p.103
- 31) ibid p.102
- 32) ibid p.129
- 33) Macleod, Robert. op. cit., p.89
- 34) Kaye, Barrington. op. cit., p.130
- 35) ibid p.132
- 36) ibid p.141/2
- 37) Macleod, Robert. op. cit., p.101
- 38) Jenkins, Frank. op. cit., p.201
- 39) Macleod, Robert. The life and death of the profession. RIBAJ.
April, 1971. p.151-153.
- 40) Musgrove, John. Personal interview. March, 1973.
- 41) Tzonos Panos. The development of the theory of design since
the beginning of the modern movement, from the point of
view of our days. Figure 1.
- 42) Macleod, Robert. The life and death of the profession. RIBAJ.
April, 1971. p.151-153.
- 43) Arcila Farias, Eduardo. Historia de la Ingenieria en Venezuela.
(History of Engineering in Venezuela).
- 44) ibid



- 45) C.I.V.'s figures. Colegio de Ingenieros de Venezuela
(Engineering College of Venezuela).
Venezuela has a population of about 11,000,000 inhabitants.
- 46) Macleod, Robert. op. cit., p.151-153.
- 47) Primary School is six years of compulsory education, from age 7 to 12. Secondary education is five years of free voluntary education, from age 13 to 17. University education is free from 4 up to 7 years studies, depending on the subject.
- 48) Basil, Esposito, Goyoaga, Jacobsen, Parodi, Perez, Vera Guardia, Universidad del Zulia, Universidad Latinoamericana. (University of Zulia, Latin-American University) Volume 1.
- 49) Flinn, M.W. Origins of the industrial revolution. p.4
- 50) Basil, Esposito, Goyoaga, Jacobsen, Parodi, Perez, Vera Guardia. op. cit., Volume II
- 51) Meikle, Alan. Education and Practice. RIBAJ. May, 1970. p.210
- 52) Broadbent, Geoffrey. Architecture in the future. RIBAJ. October 1970. p.457-462
- 53) Macleod, Robert. op. cit., p.151-153
- 54) Kaye, Barrington. op.cit.
Jenkins, Frank. op.cit.
Macleod, Robert. op.cit.
Gibberd, Frederick. The Architecture of England. 1965.
- 55) Arcila Farias, Eduardo. op.cit.
C.I.V. Colegio de Ingenieros de Venezuela (Engineering College of Venezuela)
S.V.A. Sociedad Venezolana de Arquitectos (Venezuelan Society of Architects).

chapter 1

THE RESEARCH AND ITS METHODOLOGY

1. THE RESEARCH AND ITS METHODOLOGY

1.1 Introduction.

1.2 The work step by step.

- 1.2.1 Preliminary reading
- 1.2.2 Definition of subject
- 1.2.3 Sources of information
- 1.2.4 First questionnaire
- 1.2.5 Selecting schools
- 1.2.6 Visits
- 1.2.7 A report
- 1.2.8 Further correspondence
- 1.2.9 Analysis-synthesis
- 1.2.10 Feed-back and evaluation
- 1.2.11 Conclusion

1.3 The methodology

- 1.3.1 Form 1
- 1.3.2 Form 2
- 1.3.3 Form 3
- 1.3.4 Form 4
- 1.3.5 Form 5
- 1.3.6 Form 6
- 1.3.7 Form 7
- 1.3.8 Form 8
- 1.3.9 Form 9

1.3.10 Form 10

1.3.11 Form 11

1.3.12 Form 12

1.3.13 Form 13

1.3.14 Form 14

1.3.15 Form 15

1.3.16 Form 16

1.3.17 Form 17

1.4 Shortcomings

1.4.1 Of the work itself

1.4.2 Of the methodology

1.5 SUMMARY

1.6 CONCLUSION

1.7 References

1. THE RESEARCH AND ITS METHODOLOGY

- Objectives
1. Explain the preparation, planning and development of the research basis of this work.
 2. Analyse the methodology used and explain the application usefulness, advantages and disadvantages of the graphics.

1.1 Introduction

The introduction was devoted to a brief comparison between the differences and causes of these differences influencing architectural education in Great Britain and Venezuela. It was a very useful exercise for the author after studying for more than two years (1968 - 1971) the University of Zulia (1) in its national - Venezuela - and international context - Latin-America (2). This chapter must proceed to explain the work done during two academic years at the Institute of Advanced Architectural Studies in the University of York, contained in Part 1.

1.2 The work - step by step.

There is, most probably, nothing new in the steps followed during my work, but I am interested in following them thoroughly because it is an experience, and it will certainly provide a frame of reference to possible readers and will explain how the methodology emerged, which, I hope, could be useful to interested researchers in this field that I feel, now, is almost unexplored at least in a comprehensive way.

1.2.1 Preliminary reading

Following my supervisor's indications, I started reading about the subjects of interest to me through some books, reports on conferences and articles in architectural periodicals. This first reading background covered September, October and the first half of November.

Details about this period may be found in Appendix 3 (3).

1.2.2 Definition of subject.

At that moment, considering the vastness of the field covered by my interest, it was decided to link the three themes to a common subject, which should be to try to find out how and how much the social implications of the profession have influenced architectural education with particular emphasis on my interests.

Time had also to be defined, and considering the importance of the Oxford Conference (1958) on the development of architectural education, the period should be 1958 to 1972.

1.2.3 Sources of Information.

The main sources of information should be the Board of Education of the Royal Institute of British Architects - RIBA - the Schools of Architecture, the courses and lecturers related with the work of the Short Courses Programme of the Institute of Advanced Architectural Studies of the University of York.

All other sources deriving from these should be used when relevant and reachable.

Several visits to the RIBA, Board of Education,

interviewing people and studying documents resulted in a good general understanding of the Schools and an appreciation of the kind of material it should be possible to find, as well as the difficulties of following year by year the development of the schools. The Board itself has only the documents assembled by the schools for the Visiting Board, once every five years, and keeps the documents only until the next visit.

Authorization was asked of all schools to study the documents existing at the Board of Education and a favourable response was obtained from most of them (3). Some more correspondence, involving requests for more information, was originated during the work, as shown in Appendix 6.

1.2.4 First questionnaire.

At this stage, with some more reading done and the documents that some schools sent, immediately after the first letter informing me about the research, I was able to develop a questionnaire with all the questions I felt, at that moment, I needed to ask the schools. The result was a huge 20 page document whose answers would take much more than that and certainly a great deal of time.

Because of the amount of information needed and the uselessness of sending such a questionnaire, several alternatives to develop the research were discussed with the supervisor and it was finally agreed that only a sample of schools, covering universities, Polytechnics and others throughout the country would be used, the main information source

being personal visits to schools and interviews with staff and students.

The questionnaire, nevertheless, should serve as a base to look for the information and organise the interviews. (4)

1.2.5 Selecting schools.

Deciding to use some schools, it was important to select well so as to get a representative sample. For this purpose a very simple survey was done consulting and exchanging ideas personally with some people, who, by their position and experience, knew most of the schools or at least a wide range of them.

The conditions were:

- the schools should represent universities as well as polytechnics or other types,
- they should cover the country, if possible,
- the development of the three subjects of interest should be considered
- the sample should present the best or more representative schools.

Although 20 schools were mentioned by the 7 people interviewed for the purpose, it was easy to see that some of the schools were picked by a clear majority. Finally the first six of the list were selected to which was later added the Department of Architecture of Leeds Polytechnic for the proximity to York, and being number seven in the selection. The schools selected were:

- University College London, School of Environmental Studies
- Architectural Association, School of Architecture

- University of Cambridge, School of Architecture
- Portsmouth Polytechnic, School of Architecture
- University of Bristol, Department of Architecture
- University of Newcastle, School of Architecture.

The result of the survey can be found as Appendix 2 of 'A Report' (3).

1.2.6 Visits

The selected schools were visited during the second term of the academic year 1972-73 in February and March 1973. As a preparation to the visit a second questionnaire, a resume of the first, of only two pages (6) and interviews were programmed.

The complete list of members of staff and students interviewed is on the above mentioned report (3).

The interviews proved to be the best possible source of information for a variety of reasons.

1.2.7 A Report.

The report mentioned several times as 'a report' (3) contains in some length all work done from September 1972 to April 1973 and has been placed as Appendix 3 in the Appendices volume.

1.2.8 Further correspondence.

After a first revision of all the documents received - 17 schools - and obtained during the visits - 7 schools, it was necessary to request more information and documents, with very varied results as can be seen in Appendix 4.

The most difficult task has proved to be getting information from the A.A., Venezuelan Universities and population figures - staff and students - of British schools.

1.2.9 Analysis - Synthesis

The study of the voluminous information retrieved convinced me of the convenience of analysing and synthetising it school by school, trying to do it as simply and directly as possible, avoiding any interpretation or preconception; for that a graphic representation should be the easiest way to understand and assimilate, developing gradually the kind of diagrams and graphics I will present and discuss later on in this chapter.

Only after studying all the schools was it possible to start putting the information together, therefore the analysis-synthesis process is done in two steps, first school by school and then all schools together. In some cases the second step means necessarily sacrificing part, the least relevant I hope, of the information for the benefit of the comprehensiveness and clarity of the graphics.

1.2.10 Feed-back and evaluation.

The feed back has been done by requesting more information, as mentioned before, comparing with the results of the personal interviews, inserting in some questions when that has been possible.

Evaluation is even more difficult to do in some objective way. Nevertheless, comparing results and information from one school to another, revising documents and testing against the opinion of experienced persons, like my own supervisor member of the RIBA Board of Education and external examiner of some schools, I believe I have a clear opinion of the value of the information collected and handled as well as of the work itself.

1.2.11 Conclusions.

All along the road particular and general conclusions have emerged of the work in its different steps. In fact, the first report of April 1973 had some preliminary conclusions, the talk of June 1973 produced some others, and the process of analysis-synthesis produced for each graphic for each school, and then for all schools, conclusions that will be presented in the next chapter and then summarised in a conclusion for each one of them, as well as final conclusions in the last chapter.

1.3 The Methodology

The idea of explaining the methodology employed during the work has not the pretence of producing 'a' methodology with the aim of 'selling it' as the best or even a good one, but simply and modestly to say that it has been an intention to do methodical work, and at the end of it look back and possibly find its usefulness and/or weakness to decide if it is worthy or not. An interesting experience for one who without any preconceived ideas tries to learn by research, a teaching method, one of my interests, in itself.

Even though it has been possible to find some kind of graphics useful enough to be used for all schools, the differences from one to another are so big in some respects, specially in organisation and relation with the mother organisation, be this university or polytechnic, that some of the forms presented later have been used with somewhat different approaches, but keeping in general the objectives defined in the enumeration and explanation of each one, this is particularly true with forms number one and number two, because of the reasons explained.

1.3.1 Form 1.

Objective. To define the position of the School or Department within the institution, show the length and general pattern of architectural studies, and - when existing - the links with other departments, schools, services or faculties.

Description. Horizontally are placed the years of study and main characteristics.

Vertically the departments, schools or courses. In the left side the entrance requirements.

Commentary. Very useful to see in one page the many complexities to be found sometimes in several different documents, in some schools, and to compare with other schools.

The example shown in the next page belongs to the School of Environmental Studies, University College, London.

1.3.2. Form 2.

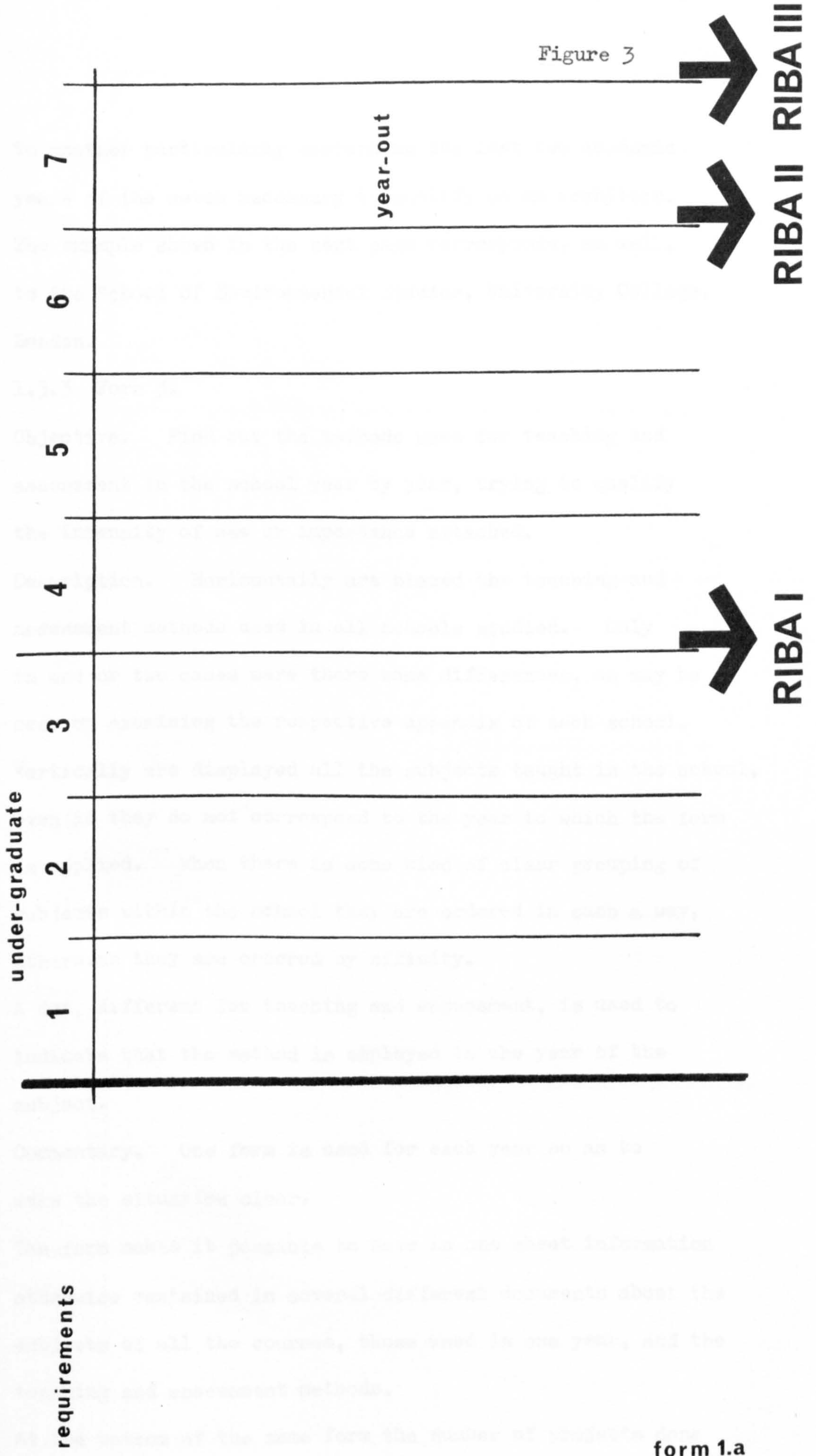
Objective. To present the post-graduate studies, duration, subjects or options, type of courses or studies.

Description. Horizontally are placed the years of study. Vertically the different courses or options offered shown if they are formal courses or research and differing full-time and part-time conditions, as well as the degrees involved.

In the left side the requirements established to take the degrees, and when they exist, alternatives are shown.

Commentary. Useful to understand the different possibilities offered for post-graduate studies and higher degrees, as well as to understand the different terminology used from one school

STUDIES Y.1 - Y.7



to another particularly concerning the last two academic years of the seven necessary to qualify as an architect. The example shown in the next page corresponds, as well, to the School of Environmental Studies, University College, London.

1.3.3 Form 3.

Objective. Find out the methods used for teaching and assessment in the school year by year, trying to qualify the intensity of use or importance attached.

Description. Horizontally are placed the teaching and assessment methods used in all schools studied. Only in one or two cases were there some differences, as may be seen by examining the respective appendix of each school. Vertically are displayed all the subjects taught in the school, even if they do not correspond to the year to which the form is applied. When there is some kind of clear grouping of subjects within the school they are ordered in such a way, otherwise they are ordered by affinity.

A dot, different for teaching and assessment, is used to indicate that the method is employed in the year of the subject.

Commentary. One form is used for each year so as to make the situation clear.

The form makes it possible to have in one sheet information otherwise contained in several different documents about the subjects of all the courses, those used in one year, and the teaching and assessment methods.

At the bottom of the same form the number of projects done

HIGHER DEGREES

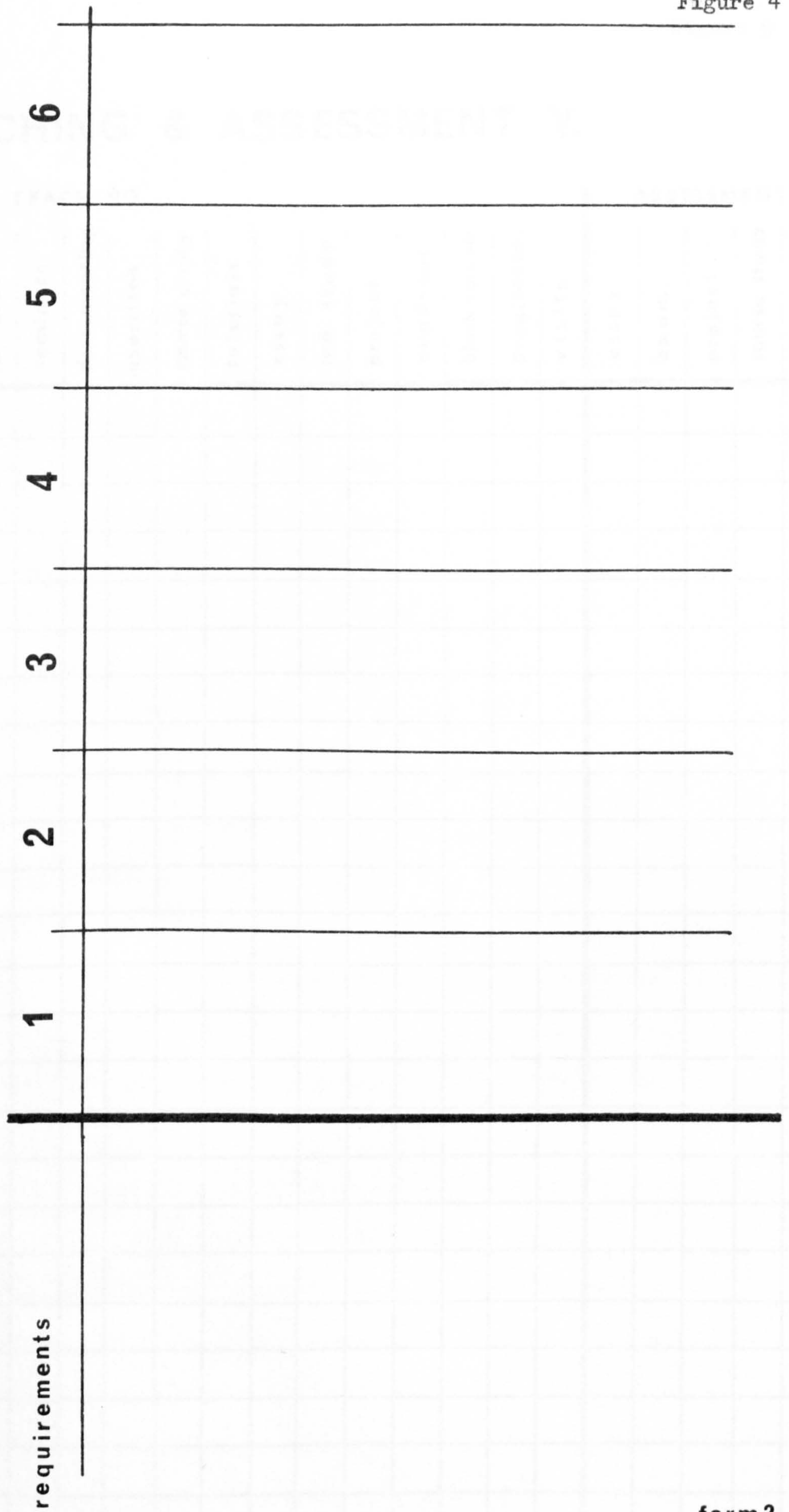


Figure 4

by term or session and the respective emphasis, when there is one expressly stated by the school, are shown.

As shortcomings, I must mention that it is very difficult to qualify conveniently how much or how well each of the methods is used, therefore an explanation follows each form, in the schools analysis to be found in the appendices, in which efforts are made to clarify these points using all other information available, that is very variable from school to school and not always very complete because each one states programmes, contents and methods without any common frame.

1.3.4 Form 4.

Objective. Find out the number of hours, distribution and subjects per week that students have as fixed timetable.

Description. Horizontally the days of the week and the years involved. One form covers year one to year three, other year 5 and year 6. In some cases when a formal course exists for post-graduate or higher degree studies a similar form is used.

Vertically the hours that cover the time range of all schools studied.

In the respective space the names of the subjects or activity are written (ex. seminar, co-ordination).

Commentary. Really useful specially considering that the 'week events' sheet produced by the schools, as a list, does not allow you to get, in one look, an idea of the year by year involvement of students in lectures or courses. The observation of the timetable form gives not only the number of hours but also the distribution or concentration of them,

TIMETABLE Y.1 Y.2 Y.3

	mon.			tue.			wed.			thu.			fri.		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															

that normally correspond with the criteria of more or less freedom allowed to students and the time they are expected to devote to project work. The main disadvantage is that all block courses, now used in many schools, cannot be usefully incorporated, they are duly considered nevertheless in the explanation of the graphic in each case and in form 5 as well.

1.3.5 Form 5.

Objective. Analyse students workload year by year, per week and per session and study course emphasis, if there is any.

Description. The upper graphic, hours per week work, shows horizontally the subject by groups, and vertically the number of hours per year, with total to the right side.

The second graphic, hours per week has the same characteristic, but the figures presented correspond to hours per session considered block courses.

Commentary. One form is used for year one to year 3 and another for years 5 and 6, as well as for postgraduate courses or higher degree studies, when possible.

Very useful to appreciate not only students involvement in lectures or courses but also to see emphasis on studies year by year and on the course as a whole.

A shortcoming is that when a school has not grouped the courses this has been done by the author, considering carefully courses content to find affinities. Fortunately of all schools studied only one was in that situation, and the description of the courses was clear enough to do the grouping.

WORK LOAD

Week

Y. 1						
Y. 2						
Y. 3						

Session

Y. 1						
Y. 2						
Y. 3						

1.3.6 Form 6.

Objective. To study the co-ordination existing between project work and other subjects, year by year, as well as the relation between projects.

Description. Horizontally the length of the academic year is displayed, showing the three terms, vacations, critics, examination preparation, and examinations when they exist.

Vertically are placed the subject groups.

Project work is shown at the bottom or in the subjects lane when they are clearly corresponding to one or other as stated in the schools document.

The horizontal duration and vertical relation are indicated when they are expressly mentioned by the schools documents or have been pointed out on personal interviews by staff members.

Commentary. Most useful to understand the project work done and co-ordination with other subjects, that is to be found only by studying all programmes of each year.

An effort has been made to point out the nature or type of project done, which is very important in the first year because several schools do not do project work properly, but problem solving work during most of the year using in some cases some of the time to develop drawing skills.

The search for the information for this form made clear that co-ordination or integration of all subjects with project work is one of the unsolved problems of the schools, of which they are all aware.

One form is used for each of the courses, when applicable.

COORDINATION Y.

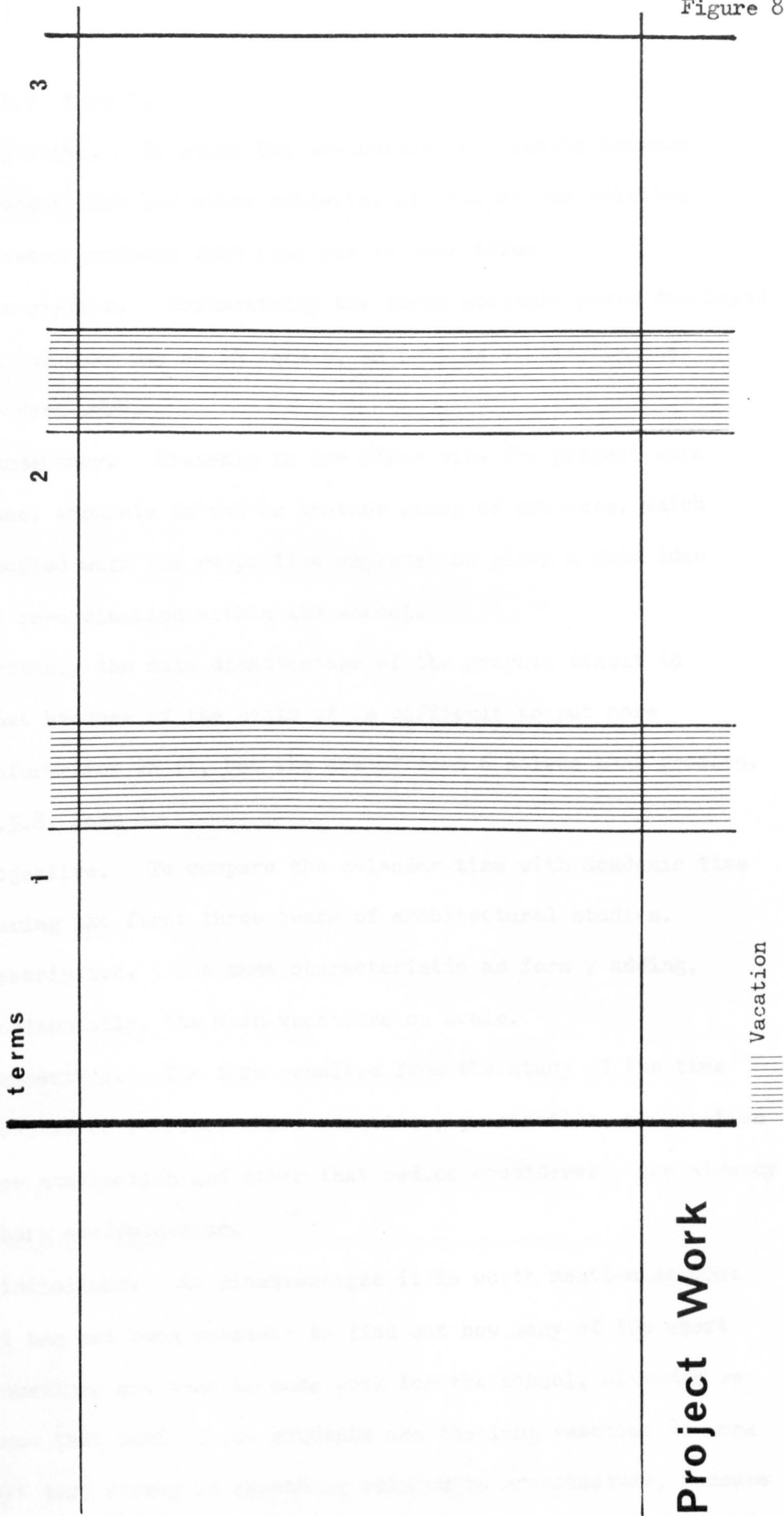


Figure 8

1.3.7 Form 7.

Objective. To study the co-ordination existing between project work and other subjects, as well as the relation between projects from year one to year three.

Description. Horizontally the three academic years displayed in the same way as in form 6, as well as vertically and project work.

Commentary. Presents in one clear view the project work done, emphasis in one or another group of subjects, which coupled with the respective explanation gives a good idea of co-ordination within the school.

Probably the main disadvantage of the graphic itself is that because of the scale it is difficult to put more information in it, but the use of form 6 solves that problem.

1.3.8 Form 8.

Objective. To compare the calendar time with academic time during the first three years of architectural studies.

Description. The same characteristic as form 7 adding, horizontally, the main vacations on scale.

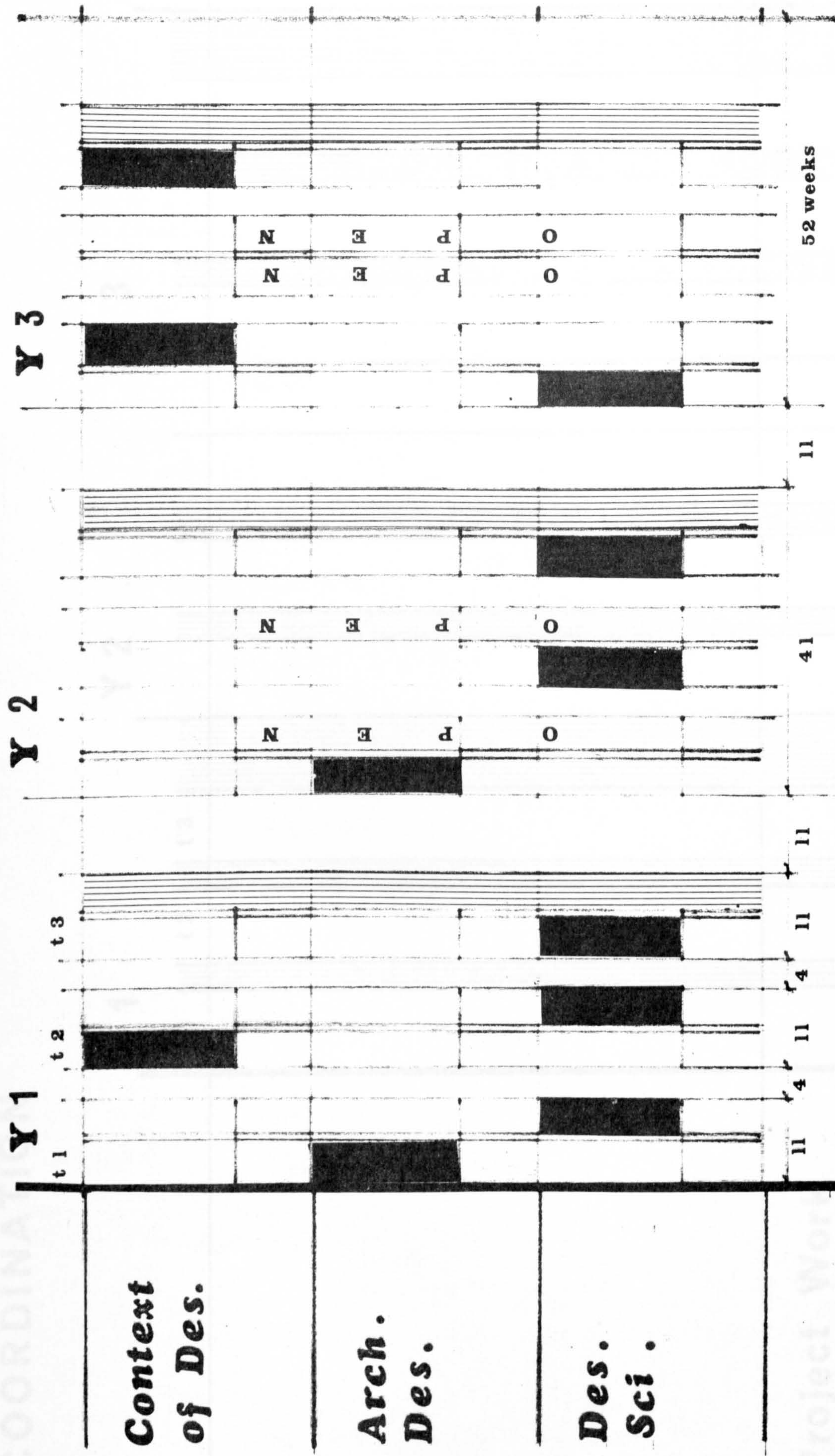
Commentary. The form resulted from the study of the time devoted to courses, short vacations, examination, preparation for examination and other that reduce considerably the already short academic year.

Limitations. As disadvantages it is worth mentioning that it has not been possible to find out how many of the short vacations are used in some work for the school, although we know that most of the students use the long vacation to work but very rarely in something related to architecture, because they take any job they can find.

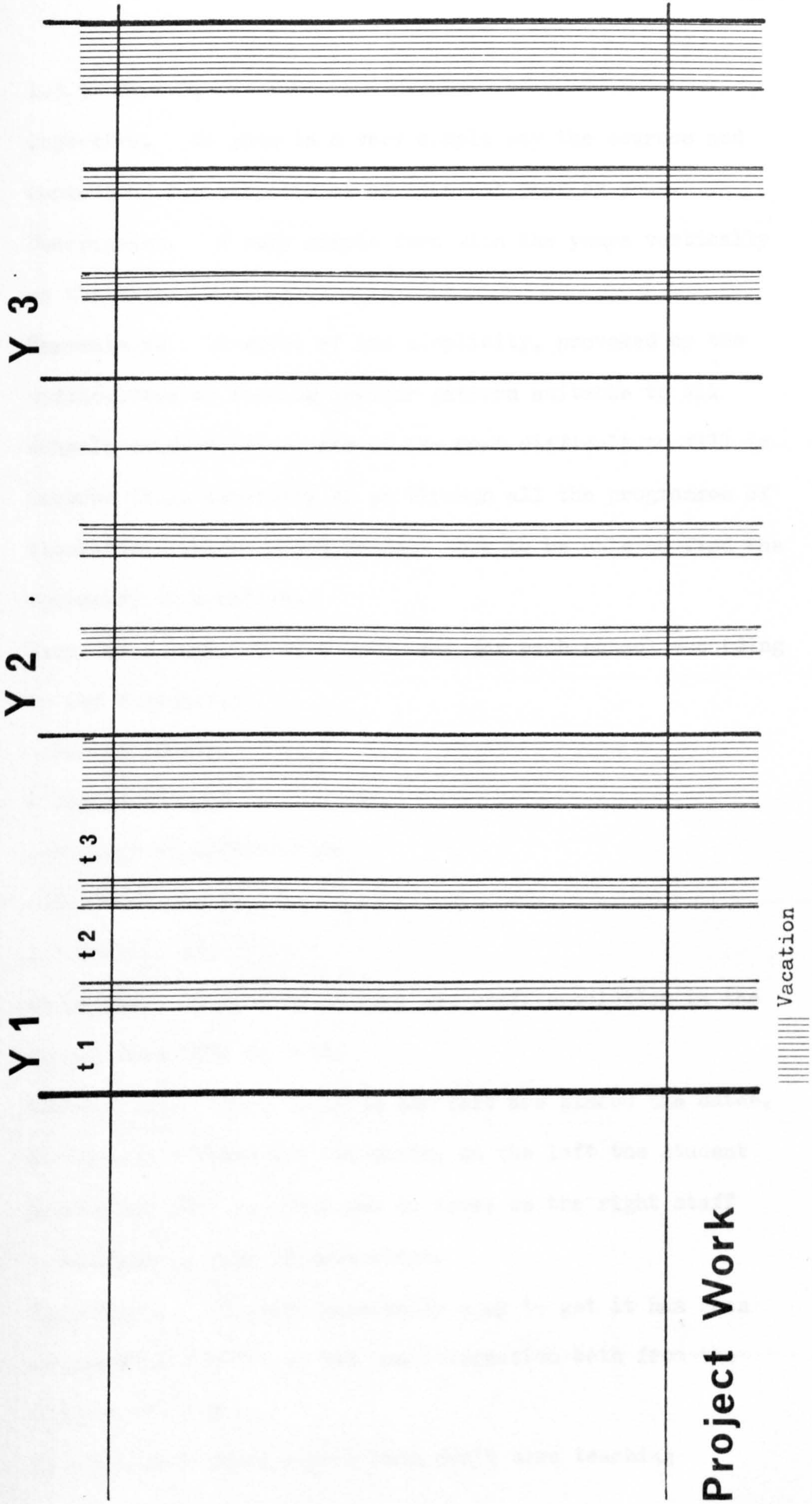
Best Copy
Available

Figure 9

CALENDAR TIME



COORDINATION



Project Work

Vacation

1.3.9 Form 9,

Objective. To show in a very simple way the courses and content of the subjects of my interest year by year.

Description. A very simple form with the years vertically on the left.

Commentary. In spite of its simplicity, provoked by the difficulties of finding another pattern suitable to all schools studied, it is one of the most difficult to fill in because it is necessary to go through all the programmes of theoretical subjects and project work to be able to find the necessary information.

Four forms number 9 have been used for each school according to the objective:

- Social concern
- Design Methods
- History of Architecture
- Teaching Methods.

1.3.10 Form 10.

Objective. To observe student and staff population in the school from 1958 to 1972.

Description. Vertically on the left are placed the dates. Horizontally there are two parts, on the left the student population year by year, one to five; on the right staff population by type of dedication.

Commentary. Although apparently easy to get it has been extremely difficult to get the information both from the schools and RIBA.

In some cases where researchers don't have teaching

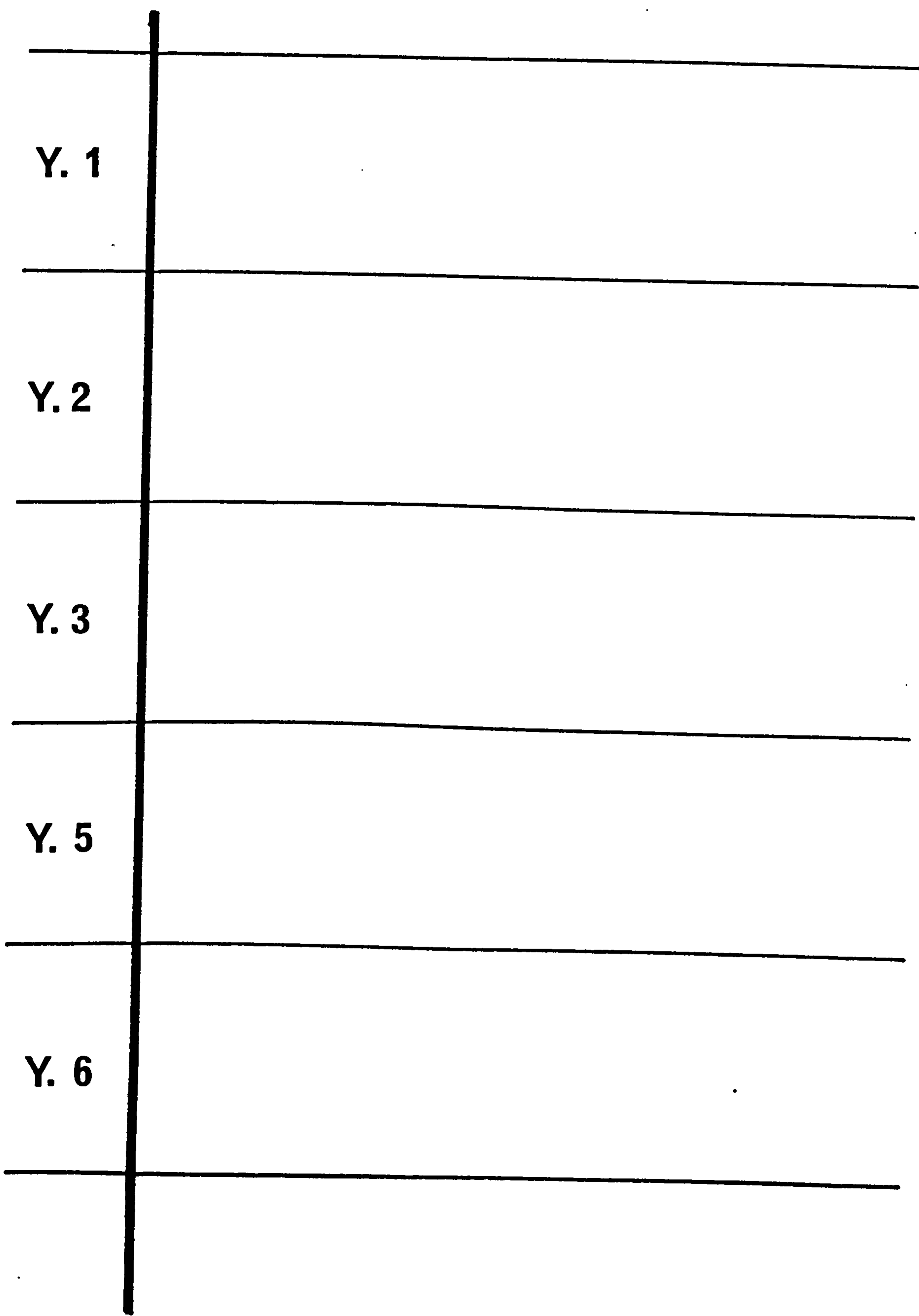


Figure 12

POPULATION

students

staff

	1	2	3	4	5	6	full time	half time	part time	outs. lect.
1958										
59										
60										
61										
62										
63										
64										
65										
66										
67										
68										
69										
70										
71										
72										

responsibilities or it is only a small part of it they are shown specially as such.

To calculate the ratio of staff/student, one of the logical results of this graphic, a co-efficient has been applied to the figures of the staff as may be seen on the explanation of the graphic for population of all schools.

The ten forms explained so far have been developed and used for the analysis-synthesis of the schools studied individually. For the purpose of comparing the schools so as to reach general conclusions, when possible, another set of forms was developed based on those, and they are explained below.

1.3.11 Form 11.

Objective. To compare all levels of studies in the schools considered in the work.

Description. Horizontally are displayed the seven schools or departments belonging to universities, polytechnics or others by the name of the institution.

Vertically the years of study from year one to higher degree courses or studies.

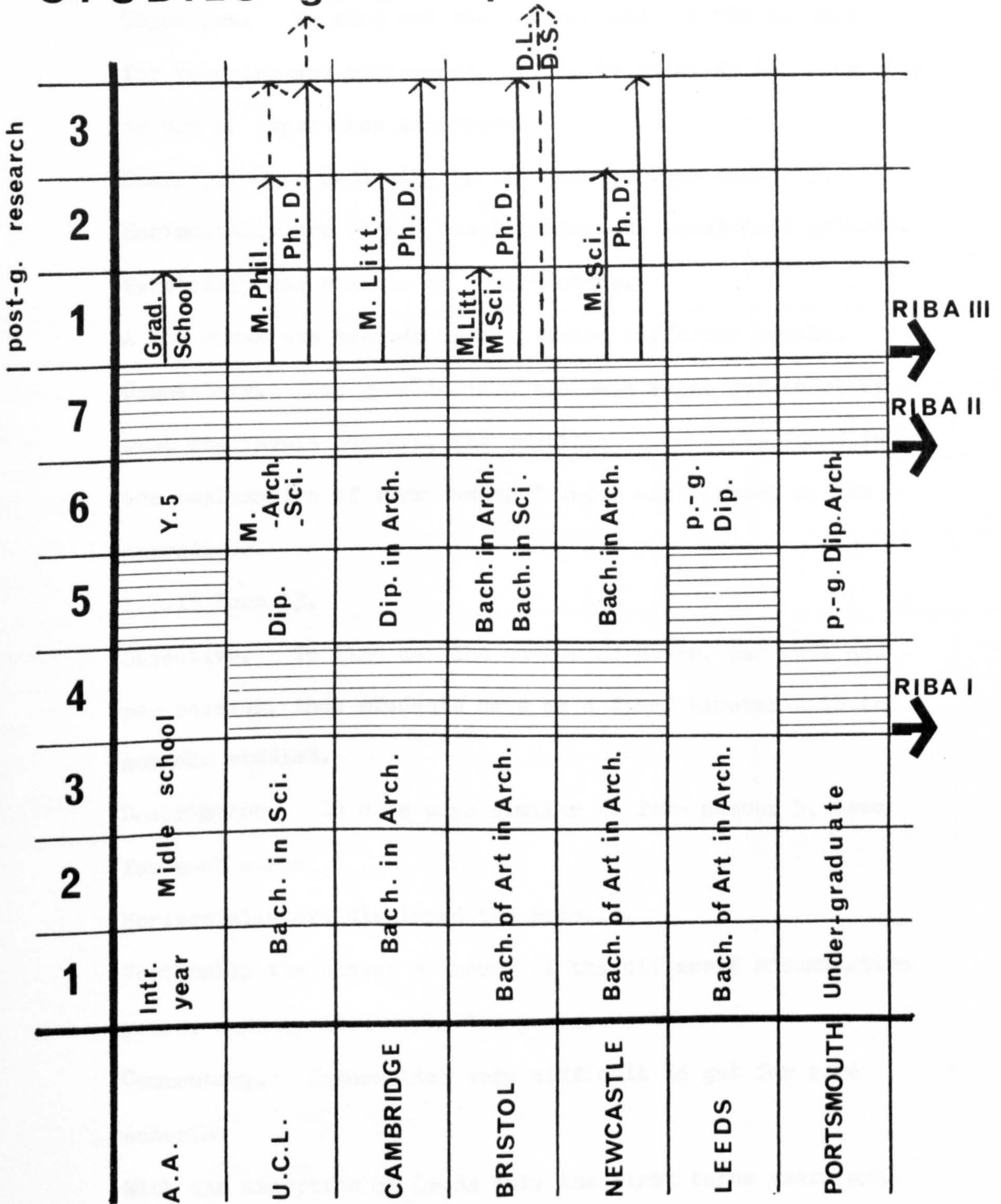
To the right are shown the steps when the RIBA examinations should be taken for professional qualification. The schools studied are exempt from the examinations as recognised schools.

Commentary. Very interesting to see the general pattern of studies and different names of courses at all levels.

As limitations it must be noted that it is difficult to show all alternatives allowed in some schools, but for that purpose forms 1 and 2 are available.

STUDIES general pattern

Figure 13



Year-out = Practice
 Full time Part time

1.3.12 Form 12.

Objective. To find out the methods used in the schools for teaching and assessment, trying to quantify the intensity of use or importance attached.

Description. Basically is the same as form number 3.

Horizontally are placed the teaching and assessment methods.

Vertically the schools of architecture.

A dot shows the methods used in three different levels.

Commentary. The graphic involves some value judgement in what the levels concern, the justification may be found in the explanation of form number 3 under each school on the appendices.

1.3.13 Form 13.

Objective. To find out the number of hours, per week and per session, that students have as a fixed timetable in the schools studied.

Description. In some ways similar to form number 5, used for each school.

Horizontally are displayed the schools.

Vertically the number of hours of the different accumulative years, a heavy line marks the years.

Commentary. Information very difficult to get for some schools.

With the exception of Leeds only the first three years are shown, because the last two years are so free of fixed timetables that the information is not very relevant.

1.3.14 Form 14.

Objective. To show the project work done in the schools

TEACHING & ASSESSMENT

Figure 14

	TEACHING												ASSESSMENT					
	lectures	seminars	disc.meeting	exercises	course study	tutorials	essay	ind. study	project	hand-out	block course	prog. learn.	visits	essay	exam.	project	course study	tutor
A. A.																		
U. C. L.																		
CAMBRIDGE																		
BRISTOL																		
NEWCASTLE																		
LEEDS																		
PORTSMOUTH																		

80 % or more of the courses

50 % approx.

25 % approx.

during the five years of academic studies.

Description. Horizontally are displayed the schools.

Vertically the five years considered, independent of

the 'years out' that usually come after year 3 and year

6, as can be seen on form 11.

Commentary. To complement the information about the number of projects the graphic shows the emphasis they have; when the school or the programmes expressly say so. Otherwise the explanation to this form gives the findings about the projects in chapter 3.

1.3.15 Form 15.

Objective. To show the development or importance of a particular subject in the schools studied.

The same form has been used as:

- Form 15 a Courses or lectures on Sociology
- Form 15 b. Concern on psycho-sociological problems and client participation in project work.
- Form 15 c. Design methods
- Form 15 d. History of architecture.

Description. Horizontally are displayed the schools.

Vertically the years of study, from one to five.

A dot in front of the respective year shows the level of the subject development or importance.

Three different levels are shown.

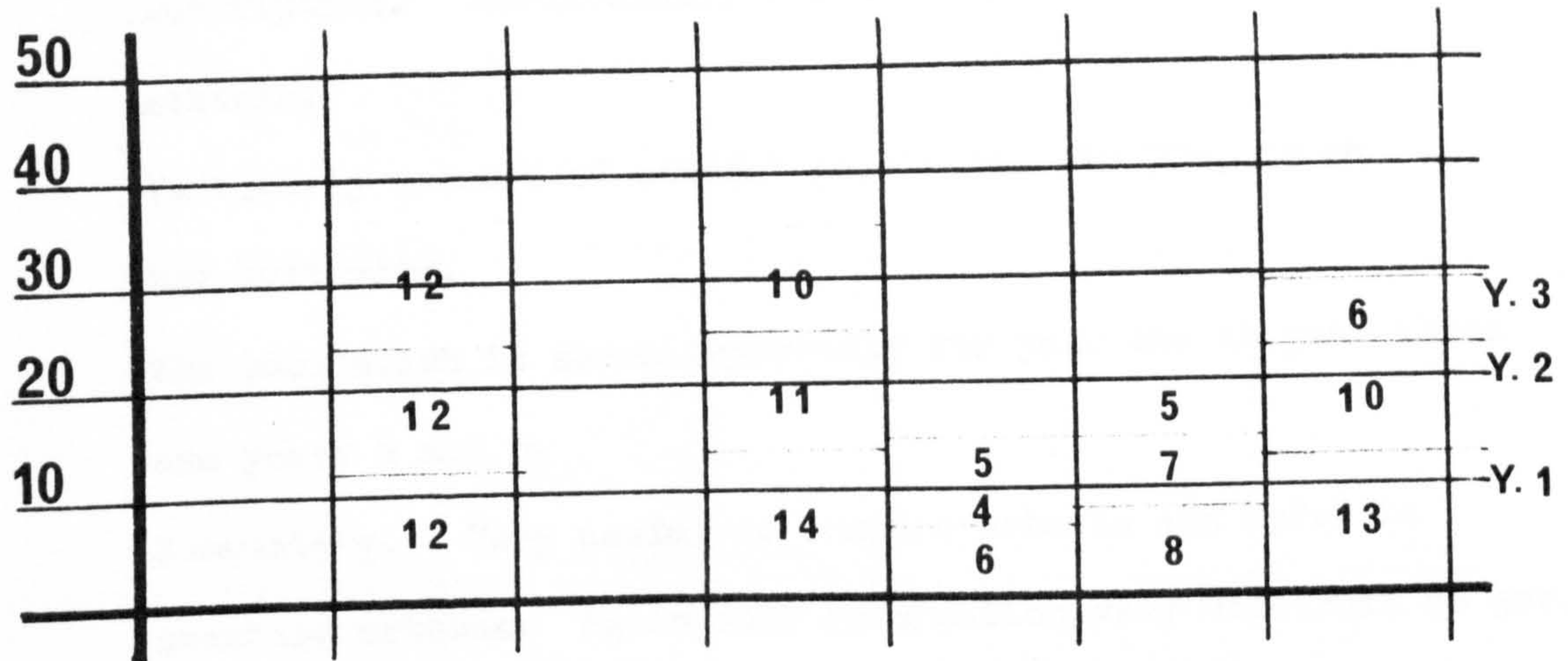
Commentary. Again the making of this graphic involves value judgement that has been based as much as possible on the information provided by schools documents or interviews.

The explanation of the form itself or of the respective information on the subject in each school - see appendices - may help to

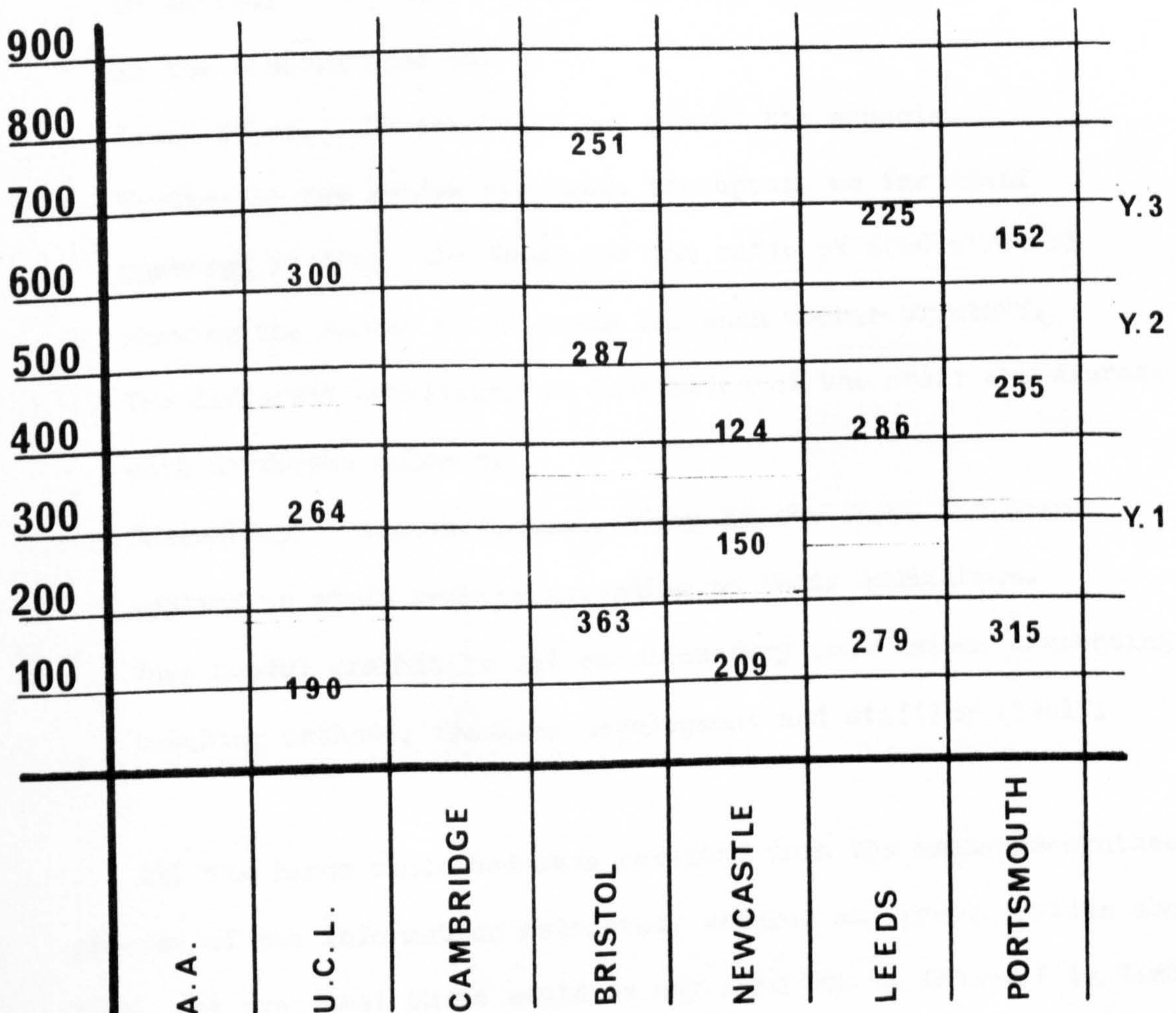
WORK LOAD

Figure 15

Week



Session



understand the qualification done.

1.3.16 Form 16.

Objective. To observe student population of all schools.

Description. Horizontally are displayed the names of the schools.

Vertically a scale of student population, in 50s, is on the left side.

The population is shown separately for year one to year three and years 4 and 5.

Commentary. Very useful to compare schools and refer to teaching methods. Again some information very difficult to get.

1.3.17 Form 17.

Objective. To observe staff and the ratio of student/staff in the schools studied.

Description. Horizontally are placed the schools.

Vertically two scales are used, the upper one for staff numbered in tens, the lower for the ratio of student/staff showing the number of students for each member of staff.

The different conditions or dedication of the staff are expressed with different colours.

Commentary. A co-efficient, shown in the form, has been applied to staff members according to their dedication.

Very useful graphic to get complementary conclusions concerning teaching methods, research development and staffing itself.

All the forms described have resulted from the analysis-synthesis process of the information retrieved, without any preconception about them, not even that there would be any form but an interest in finding a methodology. Most of them have been changed during the work to

PROJECT WORK

Figure 16

6		c & d				x		
		a			a			
		c & d				x		
		a						
5			x	a				
			x	d				
			x	a				
3		a-b-c-e		e	a-e	a-c	f	
		a-c				a-c-d	open	
		a-c		a	a-c-d	a	open	
		a-d			a-d	a-c-d	f	
		a		a	a-d	a	d	
2		b-d		a-b	a-c	a	d	
		a-c			a-c-d	a	open	
		a		a	a	a	d	
		a-b		a	a	a	open	
		a		a-c-d	a	a	a	
1		a			a-c-d		d	
		c-d			a-c-d		d	
		a			f		f	
		a			a		d	
		a			a		a	
	A.A.	U.C.L.	CAMBRIDGE	BRISTOL	NEWCASTLE	LEEDS	PORTSMOUTH	

a Architecture

b Landscape

c Building

x Same theme

d Env. Des. Eng.

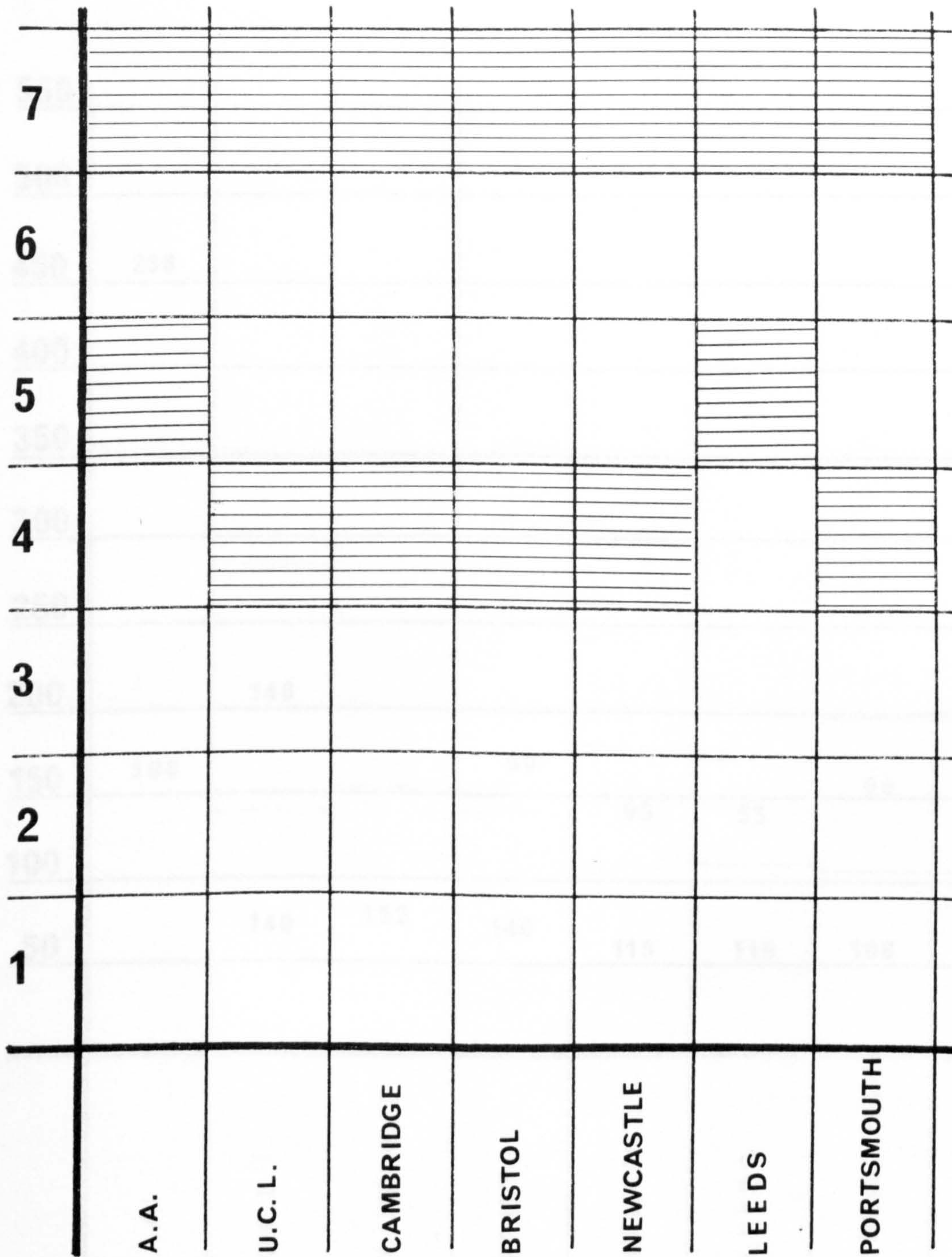
e Planning

f Context of Des.

▭ Sketch

D. M.

Figure 17



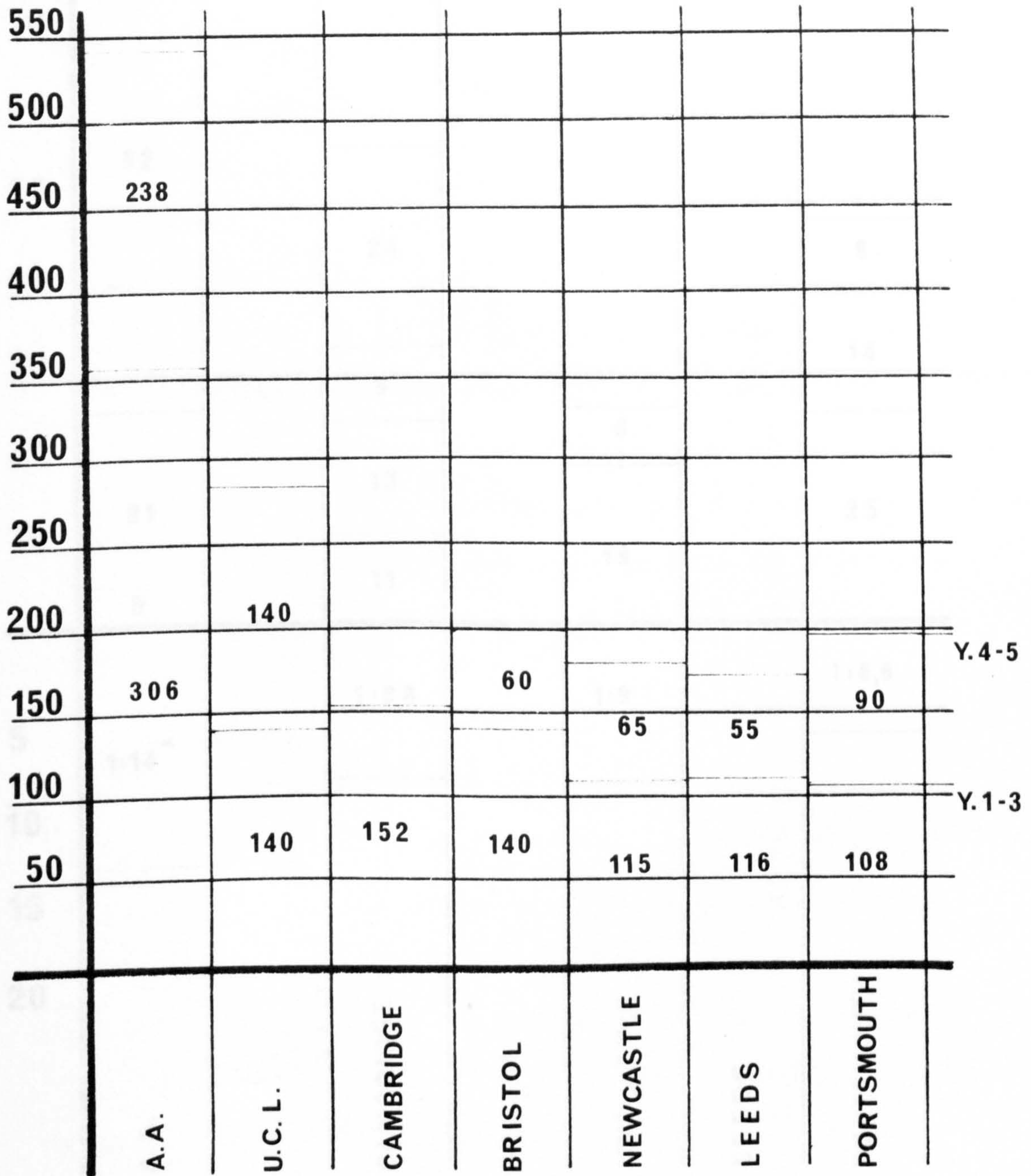
Computer aid

Concern about

Theoretical knowledge

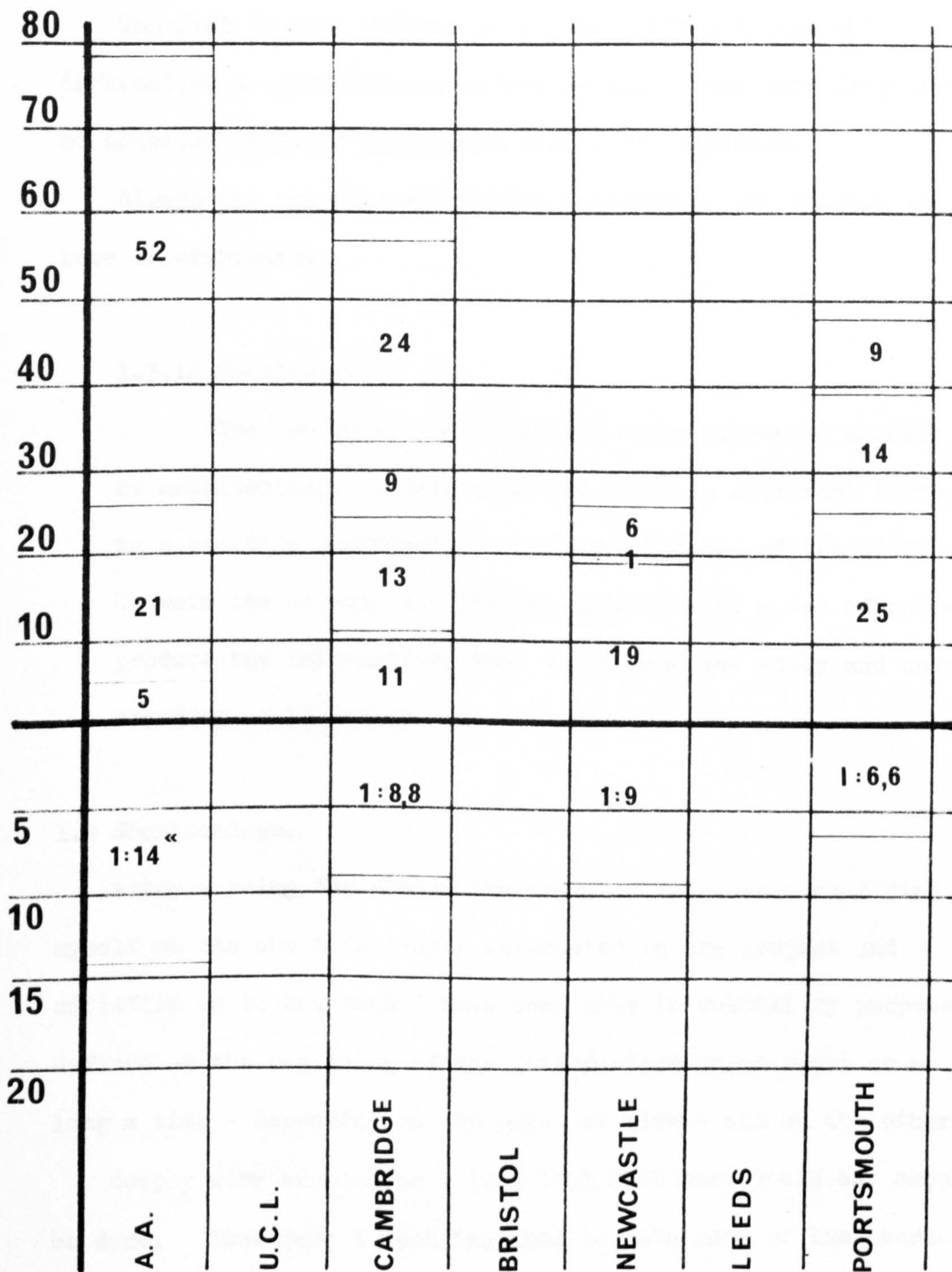
POPULATION:students

Figure 18



POPULATION:staff,staff/stud.

Figure 19



Full time = 1

Outside Lecturer = $\frac{1}{8}$

Half time = $\frac{1}{2}$

Researcher

Part time = $\frac{1}{4}$

" assuming 80 Outs. Lect.

form 17

make possible the use for the seven schools studied, and the application to other schools could produce further changes.

The fact is that without a graphic representation of the information a comprehensive understanding of the very large amount of material obtained would have been very difficult.

Always the graphic information produced by the schools has been incorporated.

1.3.18 Conclusion.

The use of methodology to analyse different schools of architecture, in this case resulting in different forms, is a positive experience, and useful because of the differences between the schools and the non existence of a set of patterns to produce the information, that would make the study and understanding of it easier.

1.4 Shortcomings.

After working for almost two years in this research I find myself on the one hand deeply interested in the project and satisfied as to how much I have been able to fulfill my purposes, defined at the beginning of the introduction in so short or so long a time - depending on the point of view - and on the other deeply worried because I feel that much more could and should be done. Therefore I feel inclined to note some of the shortcomings - the more relevant - that I sincerely believe must be stated.

These shortcomings will be simply enumerated without much comment, in two parts like this chapter has been in some way divided: the work itself, and the methodology.

1.4.1 Of the work itself.

1. This work, by its importance, could be better done by a person more qualified than myself, particularly on design methods, teaching methods, history of architecture, architectural education in Britain, and architectural psychology which is a new subject that in Britain runs parallel or together with architectural sociology, so to speak.

2. Even though conscious of their importance and existence I have not considered during the work in any depth, but only as a part or relation with my interest, the following aspects that influence the cultural environment, architecture, architectural education and the schools in particular:

- economics
- building facilities
- equipment
- efficiency
- student wastage
- post studies professional results
- continuing education
- entrance requirements.

Economic factors are important because they influence human resources as well as all kinds of material means and very often special development and research programmes.

Building facilities, although they may depend on long time programmes of economic factors they influence or shape some some courses that need laboratories, workshops, meeting facilities for tutorial work, etc., the same thing happens

with equipment particularly very sophisticated 'hardware'. Efficiency is a very difficult factor to measure, but it is important and in some personal interviews it has been mentioned with some emphasis and Mr Broadbent of Portsmouth Polytechnic has clearly expressed some ideas about it. (7)

In my own experience there is a clear relation between economic factors and efficiency in proportion to student population in higher education, besides any other kind of efficiency considered.

Wastage of students may be considered in many ways, from the selecting point to the final qualification and should be studied as a significant factor when taking account of teaching methods, orientation of studies and possible changes, analysing not only general patterns but subject by subject, specially now there seems to be an increasing number of opinions pledging a new orientation on A levels required to enter schools.

Consideration should be given to research for follow ups to find out what really happens with new architects graduated from environmental, building sciences, project orientated schools and relations between student qualifications and professional quality. The feedback of this research could be very useful.

Continuing education, as in Bristol, could be a good way to improve education-professional relations. Entrance requirements, a subject about which there is some research done, has been considered only in chapter 4, and without any pretence at drawing special conclusions.

3. The research should include all schools of architecture in Britain, but that was out of the question for me, as experience

has proved, in only two years.

4. Information is difficult to get at schools and at the RIBA in order to follow evolution year by year. Documents are not kept long enough, interviews are usually short and interrupted, visits are expensive to be done without any special provision, and specially and surprisingly also statistics about the population of students and staff more difficult than other information.

5. There is a need for a Centre, on a national scale, to which all documents produced by the schools concerning any aspect of architectural education should be sent immediately for compilation.

6. A research like this requires more time, resources and people involved. It should be a continuous task, probably for the Schools Council that according to its chairman, newly elected last April, will work on the following areas: - resources, aims and fulfillment, links profession, education, use of visual aids, on the schools of architecture.(8)

1.4.2 Of the Methodology.

To be able to give more credit to the methodology and the findings it has produced, the shortcomings are:

1. It was not possible to go back to the schools with the analysis-synthesis done so as to discuss with the qualified persons the information contained and value judgement involved.
2. Only the subjects of interest to me were analysed in detail, the others were considered in what was necessary to a general understanding of each school.
3. After studying all schools the forms could be considered more definitive.

4. More time was necessary to look in more depth at some subjects and to find more specific forms for some of them.

This is only an assumption because when this was the case during the work it has been done.

1.5 SUMMARY

The chapter has a double objective, to present in detail the research work done around architectural education in Britain to allow the author to learn about the subjects of his interest, which are: theory of design, teaching methods on architectural education, and methodology for teaching history of architecture, using for that a sample of schools of architecture; and the methodology used, developing for the purpose some forms to synthetise and present the information retrieved. The work is described chronologically and the description of the different steps followed is accompanied by appendices.

The methodology is described briefly and then explained through the forms developed for the study of each school as well as for the condensing of all schools.

Conclusions are drawn of each part and are followed by a comment on the shortcomings the author feels both parts have had.

1.6 CONCLUSION

The research work has been highly rewarding allowing the author to reach his objectives in more ways than it was hoped, because the study of some of the more representative schools of architecture in Britain is a healthy experience for someone that has been teaching in similar institutions for more than 10 years. This means that the way followed was a right way.

There is, as has been said under the title of shortcomings, a permanent field of research to be developed, with profit for the future of architectural education, specially now that according to so many opinions the profession and the education as well are at a 'critical or turning point' as has been described, that some institution must assume as a task.

A methodology is extremely useful to analyse and synthetise the information produced by each school of architecture and to compare it. The very simple method used in this work has many possibilities, not only for the schools considered but for others in the country as well, and even from other countries, as proved when it was used for Venezuelan schools of architecture. In fact, it would be extremely interesting to be able to do the same research in other countries so as to compare possible excelencies and defficiencies with their respective backgrounds and between schools.

The use of some typical forms is a very good way of clarifying and comparing the information presented in completely different ways.

The enumeration of shortcomings presented allows for a completion of other works, or stages, that could be done in the future, because it represents in some way conclusions of two years of looking into the problem with the purpose of discovering about the subject and at the same time about the method itself.

1.7 References.

CHAPTER 1.

- 1) The University of Zulia, is the second largest in Venezuela with some 35,000 students. Zulia is the main federal state of the country, with well defined regional characteristics,

Maracaibo the capital city is the siege of the university.

- 2) Basil, Esposito, Goyoaga, Jacobsen, Parodi, Perez,
Vera Guardia Universidad del Zulia - Universidad Latinoamericana.
Tomo 1, Tomo 11, Tomo 110, 1971. (University of Zulia - Latin-
American University. Volume 1, Volume 11, Volume 111, 1971).
- 3) Appendix 3. A Report. April, 1973.
- 4) APPENDIX 4. A Questionnaire. January, 1973.
- 5) APPENDIX 3. A Report. April, 1973. (Appendix 2)
- 6) *ibid.* (Appendix 5)
- 7) Broadbent, Geoffrey. Resources for a school of architecture.
Report for the Schools Council (7 pages) March 1973. p.2.
- 8) Jenkins, Marshall. Personal interview. June 1973.

chapter 2

SCHOOLS OF ARCHITECTURE

2. SCHOOLS OF ARCHITECTURE

2.1 Introduction

2.2 Appendix 2

2.3 Comparing Schools

2.3.1 Figure 20. General Pattern of Studies

2.3.2 Figure 21. Teaching and Assessment

2.3.3 Figure 22. Workload, per week and per session

2.3.4 Figure 23. Project work

2.3.5 Figure 24. Social studies

2.3.6 Figure 25. Social psychology and client consideration

2.3.7 Figure 26. Design methods

2.3.8 Figure 27. History of Architecture

2.3.9 Figure 28. Student population

2.3.10 Figure 29. Staff population and student/staff ratio.

2.4 Conclusions

2.4.1 The end product

2.4.2 Entrance requirements

2.4.3 Studies length

2.4.4 Profession-education relation

2.4.5 Differences between schools

2.4.6 Influence of head of the school

- 2.4.7 Need of communication
- 2.4.8 Short academic year
- 2.4.9 Research at Schools
- 2.4.10 Regularity of studies
- 2.4.11 RIBA examinations
- 2.4.12 Courses patterns
- 2.4.13 Teaching methods
- 2.4.14 Students workload
- 2.4.15 Project work
- 2.4.16 Social concern
- 2.4.17 Design methods
- 2.4.18 Architectural history
- 2.4.19 Population
- 2.4.20 Teachers education
- 2.4.21 Educational philosophies

2.5 SUMMARY

2.6 CONCLUSION

2.7 References

2. SCHOOLS OF ARCHITECTURE

Objective. To inform about the schools of architecture and general conclusions about them reached during the study.

2.1 Introduction

Having already explained the work done, and the effort to follow a methodology, this chapter is dedicated to presenting the information obtained from the seven schools of architecture selected for the study, school by school, comparison of all of them, and then general conclusions, leaving special conclusions for the following chapters.

Due to the mass of information used and the voluminous study resulting from the seven schools this is presented as an appendix - number 2 - and in this chapter only a short description is given. Nevertheless, as all seven schools are studied on the basis of the information comparing the schools, it is hoped that Appendix 2 will be read before that information.

2.2 Appendix 2.

Appendix two, contained in a separate volume, is simply the application of forms explained in chapter two, with the necessary flexibility, to all seven schools studied. Each form has produced one or more graphics, each of which has an explanatory sheet to clarify the information presented.

The documents that helped to produce the graphication for each school form a special part of the bibliography, and are also

classified by schools.

As a guide a list of schools is given with the number of graphics and explanatory sheets for each one:

• Architectural Association	31 pages
• University College London	39 pages
• University of Cambridge	43 pages
• University of Bristol	53 pages
• University of Newcastle	43 pages
• Leeds Polytechnic	41 pages
• Portsmouth Polytechnic	43 pages

2.3 Comparing Schools.

To avoid unnecessary repetition, objectives of each graphic will not be given before the explanation, because they are contained in chapter two with the corresponding 'Form' number.

The information will be presented referred to the graphics.

2.3.1 Figure 20. General pattern of studies.

There is a general pattern of studies followed by all the schools, seven years length and two years of practice, although as the graphic shows, with the exception of the second year of practice that must be the last year before professional qualification by the RIBA examinations, there is some freedom to place the first year of practice, which is most commonly placed after the three first years, leading to exemption of RIBA examination Part 1 - in all recognised schools - and to a degree, normally at Bachelor's level. In this case, Leeds Polytechnic's students do the four year course for the Honours degree of the C.N.A.A. (*) before the first year out. After the graphic was done according to the informaion received -

(*) National Council for Academic Awards

March 1973 - the Architect's Journal informed that in an explanation given about the A.A.'s educational policy to the RIBA by Jerry Foley the so called middle school consisted of second and third year...

"... Staff described how the intermediate school (second and third year) and the diploma school (fourth and fifth year) offer variety of choice to students...." (1),

which probably means that the first year out by A.A.'s students is done after the third year like most schools.

There is, nevertheless, in spite of this uniformity, a big variety of names in the degrees obtained in this first three year course. In some cases like at U.C.L. (*) the name of the course is 'Bachelor of Science in Environmental Studies'; in Bristol and Newcastle the courses are called 'Bachelor of Arts in Architecture'.

This first three years although they are differently orientated from one school to another seem to be the most common ground in architectural education, leading to a certain level of knowledge and skills so as to permit students to go out for one year of practice, and though the profession seems to protest about the skills for immediate application to office work, as we shall see further on, the intellectual development seems good to many of them and there is a certain level throughout the country that allows students to change from one school to another, without greater wastage than usual for the second part of their studies.

(*) University College London, School of Environmental Studies.

The years out are widely discussed, specially the first, and there seems to be a sort of entrenchment between education and profession about how the students must be prepared for them by the latter, and what they must do in practice by the former, but very seldom someone proposes eliminating the practice altogether.

The next two years in the schools, fourth and fifth or fifth and sixth as they are called, present an even wider variety and differences, this time not only in the names of courses or degrees but also in the difference of course contents. U.C.L. has a wide variety of possibilities for those two years having a Diploma course in Architecture on one year and a Master degree on one year with two options. The A.A., Cambridge and Portsmouth offer a two year diploma course in architecture, the latter considering their students as post-graduates. Bristol offers two two year courses for Bachelor in Architecture and in Science. Newcastle a two year course for Bachelor in Architecture, and Leeds a three year course for a diploma in architecture or other possibilities through sandwich courses. The three year course includes two years out which means that like the other schools, it takes seven years of study to qualify as an architect.

The important fact about these courses is that they are very different in orientation and there is a kind of diversification of the profession at this level. Some of the schools offer as many as 9 different options - Portsmouth - but in spite of these differences there are two common factors to mention: first, all schools consider that after one year out students

come back with a different view of the profession and it is difficult to get them interested in theoretical subjects again, and second the approach to the studies is the same, tutorial basis, one or two long projects, a dissertation or an essay, and some seminars form the general pattern, the exception being Bristol with more tight courses.

Concerning past-graduate or higher degrees the universities follow in some way a similar pattern although considering the very different organisation of each one, and again, the names of the degrees involved change from one place to another, but generally speaking they offer possibilities through courses - Bristol - or through research - all of them - being the full-time M.Phil degree, two years, and Ph.D. three years; in the case of part time the time goes to three or more and four or more respectively. The University of Bristol grants a D.Litt, degree for noteworthy published work to Bristol graduates after 8 years of work.

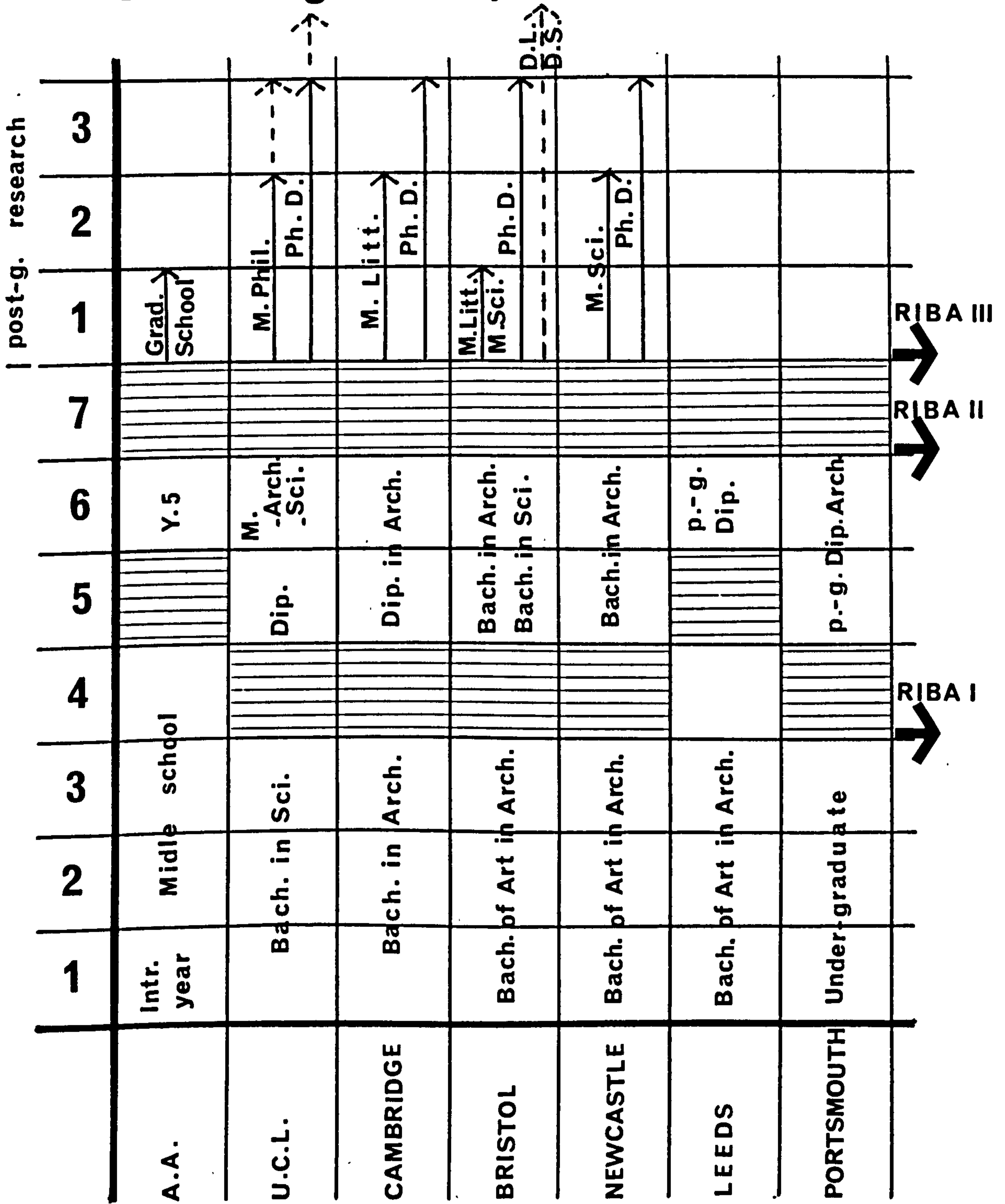
Higher degree studies may be undertaken immediately after the professional qualification, for those willing to become architects or even after the sixth year, but as it happens it is difficult to get a place in the university; this must be applied for and not necessarily obtained.

2.3.2 Figure 21. Teaching and Assessment.

With only two or three exceptions the methods used in the schools studied are those listed on the form, as may be deduced by the detailed analysis of the respective graphics school by school.

STUDIES general pattern

Figure 20



Year-out = Practice
 Full time Part time

The three levels shown have been defined considering in how many of the courses of each school a method is used, and the importance that it has in respect of the total amount of hours per session of the subject.

The main difficulty has been to discover how much the project is used as a method besides studio or project work itself, but it is fair to say that it is used to some extent, and therefore considering the importance that project work has in a school of architecture and the fact that indirectly some subjects apply the knowledge, given or acquired, on the project itself, it has been considered in the middle level.

Lecturing continues to be the most widely employed method, although it is very fashionable to say that lectures are of no use in higher education or even in education in general, the fact is that lectures have changed from the traditional kind we all know, as we shall discuss in 'Chapter 6 on teaching methods', and as long as there is a need to provide information and architectural teachers are architects more than educationalists, without training to use the latest technicalities of new methods, it will continue to be so.

The second level, not very close to lectures, is occupied by seminars, exercises, the already mentioned project work, handouts or set-books, the latter specially at Newcastle, block courses and in one case visits.

Seminars are increasingly being used although some of the staff using it recognise that they do not know the proper technique.

Exercises involved are of different sorts, including laboratory exercises with models, use of equipment to measure

environmental conditions, experiment with special equipment or simply calculations with or without computers.

Block courses on one subject as well as on several of them, before each project or distributed during the year from one or two days to two weeks, are very much in use and apparently producing good results and motivation of students.

On the third level a wide range of methods were found such as: discussions, exercises, tutorials, essay, handouts and visits.

Discussions, as in the case of seminars, are considered good methods, but not many teachers are prepared to organise this kind of work.

Tutorials that are in fact used in all project work are considered in this graphic as cases in which there is real individual tutorial, and the school has an arrangement to make this work.

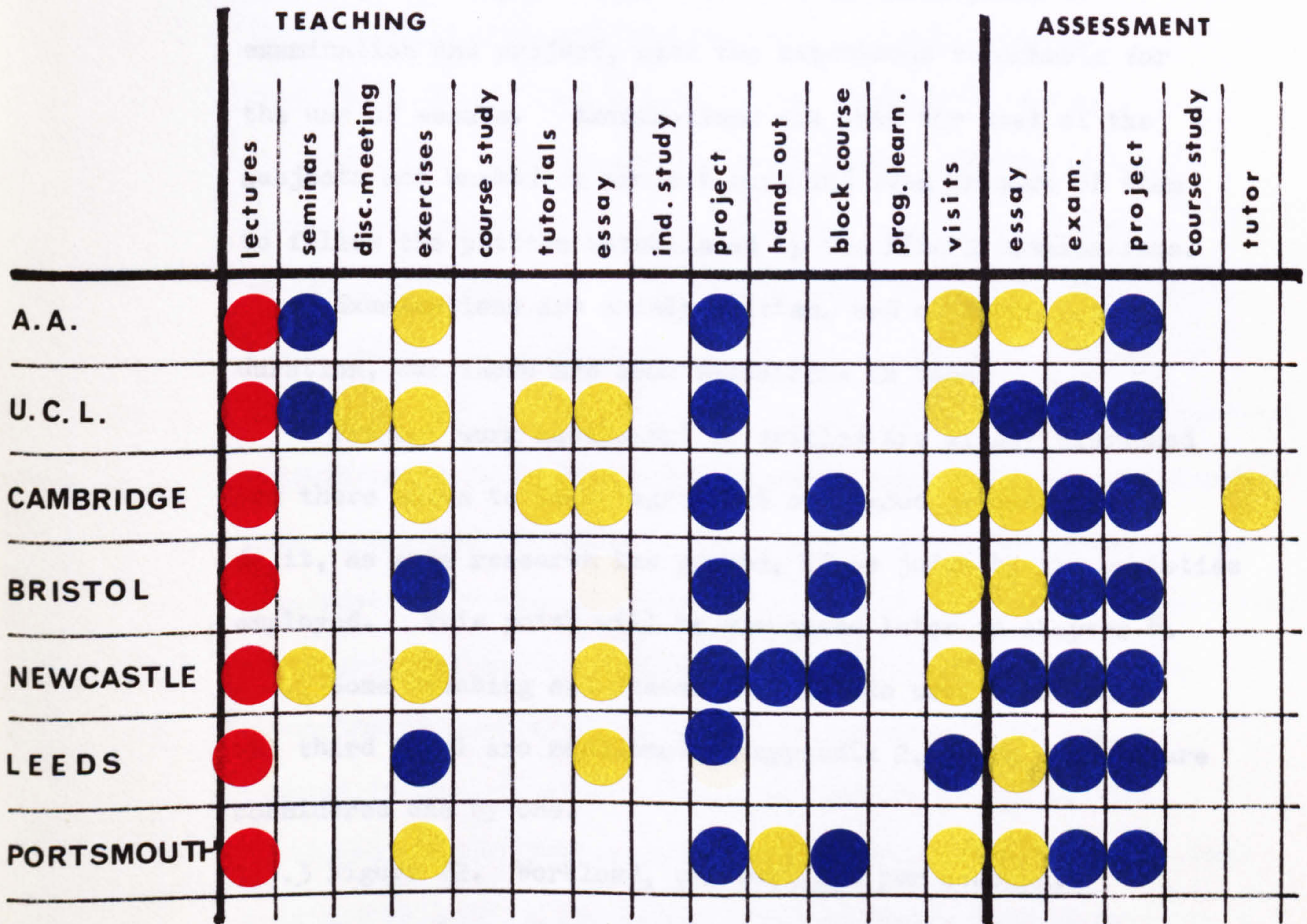
Essays are produced for courses on architectural history and in some cases only to fulfill the RIBA's requirements, although some architectural historians consider the method a very good one.

Visits are usually by all schools and they go from the short, one day or half day visit to a building, to the two week study visit abroad with a variety of interests, and there seems to be unanimous opinion that although sometimes they are difficult to organise with a convenient follow up they are very useful.

The same levels are applied to the assessment methods found to be used at schools, which are: essay, examination,

TEACHING & ASSESSMENT

Figure 21



- 80 % or more of the courses
- 50 % approx.
- 25 % approx.

project critics, study course and tutorial.

There is no one method of assessment used for most of the subjects taught. The second level corresponds to examination and project, with two exceptions remarkable for the use of essays. Examinations are used for most of the subjects not marked on project work and even on some of them to follow the pattern established by the RIBA's examinations.

Examinations are mainly written, and of three hours duration, but there are some variations on time.

Project work assessment or critics are widely discussed and there seems to be no agreement of a good or best way to do it, as some research has proved, if we judge by the varieties employed. This point will be discussed later in chapter 6.

Some teaching and assessment methods used less than the third level are mentioned in appendix 2, where schools are considered one by one.

2.3.3 Figure 22. Workload, per week and per session.

The numbers of hours per week established on a fixed timetable for the students varies from a maximum of 14 for one case in the first year, to 5 or 4 for two cases in the second or third year, in general they diminish from first to third year, very slightly though for the same school.

First year varies from 6 - Newcastle - to 14 - Bristol - most of them being over ten hours. The second year from 4 - Newcastle - to 12 - University College London - most of them being around ten or just over. The third year from 5 - Newcastle - to an exceptional 12 - University College London - most of them being under ten. This trend coincides with an increasing importance of project work.

It is interesting to mention the fact that Newcastle has by far the lowest number of hours, Bristol the highest and Portsmouth just over the average; all three are considered 'hard working schools', and that again would seem to indicate that there is no 'one' way to induce students to work.

In fact, considering the theory that each student needs to work at least one to three hours for each hour of lecture or seminar he has in his timetable, that would seem to indicate that, taking the average position, for 14 hours of courses 28 hours of individual study should follow, which for an architectural student would be impractical because he must dedicate considerable time to his project work. The students consulted estimated the time devoted to the school on normal weeks, that is not considering the weeks previous to a project, was from 40 to 44 hours and about 50% of that time, at least, in the third year was devoted to project work, which some considered too little. Architectural students apparently must work about two hours for each course hour on the subjects not strictly related to project, and of the fixed time some of the lectures or courses are related to project, so that the time devoted to this coincides partially with the time devoted to that course, this does not always happen in other disciplines.

When considering the number of hours per session, that includes block courses, the general relative situation seems to remain the same, but Bristol and Leeds, with less hours per week than University College London, have more per session. Leeds with very few hours per week comes very high on hours per session. Newcastle remains the school with less hours per session as well as per week.

Although it is not possible to show it in this graphic it is, perhaps, important to say that the timetables tend to concentrate classes on one or two days per week, with the purpose of leaving staff free of coming to the schools on some days, and allows three or four days per week exclusively on project work, which is very convenient on some stages of the project but inconvenient in others, when ideas need some time to mature.

2.3.4 Figure 23. Project Work.

The graphic tries to show, in one single page, all projects done during the architectural studies on the schools, and considering that there is a wide variety and possibilities of project work being done, an effort has been made to define the projects following the school written definition or going through all the programmes year by year. It will be explained what has been done for each school.

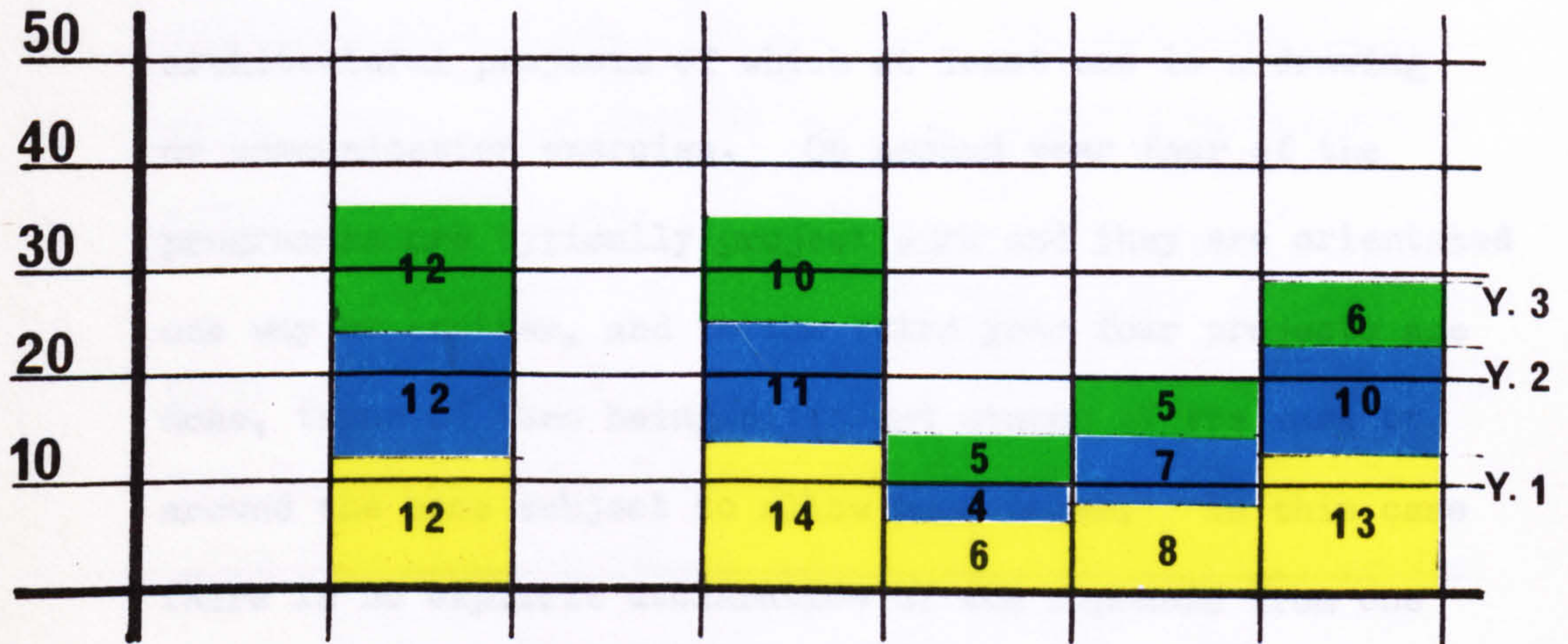
Concerning the A.A. School of Architecture it is difficult to attempt to set some kind of pattern in a graphic like this, nevertheless through the interviews and declarations appearing in some periodicals, currently most of the students are doing one project per session.

At Cambridge excepting the emphasis noted in these cases when analysis, observation of reality or surveys with briefing purposes are made, the project work is rather generally architecturally orientated although some projects are found to have some emphasis on planning or technology, for instance, it is not expressly found on documents or general programmes, at least those proportioned and studied. The number of projects decreases from first year - about 8 - to third year -

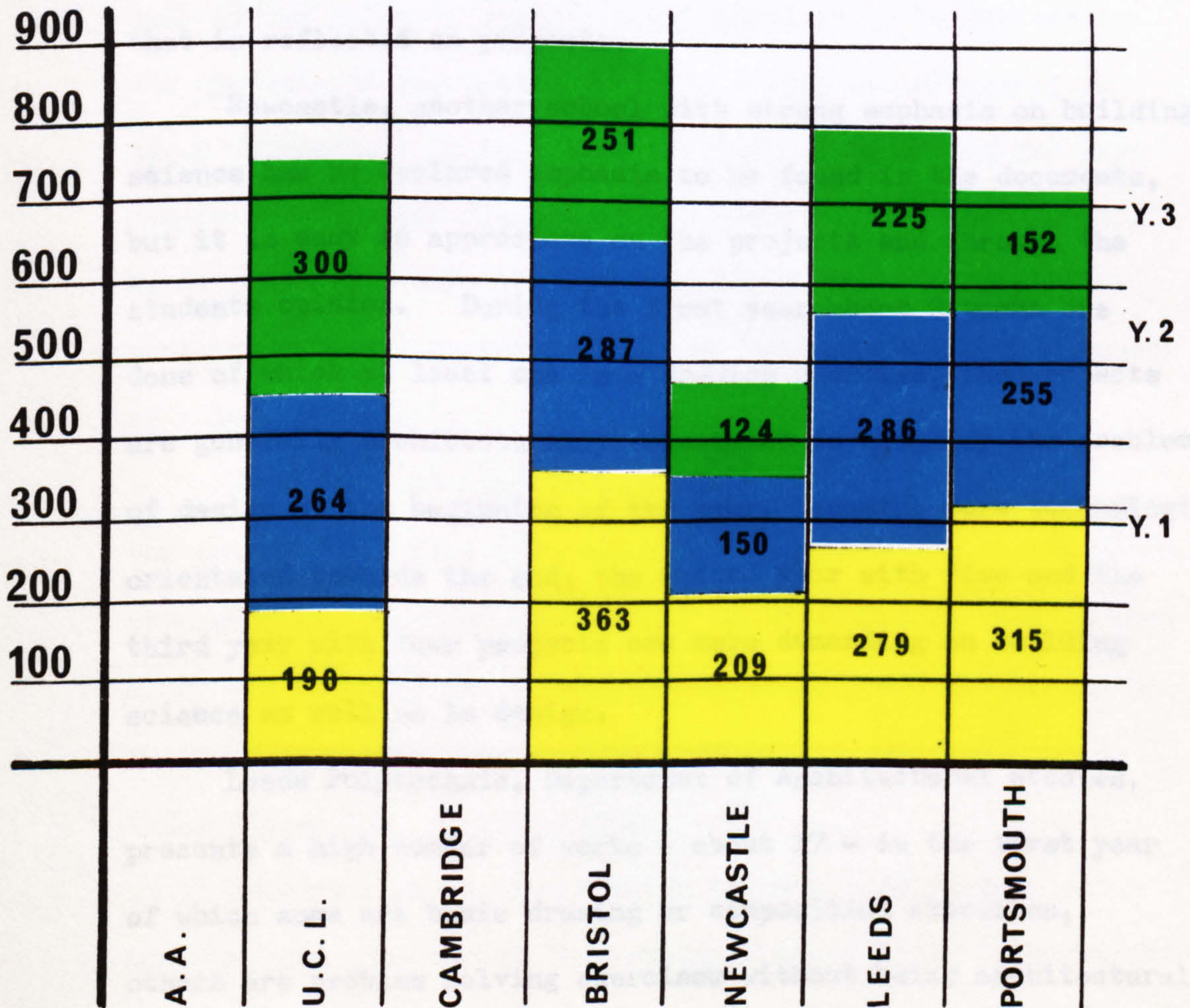
WORK LOAD

Figure 22

Week



Session



three - when the demand for better finished works increases.

At Bristol, where the course is run around 'programmes' that must not necessarily be projects, in the first year there are about four programmes that can be considered architectural projects of which at least one is a drawing or communication exercise. On second year four of the programmes are typically project work and they are orientated one way or another, and in the third year four projects are done, three of them being different stages of the same or around the same subject to allow more depth. In this case there is no explicit declaration of the emphasis from one project to another, but generally speaking the School has a strong bias towards building science and environmental sciences that is reflected on projects.

Newcastle, another school with strong emphasis on building science has no declared emphasis to be found in the documents, but it is easy to appreciate on the projects and through the students opinion. During the first year about 9 works are done of which at least one is a drawing exercise, the projects are generally architecturally orientated to simplify the problems of design at the beginning of the year, becoming more technologically orientated towards the end; the second year with five and the third year with four projects are more demanding on building science as well as in design.

Leeds Polytechnic, Department of Architectural Studies, presents a high number of works - about 17 - in the first year of which some are basic drawing or composition exercises, others are problem solving exercises without being architectural problems properly, and at the end of the year they become more

architectural design problems around housing of some kind, and two sketches. In the second year seven projects are made, one of which is a sketch, the other the invention of a kit of parts for a game, the architectural projects are generally orientated. In the third year six projects are made, some of which have an emphasis on building science or environmental science.

At Portsmouth the pattern is very regular for the first three years, in each of them five projects are made, all the same length of time, 5 weeks, two per term except in the third term when the second half is devoted to preparing for examinations. The emphasis of the projects is clearly defined according to the subjects grouping, with the peculiarity that some of the projects called 'open' are left to be decided by the students in discussion with the staff, by individual or group interest. In this case the increasing demand for more completeness on the project is not expressed for much longer, as in some other schools. In the third year two 'open' projects are left together to allow, if wanted, the development of a longer project.

Generally speaking during the fourth and fifth year the projects are more comprehensive, including the briefing and, consequently, although there might be an emphasis, this is less clear and significant. Projects in those years are longer and in most cases they take a whole session.

2.3.5 Figure 24. Social Studies.

Important as is the relation between architecture and society, and even though the social responsibility of architects is widely recognised, the studies of sociology are not common

PROJECT WORK

Figure 23

6		c & d			x	
		a		a		
		c & d			x	
		a				
5			x	a		
			x	d		
			x	a		
3		a-b-c-e		e	a-e	a-c
		a-c				a-c-d
		a-c		a	a-c-d	a
		a-d			a-d	a-c-d
		a		a	a-c-d	a
2		b-d		a-b	a-c	a
		a-c			a-c-d	a
		a		a	a	a
		a-b		a	a	a
		a		a-c-d	a	a
1		a			a-c-d	d
		c-d			a-c-d	d
		a			f	f
		a			a	d
		a			a	a
	A.A.	U.C.L.	CAMBRIDGE	BRISTOL	NEWCASTLE	LEEDS
						PORTSMOUTH

a Architecture

b Landscape


c Building

x Same theme

d Env. Des. Eng.

e Planning

f Context of Des.

 Sketch

nor very deep in architectural schools, where there seems to be a recognition of the above mentioned factor but a wide spread lack of confidence on social surveys, sociologists working on architecture, and formal courses on sociology within the schools, some of them preferring the participation or co-operation of a psychologist, or even better, a behavioural psychologist, as we shall see when we study the next figure.

The graphic shows the courses existing in a rather defined or formal way in the schools.

At the A.A. there is not a proper course, but several lectures around a core on sociology are provided in the first year as to the units of the intermediate school, and fifth and sixth year probably, now that apparently the intermediate school is only second and third year.

University College London has during the first three years courses with deep sociological content and courses on psychology and behaviour.

Newcastle has in the first year a series of lectures on sociology.

Portsmouth has during the three years courses on sociology, urban sociology, and in several others there is a deep sociological concern.

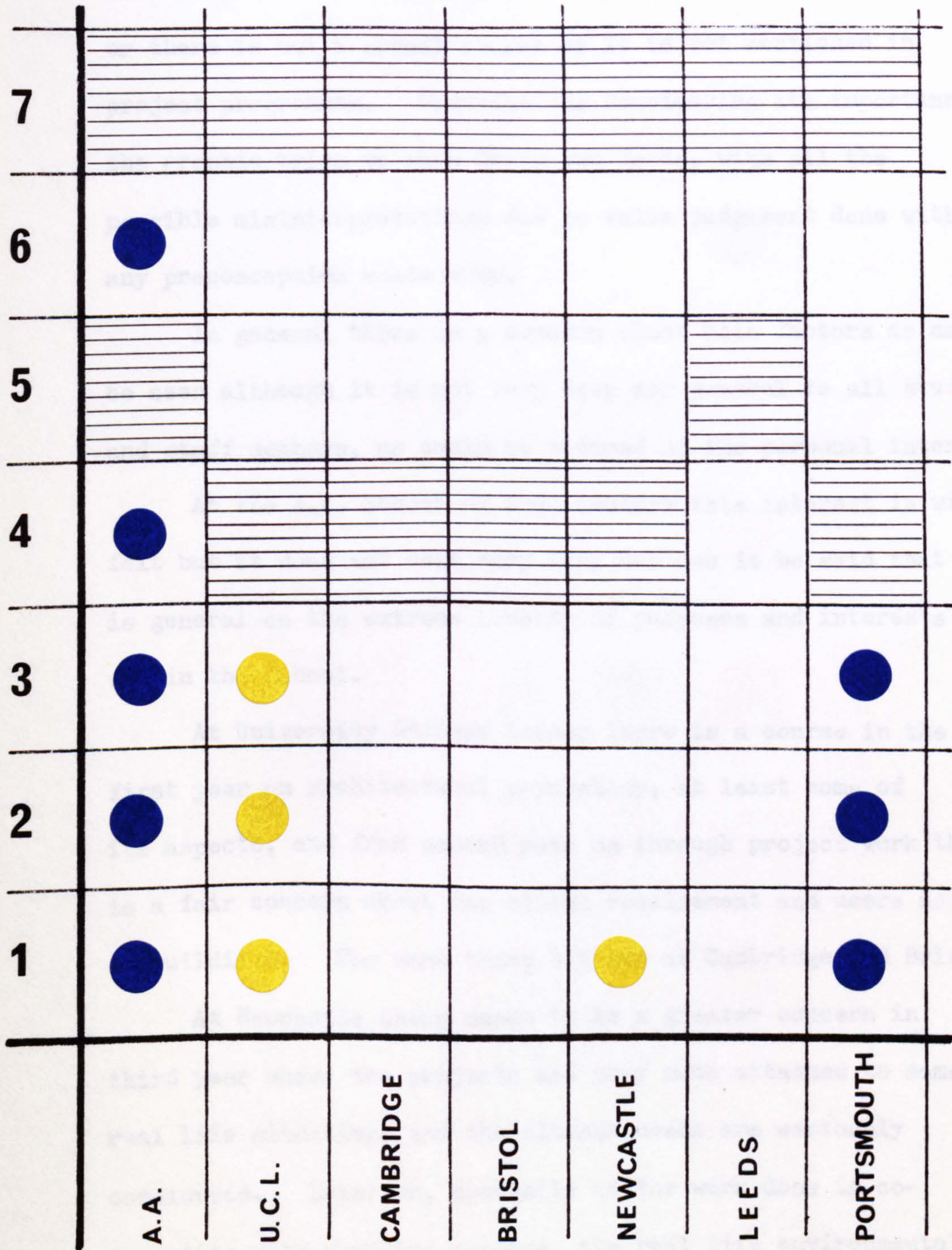
Other schools don't present formal courses on the subject, in spite of the permanent concern on project or history for instance.

2.3.6 Figure 25. Social Psychology and client consideration.

With the growing social awareness of architecture this has produced a great interest for psychological behaviour of building users and for client consideration as such, as a user

SOC. studies

Figure 24



- (Red) Good Courses
- (Blue) Some Lectures
- (Yellow) Few Lectures

or as both things at the same time; as in the former case, social studies, it is difficult to appreciate how much it really exists in schools when it is not clearly stated or there is not a formal course or it is not mentioned in project programmes. Nevertheless considering its importance the graphic tries to show these two facts, with all the possible misinterpretations due to value judgement done without any preconception whatsoever.

In general there is a concern about both factors as may be seen although it is not very deep nor general to all students and staff members, as could be deduced at the personal interviews.

At the A.A. School of Architecture this interest is widely felt but it does not seem very deep nor can it be said that it is general on the extreme liberty of purposes and interests within the school.

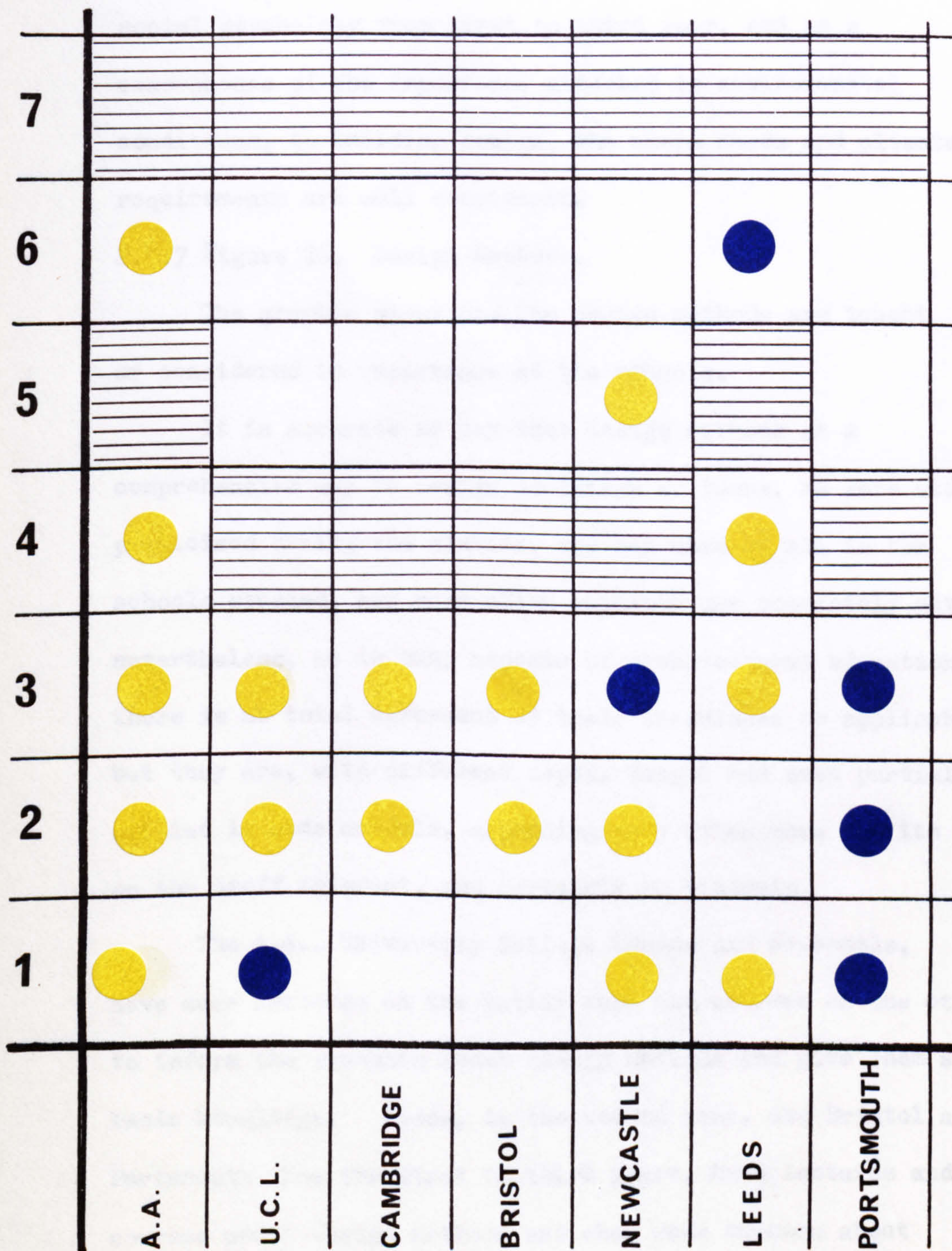
At University College London there is a course in the first year on architectural psychology, at least some of its aspects, and from second year on through project work there is a fair concern about the client requirement and users needs on buildings. The same thing happens at Cambridge and Bristol.

At Newcastle there seems to be a greater concern in third year where the projects are very much attached to some real life situations and the clients needs are seriously considered. Later on, specially in the work done in co-operation with building science, the real life environmental conditions are thoroughly taken into account.

At Leeds the interest is greater in the fourth year, when a multidisciplinary approach to project work brings the work closer to reality. This is one of the schools that would

SOC. psychol.

Figure 25



- Good Concern
- Fair Concern
- Some Concern

gladly accept a behavioural psychologist but not a sociologist to take part in project work.

At Portsmouth there is a good level of interest in social psychology from first to third year, and as a consequence of the importance attached to environmental conditions, to building design, the users needs and clients requirements are well considered.

2.3.7 Figure 26. Design Methods.

The graphic shows how the design methods are taught or considered in importance at the schools.

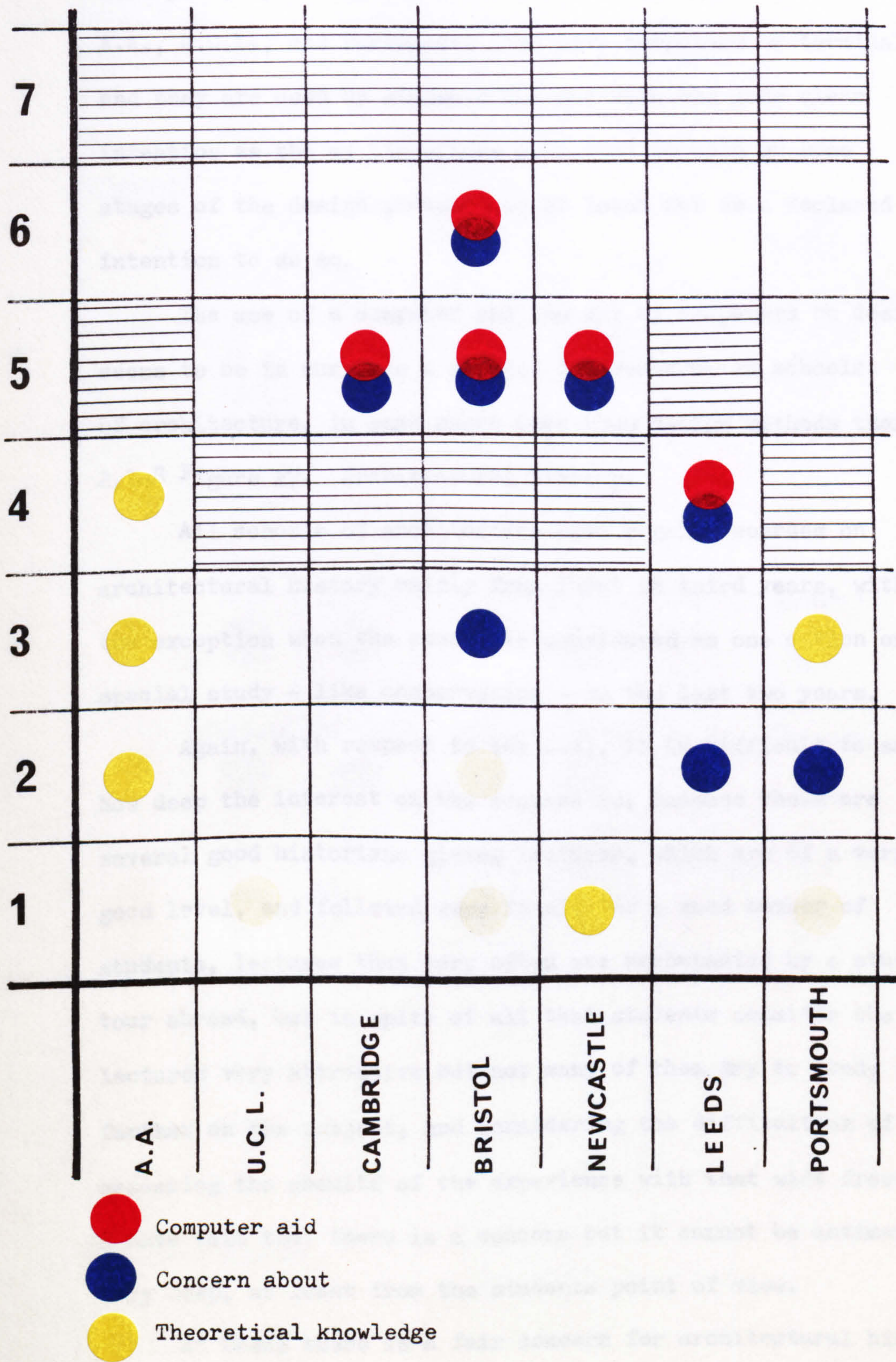
It is accurate to say that design methods as a comprehensive way to design buildings or towns, as were widely publicised during the sixties, are not used at all in the schools studied, and very often opinions are completely adverse: nevertheless, as in many aspects of architectural education there is no total agreement of their usefulness or applicability, but they are, with different depth, taught and even partially applied in some schools, depending very often more for its use on the staff interest, and certainly on students.

The A.A., University College London and Newcastle, have some lectures on the latter case and courses on the others to inform the students about design methods and give them some basic knowledge. Leeds, in the second year, and Bristol and Portsmouth from the first to third years, have lectures and courses about design methods and show some concern about their possibilities and importance, but only occasionally are they used on project work.

The use of a computer as an aid to design, which immediately brings about the problem of whether it is really used to design or merely to classify information, or calculations, or sort out

D. M.

Figure 26



alternatives, or even to produce some plans, is used in four of the seven schools selected as may be seen, mainly in the last year, specially the firth year. The other schools: A.A., U.C.L., and Portsmouth also have computers or terminals and they are used by students but not with the same clear intention as the as the others as a tool to help on some stages of the design process, or at least not as a declared intention to do so.

The use of a computer and the use of computers on design seems to be in our days a subject for research in schools of architecture, in some cases more than design methods themselves.

2.3.8 Figure 27. Architectural History.

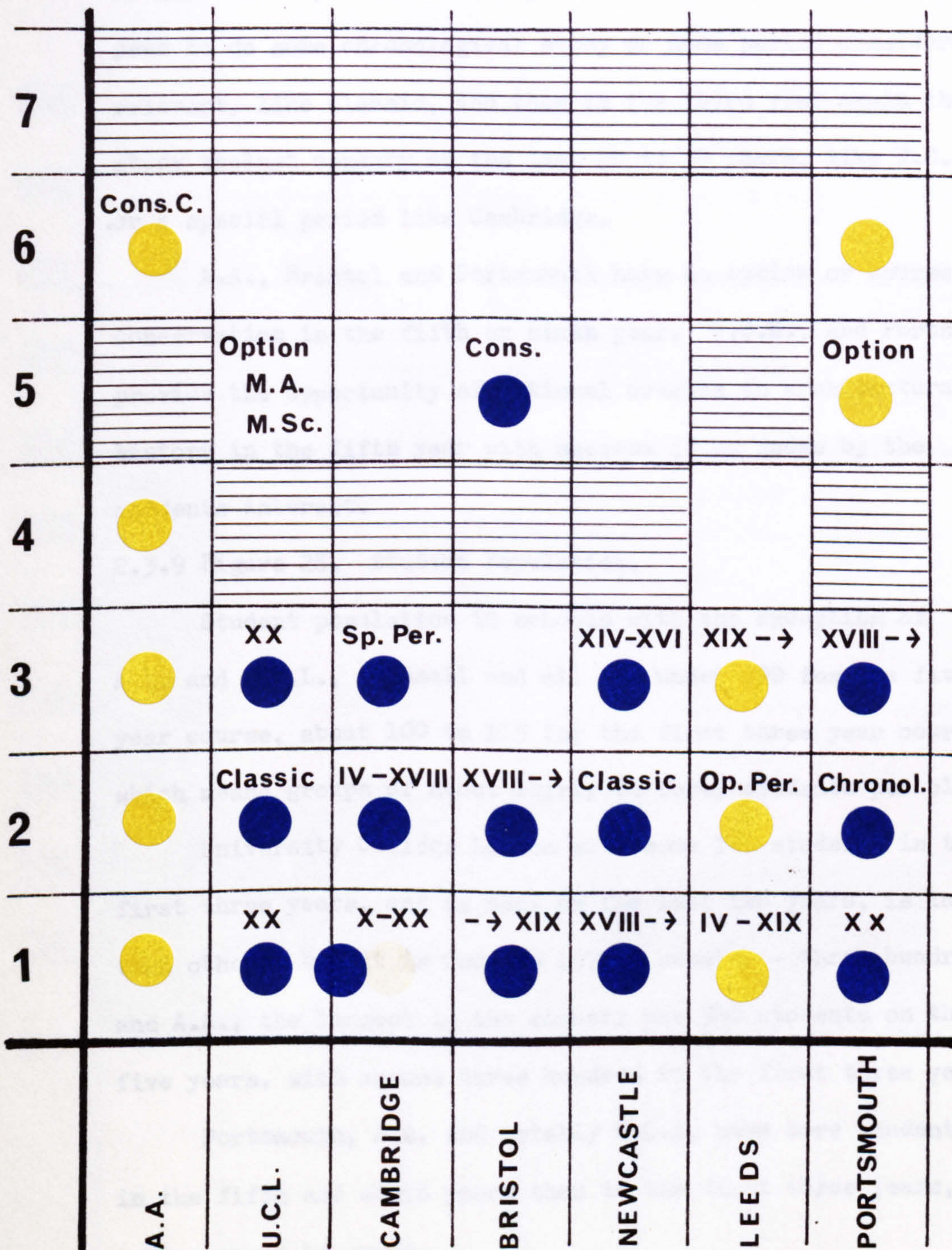
All schools of architecture have regular courses on architectural history mainly from first to third years, with the exception when the course is considered as one option or special study - like conservation - on the last two years.

Again, with respect to the A.A., it is difficult to say how deep the interest on the courses is, because there are several good historians giving lectures, which are of a very good level, and followed very freely for a good number of students, lectures that very often are accompanied by a study tour abroad, but in spite of all that students consider the lectures very attractive but not many of them try to study further on the subject, and considering the difficulties of assessing the results of the experience with that wide freedom I have felt that there is a concern but it cannot be estimated very deep, at least from the students point of view.

At Leeds there is a fair concern for architectural history that is presented in the first year as precedants and in the

HISTORY

Figure 27



● Good Concern

● Fair Concern

second year as an optional period.

Most of the schools start with modern architecture or last century in the first year, they go back on second year to do some chronological study or some period considered relevant, like classic, and then in the third year again they study the last century or the last 20 to 30 years, like U.C.L. or a special period like Cambridge.

A.A., Bristol and Portsmouth have an option or course on conservation in the fifth or sixth year. U.C.L., and Portsmouth provide the opportunity of optional courses on architectural history in the fifth year with success if we judge by the students interest.

2.3.9 Figure 28. Student Population.

Student population in schools with the exception of A.A. and U.C.L., is small and all are under 200 for the five year course, about 100 to 115 for the first three year courses, which means groups of about thirty to forty students per class.

University College London with some 140 students in the first three years, and as many on the last two years, is larger than others, but it is under - 1972-3 session - three hundred, and A.A., the largest in the country has 540 students on the five years, with around three hundred in the first three years.

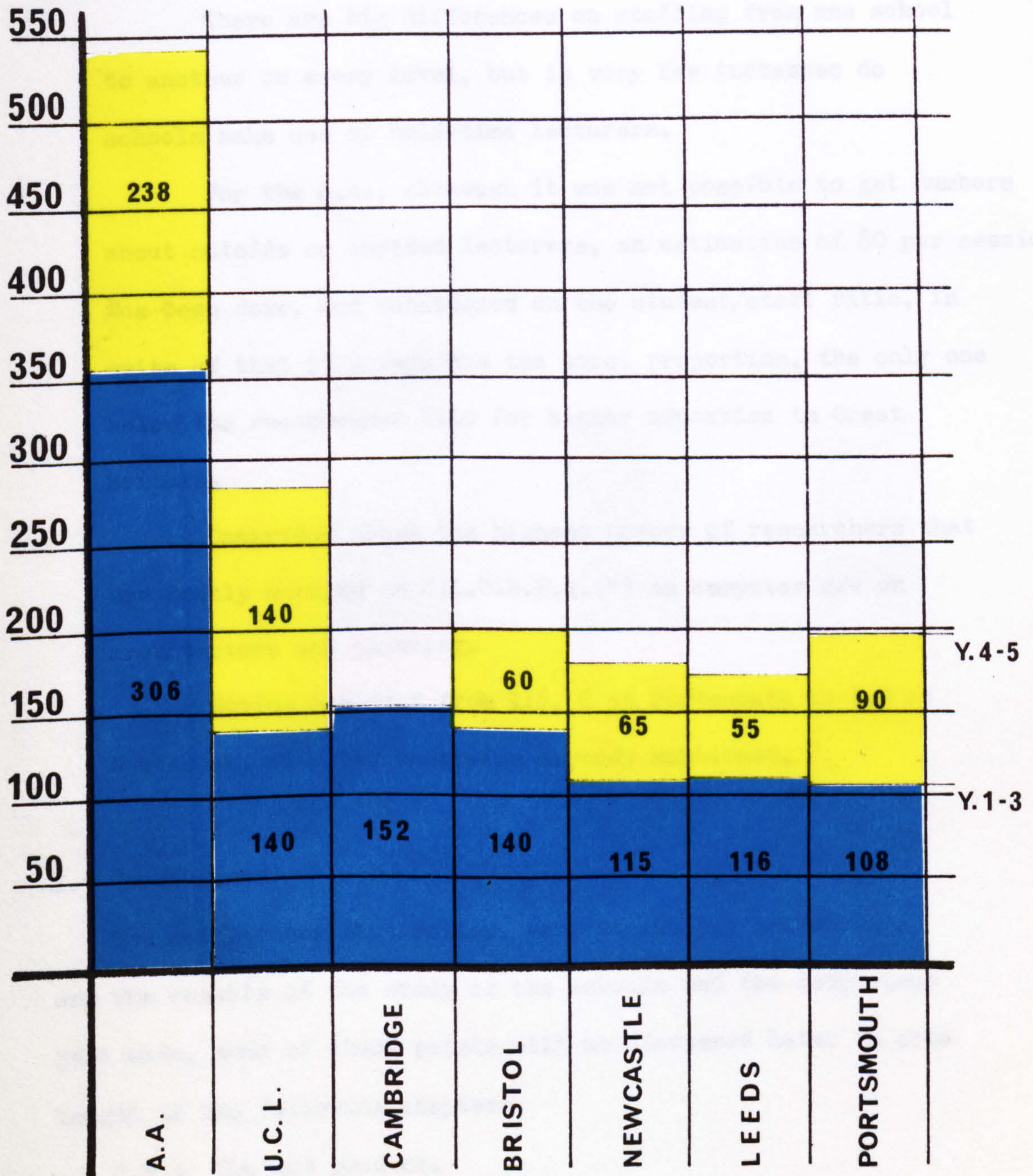
Portsmouth, A.A. and notably U.C.L, have more students in the fifth and sixth years than in the first three years, taking group by group.

2.3.10 Figure 29. Staff Population and student/staff ratio.

As said before, the different kind of staff commitment is shown on this graphic, and a coefficient has been applied, going from one for full time staff to one-third for an

POPULATION:students

Figure 28



outside lecturer. Researchers doing mainly that work, without or with only occasional teaching responsibility, are shown separately and not considered on the student/staff ratio.

There are big differences on staffing from one school to another on every level, but in very few instances do schools make use of half-time lecturers.

For the A.A., although it was not possible to get numbers about outside or invited lecturers, an estimation of 80 per session has been done, and considered on the student/staff ratio, in spite of that it always has the worst proportion, the only one below the recommended 1:10 for higher education in Great Britain.

Cambridge shows the highest number of researchers that are mostly working on C.L.U.B.F.S.(*) on computer use on architecture and planning.

Ratios are good from 1:6, 6 at Portsmouth to 1:9 at Newcastle, with the exception already mentioned.

2.4 Conclusions.

The conclusions that follow, very succinctly enunciated, are the results of the study of the schools and the comparison just made, some of these points will be discussed later in some length in the following chapters.

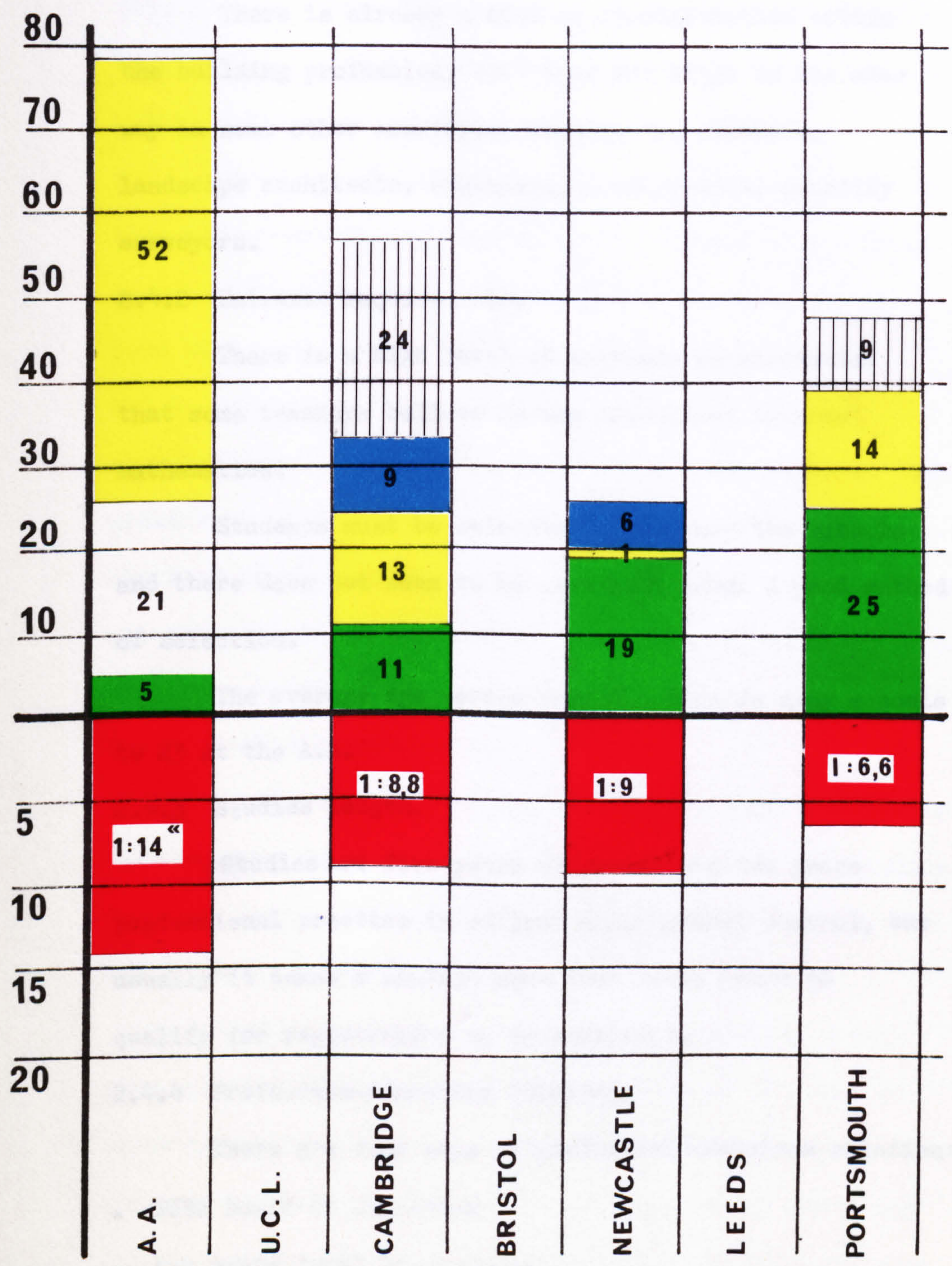
2.4.1 The end product.

The schools of architecture seem to be producing, according to what they say and try to do, architects orientated towards environmentalism and environmental design engineering-

(*) Center for Land Use and Built Form Studies.

POPULATION:staff,staff/stud.

Figure 29



Full time = 1
 Half time = $\frac{1}{2}$
 Part time = $\frac{1}{4}$
 Outside Lecturer = $\frac{1}{8}$
 Researcher
 « assuming 80 Outs. Lect.

U.C.L. - building sciences - Newcastle - environmental sciences - Bristol - and/or designers - Portsmouth.

There is already a kind of specialisation within the building profession, that does not exist in the same way in some other countries: architects, planners, landscape architects, engineers, constructors, quantity surveyors.

2.4.2 Entrance requirements.

There is a high level of entrance requirements, that some teachers believe is too orientated towards mathematics.

Students must be selected to get into the schools and there does not seem to be agreement about a good method of selection.

The average age varies from 18 years in many schools to 23 at the A.A.

2.4.3 Studies length.

Studies are five years at school and two years professional practice in offices under school control, but usually it takes a student more than seven years to qualify for registration as an architect.

2.4.4 Profession-education relation.

There are four ways of profession-education relation:

- RIBA Board of Education
- two years 'out' by students
- members of the staff who practice
- visiting lecturers.

Even without agreement in Britain about the virtues and deficiencies of the system there are more relations than in some other disciplines in the country, and certainly than in architecture in some other countries.

2.4.5 Differences between schools.

There are big differences from one school to another, that proves freedom to form architects exists, which is a very healthy situation that could be better profited with some kind of permanent follow up to draw conclusions.

2.4.6 Influence of Head of the School.

In spite of staff boards, complex organisations, and great variety of old and new regulations the influence of the head of the school is very big on shaping the school curricula, selecting staff and setting the outside image, probably because they are selected to stay rather a long time.

2.4.7 Need of communication.

Schools are not really communicating with one another over experiences about teaching or research, and very seldom does one school know what is going on in other schools.

2.4.8 Short academic year.

Considering that the more formal course lasts only three years, and that most of the students do not work on anything related to their studies during the long vacations, and that even some of the short vacations do not carry any educational responsibility, it seems that the academic year could be somewhat longer, as it is in some European and Latin American countries where there is usually only one short vacation and the working weeks during the year about 36. This is particularly true in some schools where terms are only 8 to

9 weeks long.

2.4.9 Research at schools.

After the Oxford Conference research has spread to most schools of architecture particularly into post graduate studies.

There is now a good concern about research, and most schools encourage staff members to do some, which produces a good level of research in a wide range of fields.

Results of this research and fields covered have been and still are widely discussed, as shall be seen in a separate chapter.

2.4.10 Regularity of studies.

Studies are carried out without any major disruption throughout the year, and dates are kept fairly tight, to what contributes in certain degrees the term system.

2.4.11 RIBA examinations.

RIBA's Board of Education has produced a leaflet 'The Examination in Architecture, Guidance Notes and Regulations' in which is set out the requirements for candidates to present examinations at the RIBA. This practice has become almost non-existent for British students, because most of the schools are 'recognised' which means that they set their own examinations.

The document established requirements and examinations on:

- design
- building techniques
- history and social sciences
- design technology
- planning and economic studies
- dissertation
- professional practice.

Not all schools seem to follow these requirements very thoroughly and some, apparently at least, don't cover all those requirements, and even so remain recognised schools as long as the visiting board finds the end product qualified enough.

2.4.12 Courses patterns

The common course pattern is 3-1-2-1, with few exceptions, being three years at school - one year out - two years at school - one year out.

Each academic year - session - has three terms, and this varies from 8 weeks - Cambridge - to 12 weeks - Leeds -. Most schools devote the second half of the third term to critics, preparation for examinations and examinations.

There are two short vacations, about four weeks, and a long vacation from 12 to 18 weeks. During the short vacations sometimes some work is done; during the long vacation students usually work out of the profession.

2.4.13 Teaching methods

Several different teaching methods are used at the schools creating a certain uniformity, the commonest are: lectures, seminars, exercises and block courses.

Teachers feel that some kind of preparation is needed for them as well as for students to use new and better teaching methods.

Teaching methods will be discussed in a separate chapter.

2.4.14 Students workload.

Fixed timetable is around ten hours a week - between 6 and 15 - not including studio work that is not formally scheduled,

students being free to work as they like. In some schools they may work at home, at the A.A. they have to, because there is no studio work space.

Block courses augment the total number of hours per session in 2 or 3 hours a week.

Studies are full time, but some students may be able to work per hours during the academic year.

2.4.15 Project Work.

Project work, or studio work, is considered the central core of architectural studies at all schools, although not considered as much of an artistic inspired type of work as it was before, but a scientific problem solving discipline.

There is a wide range of variation concerning the number of projects done per term or session, but generally speaking with the exception of the first year where more simple problems are studied, two projects per term, five per session is almost average on second and third year, while it is usual to find one project per session the average work for the fifth and sixth year. Students, consequently, do between 16 to 30 different works on project work, from 12 to 18 being architectural design.

Projects have different emphasis from one term or project to another, and specially from one school to another, the empyasis usually is on:

architectural design

building science

structures

interior design

environmental science

and some schools use the sketch, one or two days, on certain stages of design.

Projects have a good set of environmental requirements and most of them work under some kind of client constraint or consideration.

To make possible the development of several projects per session most briefs are given from first to third year, and done by students on fifth and sixth years.

All schools, although insisting on the role of the architect as designer, teach the student that project work is eminently a problem solving exercise, and very important because of that.

All schools studied have computers or terminals, that students learn how to use, and in some of them they are used on project work.

2.4.16 Social concern.

There is, in all schools, a clear understanding of the responsibility of schools of architecture in relation to the profession, and with society and the environmental conditions as will be seen in a separate chapter later on.

2.4.17 Design methods.

The great concern about design methods in schools of the late sixties has passed and although they are taught in some schools, but not used, nor in practices it seems, in spite of the fact that some follow as close as possible the RIBA's plan of work, that some consider too complex; this will also be discussed in a separate chapter.

2.4.18 Architectural history.

All schools studied have regular courses or lectures on architectural history with different approaches, but giving more importance to the last hundred or two hundred years on

Europe and very specially England.

Courses tend to be more and more interpretative, placing emphasis on technology, socio-economic factors, or environmental factors.

A separate chapter on architectural history may be found further on.

2.4.19 Population.

Student population has not increased very much during the period studied in the existing schools since 1958, and the new schools have maintained the figures similar to the old ones, most of them remaining small schools with small student groups per year - 30 to 40.

Staff population has grown by the necessary amount to keep the student/staff ratio good enough, as we have seen, in some schools the number of full time staff increasing against other types of commitment, but keeping a certain number of practitioners side by side with educationalists.

Small student groups mean not only advantages from the point of view of contact between student and staff and the possibility of individual tutorial, but positive economies as well, no need for new building facilities, less equipment that allows better and more sophisticated possibilities, more efficiency on administration and control, better assessment, richness of contacts staff-staff, although not always enough interactions if groups of staff are too small, that may be partially solved with a wide spectrum of professional involvement on the staff.

It is interesting to note, at this point, that there

seems to be a kind of tacit agreement between architectural educationalists about the size of a school of architecture, if we compare the size of American schools, where universities often have more than 40,000 students and some more than 100,000. The following figures are taken from an American document showing 1971-72 figures (2):

		ratio stud./staff
less than 100 students	7 schools	1:5 to 1:10.7
100 to 400 students	51 schools	1:7.5 1:20.5
400 to 600 students	12 schools	1:10 1:16
600 to 1000 students	4 schools	1:12 1:16
more than 1000 students	1 school	1:20.2

Out of 78 schools more than 50 are between 100 to 400 students, within which range all British schools except one are placed.

The Venezuelan experience has shown that after reaching 500 to 600 students schools reach a crisis as happened at Caracas, where different units of about 400 to 500 students were organised so as to be able to function conveniently. (3)

4.2.20 Teachers Education.

Teachers in schools of architecture are mainly qualified architects or other professionals closely related architecture who become educationalists slowly through empirism.

Excepting the short courses of the I.A.A.S. (*) at the University of York, some continuing education courses, and a new two year course for 'design and planning education' at University College London, Development Planning Unit, there are no formal courses for teachers on architectural education nor a progressive way for students to become gradually involved in teaching, with

(*) Institute of Advanced Architectural Studies

some exceptions on postgraduate level.

Some educationalist architects resent it when a practitioner is appointed as head of a school or as a professor, because they say he has no educational experience. Practitioners believe that some educationalist architects become too theoretical. In many cases both are right because teaching experience, without special preparation, takes a long time to develop; and an architect out of practice for years loses contact and finally underrates day to day problems.

2.4.21 Educational philosophies.

Different educational philosophies may be found, clearly declared or implicit, on the way schools are run and subjects taught and project work done; at least four are detectable in the seven schools studied, as we shall see in Chapter 10.

There is a generally declared aim to make education as free as possible, that then is followed by a fixed timetable, given briefs for staff defined projects, and a carefully stated set of requirements, that makes the declaration sound more like an intellectual position than a real tangible aim.

2.5 SUMMARY

The third chapter is a big effort to concentrate most of the more general information and conclusions obtained, on large amounts, of the schools studied.

Due to its volume all the study done school by school is relegated to an appendix (Appendix 2) and only the comparative study is presented and explained following the graphics developed trying to condense the information, using for the purpose some specially developed forms, described in chapter 2.

General conclusions are presented following the same order of the analysis done leaving detailed considerations and references found about them for special subjects to be treated in the next chapters, such as:

Objectives

Social concern

Teaching methods

Design methods

Architectural history

Research

Educational philosophies

2.6 CONCLUSION

There is a big freedom in architectural education that is clearly reflected in differences from one school to another, more than in the kind of freedom students have within one school, with the probable exception of the A.A.

This freedom is healthy because it provides for several possibilities of how to form architects to be explored, even to form a professional - environmentalists for example - that may be a different kind of architect, or whatever is called, to be formed. Unfortunately this wide range of possibilities is well known only to the RIBA's Board of Education members, and some heads of schools are very keen to trace what is going on in architectural education; a tiring task because there does not seem to be a center or a system to collect and communicate information from all schools. In fact, communications between schools depends more on individuals, and some special projects linking two of them or only one course of two of them, than of any school interest.

I have had an opportunity to listen, on several occasions at the IAAS short courses at York, that teachers of the same discipline meet only exceptionally and only on that kind of course, some of them complain that even within the same school it is difficult to discuss architectural education as a whole with other staff members, and as far as I know there is no organised meetings for all people working on one subject throughout the country.

There is a general pattern on courses that is followed by most schools, and organised around the need to satisfy the RIBA three part examination requirements for professional qualifications, better explained by Macleod saying...

"...Historically, education followed examination, which may be at the root of some of the problems that have dogged us ever since"...(3)

The professional-education relation is clearly established through four different channels, the official being the RIBA's Board of Education. It is criticised both by being too loose and also for being too tight as a link. The positive factors are: that the links exist and that they are discussed.

Another very positive and healthy situation is that many searches and discussions are going on within and around architectural education, that has been continually changing during the last years, and presumably will continue to do so.

2.7 References

CHAPTER 2

- 1) The week. The Architect's Journal. A.A.'s educational policy. Vol. 158 No. 46. 14 Nov., 1973 p.1152.
- 2) 1971/72 Enrolment and Statistics. Member Schools. Association of Collegiate Schools of Architecture. USA.

- 3) The Faculty of Architecture and Planning, Central University of Venezuela, Caracas, has more than 2,000 full time students.
- 4) Macleod, Robert. The life and death of the profession. RIBAJ April 71. p.151-153.

chapter 3

**OBJECTIVES ON
ARCHITECTURAL EDUCATION**

3. OBJECTIVES ON ARCHITECTURAL EDUCATION

Objectives

3.1 Introduction

3.2 Importance of objectives

3.3 Schools declared objectives

3.3.1 Architectural Association, School of Architecture

3.3.2 University College London, School of Environmental Studies

3.3.3 University of Cambridge, School of Architecture

3.3.4 University of Bristol, Department of Architecture

3.3.5 University of Newcastle, School of Architecture

3.3.6 Leeds Polytechnic, Department of Architectural Studies

3.3.7 Portsmouth Polytechnic, School of Architecture

3.3.8 Comparison

3.4 SUMMARY

3.5 CONCLUSION

3.6 References

3. OBJECTIVES ON ARCHITECTURAL EDUCATION

Objectives: Study the objectives stated by the schools for their courses on architectural education.

3.1 Introduction.

This chapter does not pretend to be an exhaustive analysis about objectives on architectural education but merely to consider - very briefly - the importance they have, and present the actual stated objectives of the schools of architecture studied.

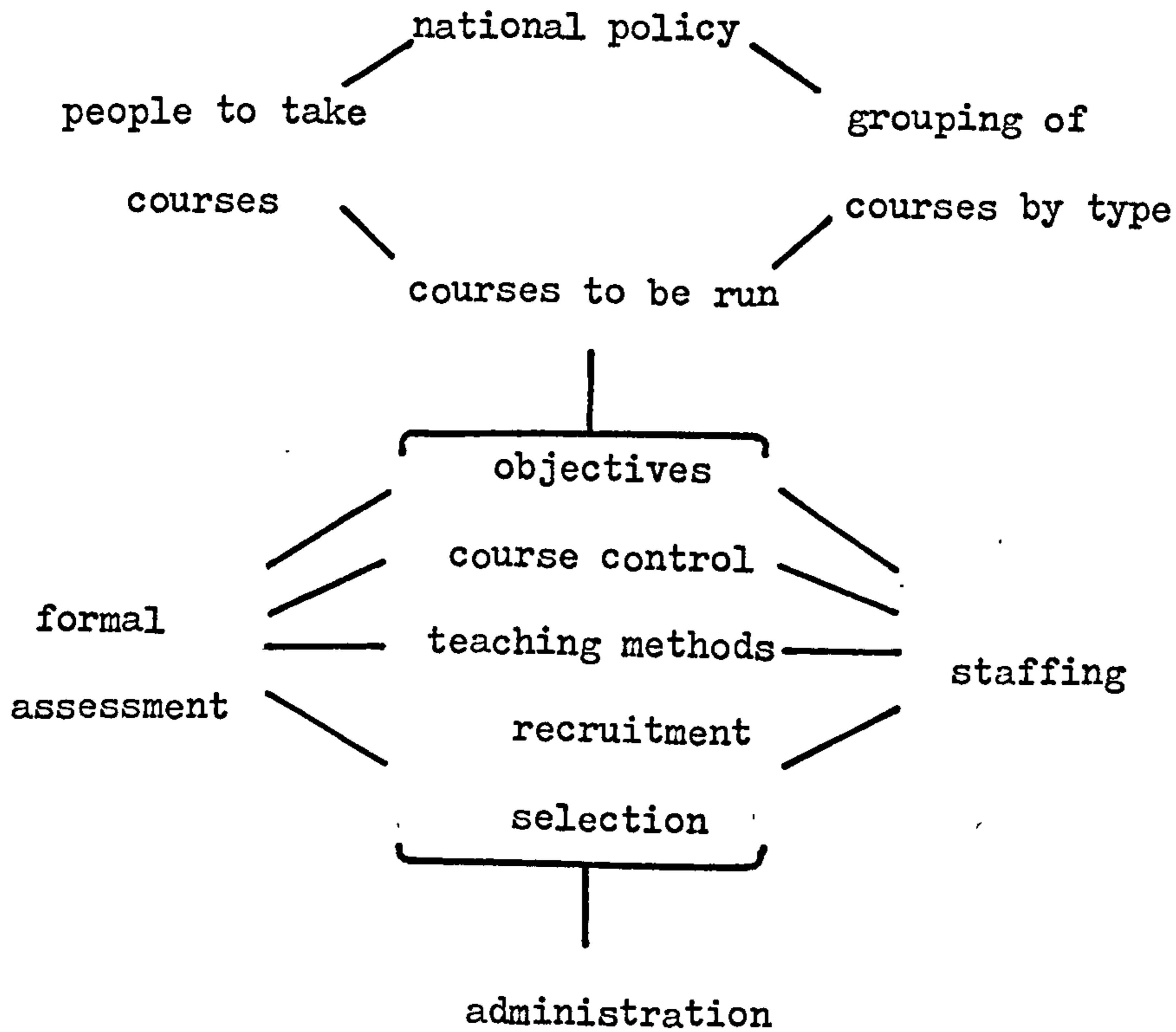
During the course of my work I have found that this is a subject wide open for research, and that there are many factors influencing them that should be studied as well as the relations between them, with architecture and the cultural environment as a whole.

3.2 Importance of objectives.

Education, being as it is a means for the furtherance of human beings to define its objective, becomes of paramount importance to any kind of education, although it is useful to remember, at the same time, that objectives are not the only factor influencing education. Education of any kind at any level receives influences of all sorts, from the environment and the society where it happens, producing through the process by students, teachers and applied results, its own influences on the society and its environment, and even to the inter-relations between them, and even with education and its actors themselves. Meaning by actors: teachers, students

educational systems and objectives as well.

According to David Warren Piper (1) the overall factors influencing education and its objectives are:



This diagram places objectives depending on the one hand on several factors such as a national policy, that does not always exist as a clearly stated one, the people to take the courses, and the courses to be run. Then the objectives are directly influenced conditioning the achievements by: course control, a very difficult thing to achieve when staff is concerned on higher education, teaching methods, recruitment and selection, all this depending on formal assessment and staffing. On the other extreme the importance of administration as a contributing factor and not a limiting one.

The same author explains the sources from where objectives arise on education as being:

students

subject taught

society

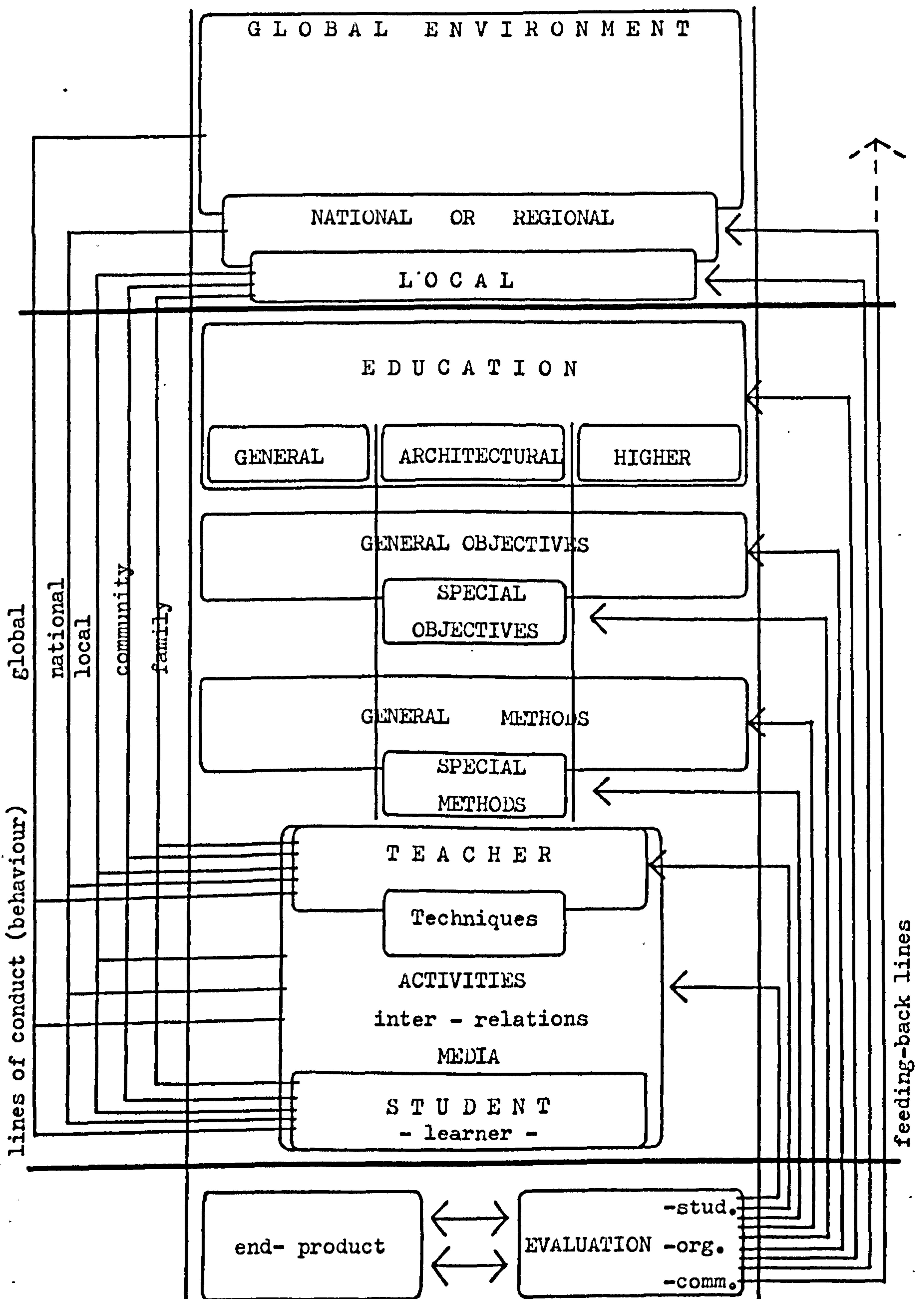
and placing one of each on a triangle's vertices develop the idea that objectives may be placed closer to one or other of these vertices, as showing the importance of inter-relations between these sources.

On the next page there is a diagram showing the adaptation of a model presented by the author of this work to an international research party, going on in South America to try to find a model, for a particular sector of education, starting from education in general (2).

In that diagram we observe that special and general objectives are dependant on the environment which is considered on three basic levels: local, meaning city or micro-region; regional or national, depending on which of those conditions is more an entity; and global, meaning the world as a whole, because even in the case of Australia or other similar or more isolated island, with very particular physical environment, it is difficult to imagine any kind of education in which any of the cultural aspects of the environment are really isolated and unique as not to have some kind of influence.

Objectives are conditioning methods and methods are influencing the teaching-learning processes in which teacher, students and techniques are contained receiving, besides the direct influence mentioned, other influences recognised as 'conducts' produced by the different environments from global to familiar, some of them touching the processes itself, and some others teachers and students with varying intensities. And on the other side the influences coming

Figure 30



adapted diagram of proposed model for systematisation of education research group on several latin american countries

back from an evaluation process are considered an important part of every educational model and continuously affecting all levels, especially objectives.

The educational model shown in Figure 30 should produce some results that should be evaluated through results on the students, on the education itself, and on the community - as scale of environment- before deciding what kind of feed back is convenient or necessary.

Again, this graphic suggests that there is influence, received and given, by objectives on education, and that the inter-relation resulting is important.

Many other reasons and opinions concur to prove the importance of clearly defined objectives on education...

"... a theory needs to be developed that will assist in the clarification of our aims in the selection of areas of study and levels of learning"....(3)

"During the past 15 years there has been an increasing realisation of the pressing need to attempt to define objectives in education in such a way as to clarify thinking, ease communication, facilitate change and make the educational experience as humane and efficient as possible. One system of objectives which classified goals on a logical-psychological-educational basis is Bloom's Taxonomy of educational objectives. The paradigm proposed has been widely discussed, even if its operational implications are not altogether clear. It has recently been applied to architectural education" (4)

Both quotations insist on the need for clarification, and the latter goes on asking for ease of communication, change and humanisation of the educational experience that necessarily means interrelations

between objectives, education and society or environment, coming back to our two first examples.

3.3 Schools declared objectives.

All schools studied have, one way or another, some stated objectives although it is somewhat worrying that they are not clearly shown as such, and in some cases difficult to find looking through several documents.

3.3.1 The A.A. School of Architecture.

"...the role of the Lower School will be that of providing the possibility for acquiring skills, information, insight and ideas leading for some towards Intermediate Part 1 professional examinations." (5)

"... and will encourage them over a period of two years to develop their own interests, research activities and approaches to the problems of the environment". (6)

"The concept of self-determination and the notion of constant re-appraisal of aims and curricula have gained for it a reputation as a unique educational instrument..."(7)

" In the AA this means choice by the individual student, rather than choice by the school in the form of a unified curriculum. Each individual has different reactions to his education, and if the greatest potential is to be realised in each, then it is essential to be able to respond in a flexible manner. In terms of curricula, this will mean varying degrees of guidance, speed and subject matter. In sum, this leads to a school biased towards freedom, individualisation and diversification." (8)

"... The school aims in its educational policy to produce generalists in this ability applied to the physical environment, and believes that this is a firmer base than directing its students to a particular role." (9)

" As has been stated, the AA has traditionally been concerned with design;..."(10)

"... The School, whilst urging each student to make use of the freedom it offers, should be able to respond to each individual's needs with a correct balance between freedom and guidance...."(11)

"... School-directed to student-motivated, but draws its satisfaction from the shift in emphasis from the teaching of a curriculum towards the education of the individual."(12)

" That the educational objectives of the AA be confirmed as meaning the promotion and furtherance of architecture, through the conduct and agency of a fully cohesive educational centre providing courses for those at all levels and age groups; a centre in which the AA's belief in education as a multi-disciplinary and co-operative activity involving staff and students may be developed, along with the fruitful connections with the membership; and in which the essentially flexible framework will be permissive of experimenting in educational processes, taking into account the continuing advances in technology, and in order to best serve the changing needs of society." (13)

" The A.A. philosophy is one of selection by choice. We do not try to fit the school to the needs of those who come...." (14)

" One of the directions we are pursuing is the concept of two-way education with a community where we put research, physical and mental work, workshops, lectures, etc. into a community, live and work there, and in return get practical and actual experience and feedback, local knowledge, increased two-way understanding and a more vibrant society...."(15)

So, apparently, the objectives of the school range from the development of the individual - choice, self-determination, freedom, individualisation, diversification - be this student or staff - two-way education, balance between guidance and freedom - a general furtherance of architecture and education with consideration for the environment of the practical skills, learning of information and search of ideas, considering architecture as a multidisciplinary subject.

Very wide objectives, ambitious and varied probably because they belong to different persons or groups at different times, the first three quoted probably being the most official, coming from the A.A. Educational Policy of 1972.

3.3.2 University College London, School of Environmental Studies.

"The B.Sc. Degree Course in Architecture, Planning, Building and Environmental Studies is intended to offer a general education in the sciences and humanities of the environment with the aim of laying the foundations for a professional or academic career in any aspect of the man made and natural environments. The course is

recognised as providing the first necessary steps in the training of architects, builders, planners, landscape architects and environmental designers, and carries certain exemptions from professional examinations." (16)

"... to study in depth a group of subjects related to some aspects of the built environment." (17)

In this case the objectives are very briefly exposed, and presented as such so as not to make necessary any kind of interpretation or summary. They are clear and well stated, the only doubt about them being in the tremendous width of concepts such as 'general education' and 'sciences and humanities of the environment' which is in any case very well supported by the great variety of courses offered as may be seen in Appendix 2.

3.3.3 University of Cambridge, School of Architecture.

"This course is intended to provide a basic grounding in the subject of architecture. It concentrates on the study of known problems of building and of the built environment. The intention is to discover how the related parts and technical requirements of a building can be translated into firm proposals; to show how theoretical knowledge and system can help; and to develop a sense of commitment...."(18)

" The course is intended to do two things; to develop the skills necessary for a man to act as an architect, and to develop his awareness of and commitment to the issues, social, cultural and technical, with which an architect must be concerned." (19)

" Generally it is the policy of the School to provide a firm framework to which the student may refer but also to encourage him to depart from that framework where he has strong and convincing reasons to do so." (20)

Again, objectives are defined with precision and in this case aimed at architecture as being responsible for the built environment, and considering its relation with other issues concerning the architect, expressing the purpose of 'firm framework' without closing the door to the possibility of big freedom when enough reasoning and motivation exists.

3.3.4 University of Bristol, Department of Architecture.

"The role of the architect is concerned with creating the appropriate built environment for human activity, in good time and at the right cost. The built environment provides the basis for most human activities and the architect is as much responsible for it as any man.

He is directly concerned with the quality of human life. To fulfill this role the architect must have, or acquire during his education, a capacity for logical analysis, management and the discipline it imposes, a scientific attitude and an interest in building construction, a capacity for detail, and the ability to collaborate with other people. But as well as this, he must be visually creative with a feeling for colour, light and form so that his buildings will enrich the environment." (21)

"... A graduate of architecture should be a well rounded person, well read, articulate and numerate. He should also be aware of cultural, sociological and economic

circumstances, and he should have respect for scholarship and for disciplined thinking. It goes without saying that technical and technological competence are also essential to him."(22)

"The course for the Degree of Bachelor of Arts in Architecture has an educational rather than a professional bias..."(23)

" As a second degree the B.Arch., is viewed as having professional application reinforced with the choice of special studies...."(24)

" The B.Sc. in Architecture is intended to offer graduates the opportunity to combine architectural design studies with work in the scientific aspects of design and construction."(25)

Objectives are very clear, and defined in relation to a specified type of architect concerned with building construction and its relation to the environment. In the case of this school the different degrees are considered as beginning with educational emphasis, and ending with professional emphasis.

3.3.5 University of Newcastle, School of Architecture.

"Architecture can be called the art of designing buildings and the profession of supervising their erection, hence the title of this booklet. In so far as it is a profession, architecture calls for integrity, common sense and administrative ability...."(26)

"... The architect has to make decisions wisely and with a balanced sense of responsibility to his client, to the public and to the people who are involved in the actual building."(27)

"... The job of an architect, as an artist, is to understand all the problems which impinge upon a building project, evaluate them and transmute them into what we call, in architecture, a solution.

As an artist, an architect makes things which did not previously exist, but his role as an artist is circumscribed by the needs of the people for whom he works...."(28)

"... it requires of the artist that he should give himself to the satisfaction of other people's needs, moods and aspirations rather than his own."(29)

"Architecture calls for intelligence and practical ability. It involves a great deal of decision making and a willingness to take responsibility. An architect has to design things which will be made by other people. He has to think in terms of how things will be made. He also has to originate."(30)

There is not a definition of objectives to be found in this case, but the way in which an architect's role and architecture are defined is intended to state the objectives of the school. These objectives are defined in the function of the architect as artist as well as professional, whose responsibility is the built environment, and their users in a comprehensive way.

3.3.6 Leeds Polytechnic, Department of Architectural Studies.

"An architect is professionally concerned primarily with the design and construction of artefacts, a building or groups of buildings. His interests may extend towards specialisation in architectural science, interior design, urban design or town planning, landscape architecture,

architectural history and many other research or practice situations. His education provides the vehicle for an individual to progress in a variety of ways, and the project based courses appropriate to architects present a unique opportunity for personal development of both intellect and imagination relating to three dimensional problem solving."(31)

"The courses aim to lay the educational foundations for future professionals of sound intellectual and creative quality and to develop personal faculties of perception and enquiry together with a rational and imaginative flexibility of mind applicable to problem solving within a responsible design philosophy. Underlying these aims is the intention to furnish students with the understanding of the forces and processes which determine our environment and the knowledge and skills appropriate to professional competence." (32)

Objectives are defined in relation to a certain concept of the role of an architect, and very wide in intentions ranging from the development of the individual through architecture as education, to the more pragmatic needs of a professional, asking at the same time for 'rational and imaginative flexibility' and the 'understanding of the forces and processes which determine our environment'. Knowledge and skills for professional competence are included.

3.3.7 Portsmouth Polytechnic, School of Architecture.

"Most students come into architecture with a strong desire to serve humanity in a positive and practical way. One of the best ways of doing this is by improving

the quality of the environment. The course in architecture helps them develop effective tools for this job." (33)

"Design is the central discipline in the education of the architect; and it is appropriate to study it in its immediate relationship to architecture, in its overall context and its particular relationship with technology." (34)

"The course is intended for students who will later pursue academic or professional careers in architecture or other kinds of environmental design." (35)

"... It is centred on a theoretical study of design which, with the analytical, creative and evaluative techniques which are essential to it, is seen as a thorough and valuable discipline in its own right...."(36)

The objectives are to prepare an architect who is a good designer concerned with the environment with 'analytical, creative and evaluative techniques' required, but leaving the door open to 'architecture or other kinds of environmental design'. Design is clearly emphasised.

3.3.8 Comparison

All the objectives presented by the schools have some points in common, the differences being more in the emphasis or importance attached to those points than in the statements themselves, and especially in the actual way in which courses are run, considering subjects, content and also project work.

Concern for the environment, not only as built environment, but in a much wider context, is shown in the schools' objectives, including the influence of factors such as social, economic and

other aspects of life and its inter-relations.

Two of the schools seem to place a big importance on the development of the individual himself - AA and Leeds - and two others attach importance to the course as education - U.C.L. - general education; and Bristol -. Four schools explicitly declare the courses being intended to form professional architects - Cambridge, Bristol, Newcastle and Leeds - of which the last three base their definitions on the roles and responsibilities of the architect.

Four of the schools consider the building in its construction and environmental qualities, and its relations with the environment as one of the main tasks of the architect, and the one for which the student must be prepared - Cambridge, Bristol, Newcastle and Leeds - this could perhaps be applied to Portsmouth but it is not expressed clearly in the objectives stated.

All the objectives show awareness of architectural responsibility to social implications of the profession, but mainly through the environment, and not to socio-economic problems.

Skills are mentioned by two schools, skills for professional competence - AA and Leeds, although apparently all four schools tending to provide professional competence, undoubtedly are concerned about these skills.

Portsmouth states clearly the importance of evaluative techniques in designing, and the AA refer to the kind of education it provides as enhancing the virtues of continual reappraisal of the school.

Some of the objectives try to state what an architect is, his roles and responsibilities, and what architecture is, important concepts about which there does not seem to be a general agreement at the schools of architecture.

Difficult to summarise as they are, we can say that the objectives range from the development of the individual within a completely free scheme of choice to a more firm framework, with a common interest for the environment especially the built environment and its relation with society, considering the building itself - constructively and environmentally well conceived - as a primary responsibility and basic task for design being a central discipline for architecture, as one of the professions involved in shaping the very wide container of human activities.

3.4 SUMMARY

The definition of objectives is important and must consider the influence of all factors affecting life in a community and the resulting inter-relations with architectural education.

A review of the objectives stated in schools' documents shows that sometimes they are not clear enough nor are they easy to find.

Some schools give concepts of what architecture and architects are and then do not go beyond that point to define precisely the objectives.

The main objectives seem to be: development of the human being concern for the environment, a general broad education with a sound scientific basis, so as to prepare future architects for changes in the profession. Very little concern is shown about skills.

3.5 CONCLUSION

It is important to define objectives on architectural education, and this must be done considering all aspects of life and not only what architecture currently is.

Objectives should be defined more clearly than they are now, and this need for definition must not be considered as a limiting factor, but as a framework to judge the results achieved by the schools.

There seems to be difficulties in defining objectives because the profession itself is facing problems of redefinition that affect architectural education.

The schools are free to set objectives for their courses, and they are using this freedom.

3.6 References

CHAPTER 3

- 1) Warren Piper, David. Educational Objectives. Paper for Teaching Methods Course. IAAS York. 1972.
- 2) Vera Guardia Carlos. November 1973. (adapted from a proposed model for the systematisation of physical education in Latin-American countries, a research project in development since 1972).
- 3) Sutcliffe, Stuart. Towards an architect. (unpublished study).
- 4) Stringer, Peter. The role of spatial ability in a first year architecture course. Architectural Research and Teaching, vol. 2 No. 1 Nov. 71 p.23-33.

Peter Stringer is referring to the experiences and research on objectives of:

- Beard R.M. and others. Objectives on higher education. Society for research into higher education. London 1968.

- Bloom, Benjamin and others. Ed. A Taxonomy of educational objectives. 1964.
- Stringer, Peter. Architecture as education. RIBA Journal. vol. 77, 1970. p.19-22
- 5) The Architectural Association. Educational Policy. 1972 p.13
- 6) *ibid.* p.1.2
- 7) *ibid.* p.2.1
- 8) Lloyd, John. Educating for choice and change. Aerna, The Architectural Association Journal. June-July 1968. p.2
- 9) *ibid.* p.2
- 10) *ibid.* p.2
- 11) *ibid.* p.3
- 12) *ibid.* p.6
- 13) From the A.A. Independence Working Party Report. Nov. 1970. The .A.A. Now.
- 14) Architectural Association, School of Architecture. Booklet 6 Sept., 1972. p.2
- 15) *ibid.* p.2
- 16) University College London, School of Environmental Studies. Information for applicants. B.Sc. Degree in Architecture, Planning, Building and Environmental Studies. June 1972 p.1
- 17) University College London, School of Environmental Studies. Information for applicants M.A./M.Sc. in Architecture. Field Experience Year. Diploma in Architecture. June 1972 p.1
- 18) University of Cambridge. Handbook of the School of Architecture. 1972. p.1
- 19) University of Cambridge. Schools of Architecture. Information for the RIBA Visiting Board. Visit on 29 and 30 April 1971. p.1
- 20) *ibid.* p.3

- 21) Department of Architecture Bristol (booklet) p.4
- 22) *ibid.* p.6
- 23) *ibid.* p.10
- 24) *ibid.* p.10
- 25) *ibid.* p.12
- 26) School of Architecture, University of Newcastle upon Tyne.
The Art and the Profession of Architecture. p.3
- 27) *ibid.* p.3
- 28) *ibid.* p.4
- 29) *ibid.* p.4
- 30) *ibid.* p.6
- 31) Leeds Polytechnic, Department of Architectural Studies. Courses
in Architecture and in Landscape Architecture. p.2
- 32) *ibid.* p.3
- 33) Architecture at Portsmouth Polytechnic. (a folder) p.2
- 34) *ibid.* p.2
- 35) *ibid.* p.2
- 36) Portsmouth Polytechnic, School of Architecture. Undergraduate
Handbook, Notes for guidance. 1972/73 p.3

chapter 4

**SOCIAL CONCERN IN
ARCHITECTURAL EDUCATION**

4. SOCIAL CONCERN IN ARCHITECTURAL EDUCATION

4.1 Introduction

4.2 Precedents

4.2.1 Before 1750

4.2.2 From 1750 to 1950

4.2.3 From 1900 to 1958

4.3 From 1958 to 1972

4.3.1 Oxford Conference

4.3.2 BASA Conferences

4.3.3 Schools of Architecture

4.3.3.1 A.A.

4.3.3.2 U.C.L.

4.3.3.3 Cambridge

4.3.3.4 Bristol

4.3.3.5 Newcastle

4.3.3.6 Leeds

4.3.3.7 Portsmouth

4.4 Current opinions

4.5 SUMMARY

4.6 CONCLUSION

4.7 References

4. SOCIAL CONCERN IN ARCHITECTURAL EDUCATION

Objectives: Study the social concern in architectural education, and its relation with the profession.

4.1 Introduction.

As we have seen in chapter 3, the architectural profession has become more and more involved in sociological issues that have influenced architectural education, during the last years, in varying degrees from one school to another.

Although most architects and schools of architecture recognise the social responsibilities of the profession, not all of them agree with the participation of sociologists or social science studies when planning or teaching architecture, because it seems to be that participation is not always useful, probably because as a sociologist puts it ...

" If we are honest we have to admit that the first century of social science has left us somewhere short of history....

Let us first reflect the doubt that today surrounds the paradigm of exactness, whatever the field of knowledge. This ideal of exactness is characteristic of the nineteenth century; in recent decades natural scientists have themselves been adjusting the meaning that they attach to exactness, but there is a real danger that social scientists may continue to strain so busily after an obsolete ideal that they neglect the more pertinent aspects of their task

So far, the development of the social sciences has been imperfectly balanced, in that social theory has been more

carefully conceived than methods of empirical testing.

The result of this, as Comte proclaimed, is that the theory has constantly outstripped the known facts and has acquired a metaphysical flavour..." (1)

The lack of exactness and the difficulties of using voluminous surveys that more often reflect opinions about past experiences than real sociological needs of the present are the main causes of distrust.

But, on the other hand, the responsibility of the architect to society is unquestionable.

"What it is very clear to me is the profundity of the influence, ceaselessly and remorselessly exercised on every single one of us, for twenty four hours every day of our lives, by the results of your space-enclosing activities."(2)

This chapter will try to follow this social concern of architecture, following briefly the development of the profession and education, as we did in the introduction, appendix 1. And then to examine the developments since 1958 to 1972.

4.2 Precedents.

As precedents we consider, in this case, some facts that happened at the beginning of this century starting with a first period prior to 1750.

4.2.1 Before 1750.

"Although the scientific discoveries of the sixteenth and seventeenth centuries are usually cited as heralding the age of enlightenment, it was not until the industrial revolution that the new modes of thought had much effect on the living conditions of the populace....

Prior to the Reformation, the professional occupations were concerned with the relationship between men and God; those that grew up before the industrial revolution with that between men and men; and those that came after with that between men and machines..."(3)

So, the industrial revolution seems to have been a turning point establishing 'new modes of thought' that should have 'effect on the living conditions of the populace'.

That date, according to Collins, has special significance because it corresponds to the beginning of a historic period.

"In the preceding pages, an attempt has been made to trace the history of architect's and critic ideas about architecture from the 1750's to the 1950's; dates which may appear just a little too neat, but which really do correspond to the beginning and end of an historic period. The reasons for the beginning in the middle of the eighteenth century have been amply discussed and, it is hoped, justified. The decision to end in the middle of the twentieth century is perhaps less conclusive, but it seems fair to insist that it is just as sound. It was only the decade following the Second World War that the architectural ideas of men described by Nikolas Pevsner as 'The pioneers of the modern movement' were established...from this time onwards, architecture was to have about it all features of stability and orthodoxy we associate with Classicism... a universal architecture of sorts does exist, whereas for the previous two centuries it did not. 1750 to 1950 may thus be considered a

formative period, to which the period after 1950 is a natural but quite distinct sequel, and it is not for the historian to pry too closely into its nature until he has some idea how it will develop and how long it will last." (4)

4.2.2 From 1750 to 1950.

Some time was to pass after 1750 before the first awareness of architecture as a social service appeared ...

"... For example, the Abbe Laugier in his 'essai sur l'architecture' of 1753 proposed a rationalistic approach to building design, based on his entirely hypothetical conception of the 'rustic hut' of primitive man". (5)

Later on, Macleod, in his book gives us the first indications of this social awareness...

"... The view of architecture in relation to society is undoubtedly Puginian; the emphasis on the workman is from Ruskin, but the adoption of the style remains an expediency." (6)

then he relates this fact with professionalism...

" Implicit in the concept of professionalism was the idea of public service. The objective was to create a class of men who could be depended upon to provide goods and services to the community of a guaranteed standard, free from the adulterating influence of price competition, and incorporating those standards of safety, quality, and durability which the public required but could not, of itself, ensure. The need for such a class of men was made acute during the first half of the nineteenth century by the growth of the

'market'economy, the disappearance of traditional patronage, and the emergence of the 'general contractor' in place of the master craftsman..."(7)

This idea of 'public service' following the concept of Pugin that 'the artistic merit of the artifacts of society was dependent on the spiritual, moral, and temporal well-being of that society' (8) is not new (it has been around for more than a century) but certainly has changed considerably.

This social responsibility of architecture could not avoid some early relations with politics...

"... the developer, Jonathan T. Carr (1845 - 1915).

A brother of J W Comyn Carr, the art critic, and himself an active political Radical, he appears to have both specific social and artistic intentions for the suburb: " I said I wanted plans of houses that a gentleman would be glad to live in, which would be as perfect architecturally as the most splendid house, but the extreme cost..." (9)

Morris and Webb, fathers of the Arts and Crafts movement, deeply involved in socialist ideas were concerned with 'aspirations of the people' in art...

" I do not believe in the possibility of keeping art vigorously alive by the action, however energetic, of a few groups of specially gifted men and their small circle of admirers amidst a general public incapable of understanding and enjoying their work. I hold firmly to the opinion that all worthy schools of art must be in the future, as they have been in the past, the outcome of the aspirations of the people towards the beauty and

true pleasure of life."(10)

This concern about 'aspirations of the people' did not become a main or general concern in architecture if we judge by Macleod's next quotation about Lethaby's work:

"... He began to search for an ideological base which would remove architecture once and for all from the arena of Style and Fashion. An immediate conclusion was that, whatever else was lacking, building science could "inform the forms" of modern architecture" (11)

4.2.3 From 1900 to 1958.

Later on, in the twentieth century, the architect was considered only an instrument, when architectural programmes with some kind of social content were tackled...

"... he wrote, "the architect is servant of a programme which does not emanate from him; for it is the legislature, preceded by the moralist, who says what a prison must be". Thus Guadet did not regard the architect as a social reformer, but only as an instrument of social reform." (12)

Modern architecture was certainly to change all this, on one hand, during some years at least, no style was accepted and the architects would act as social reformers of some kind, although not always successfully.

"... when every workman's dwelling designed by Le Corbusier was like an artist's studio. It may be doubted to what extent architects are justified in initiating changes in ways of living in domestic architecture; to what extent that is to say they are entitled to force people to adopt new social habits independently of the recommendation of social workers

and scientifically conducted sociological research..."(13)

Sir Leslie Martin speaking about 'the early years of the thirties' in Britain gives us a good description of the feelings of architects, at least British architects, during those years.

" There was the notion that architecture can and should serve society more effectively: indeed there was at times the utopian view that, through architecture itself, society can be improved or changed. Somewhere, too, there was the implicit belief that the depth of architecture can be extended and developed by knowledge and by research: though it was not very clear what could really mean. There was also the idea that new knowledge and technology would change the architectural form. And above all, there was the suggestion that nothing stands still: each new problem would require reassessment as new knowledge was developed." (14)

New knowledge, technology, and social sciences emerge as important factors of modern architecture during the thirties, that now with forty years perspective seems it had a somewhat 'utopian view' that architecture could change society.

Social sense and concern are very often awakened and stressed by catastrophe, natural or artificial, and the war, at a moment when architects were concerned with their role in society, must have been influential.

" Apart from the whole post-war context of optimism and the students' determination that architecture should be an instrument of social as well as physical reconstruction, there was the pervasive influence of

Le Corbusier. His wartime reflections and researches on urbanism (as summarised in the fourth volume of the Oeuvre Complete) had recently been published and were themselves on a scale and of an optimism calculated to fire the enthusiasm of that generation of architects." (15)

This mention of the students 'determination that architecture should be an instrument of social as well as physical reconstruction' refers to a project done in 1952 at the AA School of Architecture, making clear that for that time this social concern, in a rather gigantic way of solving every problem, was reaching or had reached the schools.

The fact seems to be that after the war, because of it or not, there was a standstill in architectural developments in the country, a new kind of position towards life and towards society grew and the last twenty years, as Collins pointed out, differ from what was happening until 1945.

"Within recent years, the attitude towards such situations has completely changed. Original programmatic research, particularly when it can lead to social or organisational improvements, is now considered in academic circles to be an architect's primary duty, and the clients are regarded as ignorant, inarticulate, insensitive laymen who, through force of habit and conservatism of temperament, neither know what they want nor are able to express those needs even if they are farsighted enough to perceive them dimly." (16)

"... "Modern society", asserted the Professor of Architecture of London University recently" is too complex for the architect to have an automatic understanding

of what is wanted in a building; the client does not know this either, although he sometimes thinks he does... The client's brief is nearly always wrong, and a bad brief inevitably results in disastrous architecture" (17)

These two quotations define, very well, two problems: one, the client does not know what he needs, and it is not considered by the architect; two, the architect does not know what the client really needs. If to this fact we add the observation of John Madge, taken at the beginning of this chapter, about the theoreticism of social sciences and its lack of exactness, we have a clear picture of how difficult and important it is to consider the social implications of architecture.

4.3 From 1958 to 1972.

4.3.1 Oxford Conference.

Almost immediately after the Oxford Conference, B.A.S.A.(*), held some important conferences about architectural education with good participation of students and lecturers that produced some declarations and conclusions about the role of the architect in society that I want to quote now, before we examine what is happening in the schools today, ten years later.

4.3.2 BASA Conferences

"... To BASA members it is fundamental that there must be a connection between the banality and general insensibility of contemporary architecture to social and environmental responsibilities of the one hand, and on the other the superficiality that exists in the Schools."(18)

(*). B.A.S.A. British Architectural Students Association

The critic is directed to both architecture as a profession and the schools, calling for more social and environmental responsibilities, this last theme continues to be factual nowadays.

" The trainee architect must not in the future be shut away in the cloistered world of his own School of architecture, but must be constantly brought into contact with students, teachers and working or professional men in allied callings, and thereby be made aware of their problems, attitudes and means of expression." (19)

Again, the school is blamed as being separated from the world ...

" Architectural education should stimulate the student to evolve a philosophy related to the human problems of a society in continual evolution, and to realise this philosophy in the techniques of his time. This is the only basis upon which he can design with conviction and integrity." (20)

Architectural education should provide a way to understand society, 'in continual evolution', and stimulate the students 'to evolve a philosophy' as a basis to design. A very wide proposition indeed.

Let us listen to a sociologist, at the same conference, about architecture and social functions...

" In some circumstances architecture may still have a purely private function, but in general the social function must become the principle motivating force in architecture. The most important circumstances making

this has been its change from Private to Public clients, resulting in a different relationship between the architect and his clients. Because of this change it is now particularly important to distinguish between his client's wants and needs, also between long-term needs and their competing alternatives." (21)

There is a need for understanding the real 'wants and needs' of clients, the same problem pointed out earlier by Collins, and as Kenneth Campbell said during the conference (BASA, 1961) it is important..."understand the dangerous and imperfect nature of the society around them in order to avoid illusion and cynicism" among the students and professionals (22)

One of the ways suggested in the same conference by Ruth Glass was:

"... Subject which will help them to do so should be included in the curriculum - social and economic history, contemporary social structure, methods of social research..."(23)

"... The social sciences have to learn a good deal about architecture before they can be useful in this field. Also architects must learn something about the social science before they can learn what questions to ask..." (24)

New subjects and a mutual understanding between architects and sociologists, seems sound enough as a proposal to overcome the difficulties mentioned.

"... teach architecture within a social and economic framework... aesthetic would be appreciated in this context...(25)

" The architect's care in designing a building as regards lighting, warmth climate and other environmental characteristics is a measure of his awareness of a building as something for people rather than a monument to his own personality." (26)

Environmental sciences, social and economic framework are seen in these two quotations as means of achieving architecture with due concern for social problems based on a clear understanding and not in 'utopian' positions.

The critic contained in the last remark about architects doing monuments 'to his own personality' is and probably will continue to be valid, because it is not inherent to an architectural condition only, but to the human condition.

" One definition of education is the development of the whole or ideal man in which all sides of his nature are encouraged. That is to say his intellect emotion and spirit.

We feel that, for an architect who is concerned with the provision of an environment in which people live as individuals, as groups, and which tends to mould the way in which they live, this type of education is specially important." (27)

Architectural education as a whole is seen as tending to give awareness of social life at all levels, and the kind of objectives we discussed in our last chapter are considered as the correct way to achieve this purpose.

During the BASA Conference of 1962, the sociological aspects of architecture and education were once more widely discussed, sometimes repeating concepts of the former conference,

sometimes putting new emphasis. I shall bring the main points, very rapidly, in the order they were discussed following papers or during group discussions.

Discussion, main paper No. 1 (28)

" ... normally human beings are not very good judges of what they want and what will make them happy.

... sociologists very rarely look at human beings in larger groups than family ... and they think at all of doing anything to the environment other than accepting it ...

... they can participate (sociologists) in a design team ... answering specific questions ... commenting on solutions ... developing own programme and bringing answer ..."

Main paper No. 2 (29)

" ... we have not done enough - by any means - to determine in more precise terms what peoples' requirements are ... and how to use them in Design.

How the people live and not how we think they must live."

Discussion, main paper No. 2 (30)

" ... human specifications are important ...

... clear thoughts of interaction between groups of architects and clients ...

... is dangerous that an architect thinks he knows more than the clients what they really need, likes, wants and does..."

Discussion, Group A. (31)

" ... the public has an opinion of architecture and needs

education about...

... architect must be responsible and sensitive to public reactions...

... social, economic, political restraints and education ... make difficult to change the environment..."

Discussion group B. (32)

" ... client is the whole world... (Fuller)

... client is a mass of people and/or authorities ...

... possibilities of working in an environmental level through public service..."

Conclusions. (33)

" ... priority to methods of analysing people's measurable requirements... and appropriate non measurable requirements..."

In general the same recognition of the difficulties to know what are the wants and needs of clients, and efforts to define the architect and the sociologist position. At the end a statement of the differences between measurable and non measurable human requirements.

This BASA conference shows that in 1961-1963 lecturers and students were concerned about the problem and were looking for ways to solve it for a better architecture and a better environment and way of life for the people. The participation of sociologists and other professionals was, as well, a sign of recognition for multi-disciplinary co-operation.

This concern, nevertheless, was not reflected in the works produced at the same time by students if we judge by two opinions about a project of 1962 by an A.A. student.

" ... Today, 10 years after, there is still a depressing

failure in the schools and the profession to get to grips with the real problem. The delusion of the seventies seems to be that it is impossible for us to reconcile social needs, art, and science or technology."(34)

The problem of ten years ago - 1962 - seems to be still present - 1973 - when this comment was written.

" This scheme exhibits with great clarity the struggle within architecture to become more responsive to human needs by identifying the social structure. The layout creates a balance between private and public by systematising and identifying the public and private realms in space." (36)

4.3.3 Schools of Architecture.

As we said in the introduction to this chapter the concern clearly exists in all schools but it varies in many ways from one to another. Now we shall examine the opinions received during the interviews, which complement the information about the subject contained in chapter 2.

4.3.3.1 Architectural Association, School of Architecture.

Staff opinions:

"... the A.A. has a strong emphasis on social problems of the community...

... since 1966 it has relations with Africa and a Third World Option...

... strong course in settlement and in planning course in the D.P.U." (36)

"... the concern was real even before the Oxford Conference, since 1955...

... more awareness at A.A. than other schools of architecture...

... students even work in community action...

... RIBA interferes with socially oriented programmes...

... in projects all students work with social real life implications.."(37)

~
Students opinions:

"... there is a real concern in the school... specially in first year ... and community action work ...

4.3.3.2 University College London, School of Environmental Studies.

" ... our responsibility for the environment ... attach more importance to social requirements than technical demands...

... rather sadly the social concern decreases from Y.1 to Y.3 and then comes back, but not quite so strong... probably because students work in architectural offices and discover that to get a job it is more useful to have technical capabilities than social concern...

... post-graduate students (some) are concerned with social developments, but in a different way... as a research field...

... staff at U.C.L. are very concerned, and some are taking part in community groups..." (38)

Students opinions:

... School in a general way is concerned, but it is not enough... credits are not allowed for work in special problems on the subject ...

... students are more concerned than staff...

... some students or staff are personally concerned,
but not as a school position.

... the school is more E.D.E.(*) orientated...

And one of the three students interviewed
considered that the school had no awareness about social
problems. (39)

4.3.3.3 University of Cambridge, School of Architecture.

Staff opinions:

"... the school by tradition is against Sociology...
not formal teaching...

... young people have motivation about the problems
and understand the role of the architect in
society, and the fact that they are dealing with
social and human facts, and relations among humans...

... the school uses extreme cases in projects,
like blind or handicapped people..."(40)

"... the school has no special social concern...

... this although architecture is rather leftist
people in a very conservative and traditional
university..." (41)

4.3.3.4 University of Bristol, Department of Architecture.

Staff opinions:

"... programmes of project work show concern about
social issues...

... there are not typical projects for speculators,
but for the social client...

... other schools in the country show more concern
about social problems...

(*) E.D.E. Environmental Design Engineering

... the school is glad not to have a sociologist...
social pre-occupation may blind the technically
important aspects of the building..."(42)

4.3.3.5 University of Newcastle, School of Architecture.

Staff opinions:

"... students are much more aware now than
years ago... there has been no significant change
in architecture because of social concern in the
last 15 to 20 years... changes have been more
technological, in science and practice...

... staff is fairly divorced of this problem..."(43)

"... students are more concerned than the staff...
... a psychologist (specialised in perception) is more
useful than a sociologist, who can get information
about the past (existing situation) which is
difficult to apply in the future, a new project...

... social surveys are a waste of time and money,
because they have no meaning at all..."(44)

Students opinion:

... the school is not concerned with social
problems, this is shown in the way the projects
are arranged...

... programmes of projects are given facts, no
exploration or discussion...

... students would like more involvement...

... staff are individually concerned, but not much...(45)

4.3.3.6 Leeds Polytechnic, Department of Architectural Studies.

Staff opinions:

"... there is a big concern in Y.1 ...

... students are made aware through problems, with real experiences from the environment, especially problems in housing...

... about 50% of the staff are concerned... the school tries to be concerned..."(46)

"... there is good concern and awareness..."(47)

"... relevance of architecture in social issues is stressed...

... the use of detailed problems helps to realise the real needs of the community..."(48)

"... the schools would like to work more on social problems... it is difficult to know how to do it...

... sociologists are too academic, they are not good or useful to architecture because they don't relate surveys to factual situations...

... 30% of staff would accept more social input, 5% would think it is not a good input...

... there have been disillusionments when a sociologist has come to work on a project... sometimes the help of an economic-historian gives better results...

... students are concerned in a very naive way... in some cases concern is deep and good...

... social situation of special cases is studied in project work...

... general social input is so wide that some time is needed to understand real needs and it is necessary to establish special requirements...

... students don't lose their interest on social problems while they are at the school...

... there is freedom for a student to do -
if he likes it - a project of their own on
social problems, but they don't take the chance.."(49)

4.3.3.7 Portsmouth Polytechnic, School of Architecture.

Staff opinions:

"... there is a terrific concern on social problems
and social responsibilities of architecture among
students and many staff members...

... constraints of architecture are different to
social problems, architecture is more technical
and sociology more behaviourism..."(50)

"... there is little relation between the students
and the real life situation...

... preparation and emphasis are only technological...

... social awareness is not expressed on the
project subjects or real content...

... there are some lectures in some aspects of
sociology..."(51)

These opinions show that although there is a clear concept
of social responsibility of architecture in all schools, not
all of them accept or consider sociology as a necessary study,
at least Cambridge is against and Bristol does not show very
special interest.

Five out of the seven schools don't like the idea of
having a sociologist, but three recognise the utility of
behaviourist to attack social problems in architecture.

Project work seems to be the way most used to study
social problems.

Some schools seem to accept the idea that the concern is more in the students than in the staff, more concerned with science and technology.

One of the problems seems to be the doubts about 'how' to consider the social problems in architectural education, to give the existing awareness more relevance, and make it useful for the new graduates.

It is interesting to compare these opinions with those of architects from other countries that have studied these schools:

"... the schools of architecture in England are socially minded, but only relatively concerned...

... British students are not very sensitive to the real problems of social life... they are concerned but they don't do very much about..."(52)

"... the A.A. show a snobist interest for Africa...

... the concern has no relation with what happens in England..." (53)

These differences of opinion seem to cast some doubt about the real social concern in British schools, but is probably due to the different background that gives to the social problem a different approach as we shall see later on in this chapter.

4.4 Current opinions.

I would now like to revise some quite recent opinions, 1971 to 1973, about this difficult 'how' we mentioned a little earlier and about the role and position of the architect with relation to the social responsibilities of the profession.

"The naivety lies in the architect's assumption that

physical forms (such as street or building layouts) can determine social behaviour. According to Blair they cannot, and he poured scorn on the pretentious 'gossip bays', 'neighbourhood units' and 'inter-village walk-ways' of the past decade. And the arrogance lies in the architect's assumption that he has to prescribe life-styles for people he has never met, knows little about and probably does not understand." (54)

Very strong criticism that points out two important facts: physical forms cannot determine behaviour, and architects don't know enough about the people for whom they are designing. The first seems to free the architects of some burden about the troublesome behaviour of youngsters, but the second shows a weakness in the approach to planning and design.

"there is an urgent need to extend the dialogue between professionals and public, and between professionals themselves. A glance through a sheaf of planning refusals or consents is enough to demonstrate that professionals speak and write in a different language from laymen."(55)

Some kind of the participation and pluri-disciplinary education we have mentioned before, in chapter 3, could be a way to get the sort of dialogue asked by MacEwen.

"As a profession we seem to have very different ideas from the public on what constitutes quality in architecture. But the dangers inherent in this widening gap in values were already present more than ten years ago, when an intellectual wing of the profession decided at the Oxford Conference in 1958 that the best way to counter them, in the long term, would be through architectural education."(56)

This gap mentioned here by Broadbent, coincides with the problem underlined by MacEwen, difficulties in communication. Unfortunately if the schools are isolated, as some have already remarked in this same chapter, and they are not communicating consistently one to each other as I have found, this way through architectural education does not seem to be working.

"This of course presupposes that the individual can identify himself with society as a whole, that is he does not feel alienated from it; for otherwise no sense of responsibility of the individual to the whole of society is possible. The problem of identification with society thus becomes a crucial feature of the discussion about the social responsibility of design."(57)

This kind of personal involvement with the whole society that is asked in this quotation is not commonplace among students and architects. The identification with the society as a whole I found more and more difficult to find. No doubt this kind of involvement if backed by enough sense of self-criticism of ideas could be an asset for the 'social responsibility of design'.

Alan Lipman in research work about community and total architecture has made some observations about the nature of the social facts considered by architects in his work:

"In summary: analysis of selected statements made by the profession's elite and the comments of interview respondents, suggests that architects subscribe to what may be taken to be the fundamental assumptions on which sociological theory is founded. These are that, characteristically, man's condition of life is collective, that the social relationships between members of the species Homo follow certain

patterns, and that these can be identified.

... include characteristics such as the limited size of social groupings; their identification or association with the locations in which they live, and preferably, in which they also find employment; their tendency to participate in frequent social interaction with others in the localities and the likelihood that they have - or feel they have - common values. Further that although relationships of this type are not free of conflict, consensus derived from unanimity about values allows for accommodation (or containment) of the conflict - generally community relations are held to be neighbourly and friendly."(58)

Besides the definitions of some of the aspects considered by architects when working on social problems, he points as well to the fact that humans are concerned with a level of society, more than society as a whole, and that fact is difficult to escape for an architect.

"So far the social scientist have an abundance of theory; the designer needs to know how to put the theory into practice; the voices from E.D.R.A.(*) suggest that it can be done. But the methods involved may have to cut across both the traditional discipline boundaries and the division of public and planner."(59)

Again, the question of 'how' and the plea for participation and pluri-disciplinary education, this time in USA, on the occasion of the EDRA international conference.

"People wanted, and in California at least were getting, the opportunity of controlling their own environment by taking

(*) E.D.R.A. Environmental Design Research Association.

decisions at citizen's action groups. In this situation, the professional is forced to adopt new rules, and execute them in a more humble manner. The new roles are those of broker, servant and technician. Though speaking mostly of design professional, Appleyard's argument was centred in their quality as experts and, in this sense, both psychologists and architects could be combined as professionals in a new battle line-up against the people."(60)

Participation, and the problems of placing the professionals against the people instead of co-operating with them. The public needs at least as much education 'to participate' as the architect, and it is more difficult to give them that education.

"Geoffrey Broadbent thinks that designers could begin to achieve architectural quality of a kind acceptable to the public by paying more attention to the findings of current research, which contradict some of the most cherished beliefs of the modern movement, while Colin Ward and Malcolm MacEwen see architectural education in secondary schools as an important means of ensuring that tomorrow's citizens understand the problems and potentialities of the urban environment. But as they rightly imply, such efforts must fail unless they are part of a wider attack on a social system that profoundly inhibits humane design. The fact is that architecture is in the middle of a monumental crisis. There are plenty of intelligent people - including many architects - who don't agree, but the evidence is surely incontrovertible."(61)

If all the citizens of tomorrow could receive today the proper kind of architectural education - not becoming architects - in school

then participation could be expected to be very positive. But most probably architects will have to find another solution to establish a multiple communication channel with other professionals, public, clients and architects.

It is interesting to note that of all the many aspects of sociological problems, that could be socio-economic, or socio-political, or socio-cultural, etc. the most mentioned by architects is the behavioural problem - individual and collective - that is a kind of psycho-sociological problem, which probably explains the readiness of several schools to accept behavioural psychologists but not sociologists. When we mentioned before the different approach to the social implications of the profession from the point of view of architects of other countries - specially developing countries - sociological problems means mainly, and sometimes exclusively, economic problems and their social consequences.

"It would seem that practitioners have interpreted the noun 'social' in behavioural terms, as well as in terms of the variety of other connotations.."(62)

4.5 SUMMARY

The first mention of social responsibility of architecture may be found around and after the industrial revolution.

Pugin developed the idea and he is a pioneer among architects. Later the technological evolution obscured its importance somewhat until the present century.

The modern movement, political struggles and the post-war reconstruction brought these concepts into actuality specially within the schools, although they were a fact years before in the profession.

With the Oxford Conference and the BASA conferences - 1958 and 1961-63 respectively - the social awareness augmented and between that moment and 1972 the concern reached all schools in different degrees, and with different manifestations ranging from some aspects in project work to courses formally incorporated on sociology.

The main concern seems to be a psycho-sociological one specially the behavioural, and considerations for clients and users of buildings. The socio-economic aspects as well as the socio-political are not mentioned as if they were already accepted or standardised.

4.6 CONCLUSIONS

There is in all schools studied a clear concept of all social implications of architecture, but not all of them have formal studies of sociology, and the acceptance of sociologists is rather limited as opposed to the behavioural psychologist that is welcomed in several of them.

The problem is 'how' to consider the sociological problems in designing the built environment, making them a positive factor in getting a kind of architecture generally accepted by the public, and contributing to the human welfare in society.

The solutions proposed seem to coincide with the need for more communication with the public and participation and more pluridisciplinary education with other professions involved, that presumably would include not only the traditional building professions but some others as well, like sociologists, psychologists, behaviourists, economists and educationalists.

The recognition of certain measurable and non measurable factors of social life and behaviour indicates the need for some sort of research that must be undertaken in a multidisciplinary approach.

4.7 References

CHAPTER 4

- 1) Madge, John. The tools of social science. 1953. p.290 /1
- 2) Wolfenden, Sir John. The Architect's role in society. RIBA Journal. 1958. as quoted in:
Jenkins, Frank. Architect and Patron. 1961. p.245
- 3) Kaye, Barrington. The development of the architectural profession in Britain. 1960. p.12
- 4) Collins, Peter. Changing ideals in modern architecture. 1965 p.295
- 5) Macleod, Robert. Style and Society. 1971. p.9
- 6) ibid. p.31
- 7) ibid. p.123/4
- 8) ibid. p.10
- 9) ibis. p.37
- 10) ibid. p.45 quoting Morris and Webb.
- 11) ibid. p.58
- 12) Collins, Peter. op.cit., p.229
- 13) ibid. p.230
- 14) Martin, Sir Leslie. Leslie Martin on the bridges between the cultures. RIBA Journal, August 1973. p.381-388.
- 15) Gray, David. F. The Zone a project of 1952. As quoted in:
Gowan, Jones. ED. Projects Architectural Association, 1947-1971
1973. p.21
- 16) Collins, Peter. op.cit., p.229

- 17) *ibid.* p.220
- 18) Introduction. BASA. An interim report on architectural education, 1961.
- 19) Musson Chris. Aims, attitudes and responsibilities. BASA. *ibid.*
- 20) BASA. *ibid.*
- 21) Glass, Ruth. BASA, *ibid.*
- 22) Campbell Kenneth. Trends in architectural practice. BASA. *ibid.*
- 23) Glass, Ruth. *op.cit.*,
- 24) *ibid.*
- 25) Report on discussion Group C. BASA. *op.cit.*,
- 26) BASA. *op.cit.*,
- 27) BASA *ibid.*
- 28) BASA. Building for people. Second report on architectural education, 1962.
- 29) Swain, Henry. BASA. *ibid.*
- 30) BASA. *op.cit.*
- 31) *ibid.*
- 32) *ibid.*
- 33) *ibid.*
- 34) Macrae, Michael, in Gowan, James. *op.cit.*, p.61
- 35) Maxwell, Robert. in Gowan James, *op.cit.*, p.61
- 36) Oliver, Paul and Garratt, Bob. Joint personal interview. March, 1973.
- 37) Starling, John. Personal interview. March, 1973.
- 38) Musgrove, John. Personal interview. March, 1973.
- 39) General opinions of interviewed, third year, students. March, 1973.
- 40) Howell, William. Personal interview. March, 1973.
- 41) Echenique, Marcial. Personal interview. March, 1973.
- 42) Silverman, Richard. Personal interview. March, 1973.
- 43) Willis, Peter. Personal interview. March, 1973.

- 44) Hardy, Alexander. Personal interview. March, 1973.
- 45) Third year students interviewed. March, 1973.
- 46) Mercer, Nick. Personal interview. March, 1973.
- 47) Karp, Mort. Personal interview. March, 1973.
- 48) Matoff, Teo. Personal interview. March, 1973.
- 49) Jenkins, Marshall. Personal interview. June, 1973.
- 50) Russell, Barry. Personal interview. March, 1973.
- 51) Salim, Ricardo. Personal interview. March, 1973.
- 52) Tzonos, Panos. Personal interview. March, 1973. Greek architecy and lecturer at the Polytechnic of Central London.
- 53) Salim, Ricardo. Aggentine architect, research fellow at Portsmouth, one year research project on architectural education in Britain.
- 54) Vandenberg, Martiz. Planning forppverty. The Architect's Journal. vol. 158. No. 34, 22 August, 1973. p.419
- 55) MacEwen, Malcolm. Taking the profession to the public to provoke them. RIBA Journal. vol. 80 No. 5, May 1973. p.220-223.
- 56) Broadbent, Geoffrey, Learning from new research. RIBA Journal. vol. 80 No. 5, May 1973. p.228-230
- 57) Tzonos, Panos. The development of the theory of design since the beginnings of the modern movement, from the point of view of our days. (Paper) 1972.
- 58) Lipman, Alan. Professional ideology: 'Community' and 'total architecture'. Architectural Research and Teaching. vol. 1. No. 3, April 1971. p.39-49.
- 59) Donnelly, Dennis. What's it all about. Research and Conference and then what? The Architect's Journal. vol. 158, No. 36, 5 September 1973. p.534.
- 60) Hawkes, Ron. The professionals versus the people. Research and Conference and then what? The Architects Journal. vol. 158 No. 36, 5 September 1973. p.535.

- 61) Editorial. Where the buck stops. RIBA Journal. vol. 80, No. 5,
May, 1973. p.209
- 62) Lipman, Alan. op.cit.

chapter 5

TEACHING METHODS

5. TEACHING METHODS

5.1 Introduction

5.2 Precedents

5.2.1 Historical background

5.2.2 General education

5.3 Objectives of teaching methods

5.4 BASA Conferences

5.5 Schools of Architecture

5.5.1 Architectural Association, School of Architecture

5.5.2 University College London, School of Environmental Studies

5.5.3 University of Cambridge, School of Architecture

5.5.4 University of Newcastle, School of Architecture

5.5.5 Leeds Polytechnic, Department of Architectural Studies

5.5.6 Portsmouth Polytechnic, School of Architecture

5.6 Listing and classification of teaching methods

5.6.1 Lectures

5.6.2 Seminars and discussion groups

5.6.3 Stimulating ideas

5.6.4 Simulation, games and role-play

5.6.5 Project and simulation

5.6.6 Individual teaching

5.6.7 Educational aids

5.6.8 Block courses

5.6.9 Team teaching

5.6.10 Selection of teaching methods

5.7 Assessment

5.7.1 Examinations

5.7.2 Project

5.7.3 Essay and dissertation

5.7.4 Tutorial

5.7.5 Course study

5.8 SUMMARY

5.9 CONCLUSION

5.10 References

5. TEACHING METHODS

Objectives: Study the teaching methods used, its objectives and possibilities.

5.1 Introduction.

In Chapter 2, the Schools of Architecture, we presented the teaching methods and assessments used in all schools studied, based on Appendix 5 that contains the detailed analysis school by school. In this chapter we shall study the teaching methods being used, their possibilities and limitations without pretending to go into further details.

First we shall look into some precedents in architectural education and in education in general, then into the objectives of teaching methods. Later we shall present the comments and results of the BASA Conferences about the subject, and then the personal opinions from members of the staff of the schools studied.

Some different well known lists of methods will be presented and the methods studied by groups, according to characteristics and objectives.

Methods of assessment will be discussed briefly at the end of the chapter.

5.2 Precedents.

There are two aspects that I like to consider as necessary precedents to the purposes of this chapter which are: historical background of architectural education, and the influences of the objectives of general education.

5.2.1 Historical background.

As we saw in the introduction to this work, architectural education in England developed from apprenticeship to pupilage to which some evening courses, mainly in draughtsmanship, were added, starting the formal architectural studies only at the very end of the last century as a consequence of examinations set out by the RIBA, first voluntary and then statutory, as a condition for registration. This means that the young architects to be were guided to learn some skills, and that the main way of learning was by 'duplication' using John Morris' concept - as opposed to discovery - and almost invariably the new architect was greatly influenced by his 'master' which was reflected later in the schools where the 'studio masters' influenced education during half a century.

Some authors suggest, in fact, that some of the problems of architectural education in England are due to the fact that examinations came before education, setting levels to be reached, knowledges to be given, and a pattern of examinations that restrain freedom in education. It is, nevertheless, good to recognise that the RIBA Board of Education allows, in my view, a great deal of freedom at present.

It is possible that this kind of historical precedent may have influenced the sort of teaching methods used and in use on architectural education, although I tend to believe that, in the last ten years at least, there has been a big tendency to try new methods and forget the traditional or old ones.

5.2.2 General education.

As we know the main objectives in general education, or

school education, at present are the search for the best possible development of the mind through individuality and freedom.

This orientation towards individuality and freedom in education contrasted with the traditional formal way of lecturing, even with the furniture arrangements, and gave way to a new kind of school that resembles more and more the play-group organisation. Now with this tendency being applied to higher education with discussions, groups, role-plays and simulation methods in use, I have the impression that we are rediscovering the advantages of child education - freedom of activities, liberation of imagination and acquisition of skills - for our university students in spite of all the seriousness of science and technology.

This resemblance includes some characteristics as learning instead of teaching, small groups, use of all media available, variety of methods.

5.3 Objectives of teaching methods.

Teaching methods have general and special objectives, and we want to look first into general objectives, without getting into the dilemma of whether they should be called teaching methods or learning processes.

General objectives of teaching methods are to facilitate the teaching to lecturers and the learning to students to develop the mind, and to get some basic background discipline. The motivation is an aspect of teaching that too often instead of being considered and treated as a means, becomes an end in itself. The question, many times raised, that if a higher degree student needs

motivation to study, being supposedly a grown-up person knowing what he wants, is an interesting one that helps to clarify the role of motivation as a way to clarify things, and to stimulate thinking but not to be merely an entertainment showing the lecturers skills.

According to Donald Bligh teaching methods can achieve three kinds of objectives: the acquisition of information, the promotion of thought, and changes in attitudes, (1) and some methods are better than others in achieving one or other, it even being possible to use a combination of methods depending on the objectives.

For John Morris there are six levels of learning and two different processes: duplication and discovery. Comparing this process with Bligh the acquisition of information is mainly a duplication procedure, although not exclusively, and the other two divisions are mainly discovery. The levels of John Morris are: factual information, technical skills, intellectual skills, social skills, personal understanding, and self-insight; the first four being at the reach of duplication and discovery and the last two of discovery almost exclusively. (2) These kinds of definitions are useful to judge the utility and place that teaching methods may have on the educational process.

" In a few years, it will be possible to make a considered assessment of the place of the new methods in relation to the old. We shall see where the old have been clearly displaced, and where they have yet to encounter an effective modern rival. Pending such an assessment, what can be said about the relationships between different teaching methods ?" (3)

Agreeing entirely with this opinion we do not pretend to

assess the new nor the old teaching methods, but simply to report on their uses and purposes.

In fact, some tendencies are entirely free as to avoid the responsibility of choosing teaching methods or leaving the mind to develop even in this aspect of the process, the selection of methods by the students...

"... the teaching-learning process is free, through projects... the staff are treated as teaching resource...

... specifically the student should be able to isolate and state problems, or even better, to avoid problems..." (4)

Another important objective, at least in architectural education, for teaching methods is that besides learning some 'factual information' it is necessary too to be able to use that information through a 'technical' or 'intellectual skill', using Morris' terms...

"Dewey wrote in the late thirties... scientific subjects are being taught very largely as bodies of subject matter rather than as a method of universal attack and approach"... (5)

"... She also pointed out that 'manipulation... can only be learned by doing... But recently, in schools of architecture, it has become fashionable to avoid the doing of three dimensional manipulation. The inter-action chart has taken the place of the drawing as the object for final presentation, and while no-one would wish to reinstate the presentation drawing as an end in itself, which it used to be, it is becoming increasingly clear that students are failing to learn the three dimensional code, which is their stock-in-trade as architects". (6)

These observations of Musgrove and Broadbent are very pertinent in a moment when the enormous variety of teaching methods, with attractive names, may perfectly well push inexperienced lecturers and

learners to use the method for the method. It is important then to make the learner aware of the method, the objectives, and try to make the transfer a conscious step of the mind.

As for the special objectives of each teaching method, later on in this chapter when we study the listed methods we shall see those objectives more easily.

5.4 BASA Conferences.

data?

During the BASA Conferences the teaching methods did not receive a very deep or wide consideration, but mentions were made, which I would like to quote now so as to compare them with what are the opinions, and what is being done actually in the schools.

"Aims of teaching methods:

... bring out the best of each individual...

... analysis, clarity of thought... expression...

... encourage creative work for its own sake and not in competition with other...

... encourage disciplines and thought processes in which the exercise of technical virtuosity and invention may be interpreted with a clear understanding of human social and psychological needs." (7)

"... group discussion helps to monitor one's own mental process and to learn that there are other opinions than yours...

... it is important to teach the student consciously to transmit his education and training to work situations..."(8)

"... the use of models is highly recommended... but it requires special laboratory and staff facilities, which are expensive...

... shortage of fully trained building scientists is

going to be the stumbling block in the development of architectural technology in the coming decade..."(9)

"... machines are worth while to relieve the instructor of some of the routine labours of teaching...

... how they work :

- present material to a student
- ask a question
- indicate correctness of answer
- direct to appropriate next unit...

... a way to satisfy the huge demand for more instruction in more and more subjects..."(10)

"... a need for education in method and principles rather than in factual information...

... designers must make decisions and can no longer work in isolation..."(11)

The main concerns were coinciding with the objectives of general education towards the broadening of the mind, and the teaching of less information and more methods and principles, the only new methods mentioned specially being the use of models and machines for teaching.

Abercrombie makes clearly the point of transfer we have mentioned before as a necessary general objective for teaching methods.

5.5 Schools of Architecture.

After those opinions from 1961 to 1963 let us now examine the opinions of members of the schools studied expressed in personal interviews during 1973, ten years later...

5.5.1 Architectural Association, School of Architecture.

"... mainly group activities, tutor activity and individual activities..."

... students come to the school strongly motivated and they decide what they can do to offer something...(12)

"... teaching methods are empirical and use the own life experience of lecturer in the A.A....

... the A.A. has a lot of lecturers and students like it...

... not lectures about dry subjects, but pragmatically orientated during the project...

... use of tutorial system on individual basis...

... each student gets about half an hour of technical tutorial each four weeks...

... assessment is not very formal but it is separated for: design and technology and the student must approve both...

... integration and co-ordination is informal, but good, this year, it was not good before ..."(13)

5.5.2 University College London, School of Environmental Studies.

"... teaching methods have changed considerably since 1958 to 1972...

... in project work, the work is much closer to the actual outside world...

... teaching techniques are not so formal as they were, more use of:

- smaller groups
- discussion groups
- guided tutorials
- middle size seminars...

... there is a general trend of participation on the part of the students themselves with a much greater effect not only in the way of doing things but also in the direction of the course...

... the curricula are more loose today..."(14)

5.5.3 University of Cambridge, School of Architecture.

"... there is freedom for lecturers or teachers to do the course as they like...

... about 40% theory and 60% project in the first three years and 50% in years 5 and 6 ..."(15)

"... the school will concentrate more theoretical knowledge in first year...

... is important to teach through doing...

... characteristic of Cambridge is the supervisor or individual tutorial system... a tutor follow general studies of the student during all three years, not necessarily belonging to the school...

... a teaching team, replace the year master, formed by two full time and two part time staff, for each year a co-ordinator shall be appointed...

... it is important to integrate better the teaching, linking together: history-background

environmental requirements, and

project work, establishing a close

relation to develop class, day or week of lectures and seminars...

... structure for architects must be taught in a special way... not many mathematics and use of structural models to collapsing point..."(16)

5.5.4 University of Newcastle, School of Architecture.

"... important in teaching methods is communication... a good lecturer is good... no teaching method is good if the lecturer is not good enough to get students interested in learning...

... a university must teach theory and ideas, not management,

the time is too precarious to lose it..."(17)

"... block teaching must not be too long, 2 or 3 days and are good at the beginning of a project, given by a group of staff, normally one hour lecture and one hour application...

... the team design allows sound advice early enough in the design process..."(18)

5.5.5 Leeds Polytechnic, Department of Architectural Studies.

"... interdisciplinary studies in year 5 tend to integrate all subjects in the project...

... the team work is positive but the students must do something of his own...

... must be product orientated and not process orientated...

... the use of England as one resource, is an important idea, and it is possible...

... take part in national competitions encourage students to work with real constraints...

... working jury and evaluation as teaching opportunity must be preferred..."(19)

"... different teaching methods are used at different levels...

... approx. lectures 20% in years 1 and 2, tutorials and seminars 20%, project work 60% in year 3 goes to 80% and to 95% in years 5 and 6.

... the project beside the architectural requirements must have a clear educational objective...

... use of laboratories and calculations are very common in building sciences..."(20)

5.5.6 Portsmouth Polytechnic, School of Architecture.

"... group studies go through the year in different ways,

depending on the topic, the methods most used are:

- lectures
- seminars
- notes (hand-outs)
- exercises...

... lectures are considered suitable for certain subjects...

1.. the use of sophisticated teaching methods, like programmed learning, gaming and simulation are left for year 5.

... the best teaching methods are the personal relationship staff student...

... active design is a discipline in itself with great educational values that has not yet been exploited and may be useful to other disciplines...

... practical projects and competitions are very useful when suitable to the programme...

... it is important to teach the student and make him understand about perception and communication, specially psychology of perception..."(21)

" ... schools are conservative in England, what is good in a sense because a too open situation can be chaotic...
... best methods are, and more used as well, laboratories, seminars, lectures, projects, field studies..."(22)

There is in the schools in general: complete freedom for lecturers to decide the method or methods to be used, a tendency to favour more participation of students through seminars, discussion groups, laboratories, exercises and project work; lectures are widely used because considered suitable for some subjects; 'sophisticated' methods like teaching machines, games, are not very commonly used;

project work augments in importance with relation to other subjects as the studies progress; integration, and the use of team teaching are considered important.

Assessment, consciousness about perception and communication, use of models, and block courses were mentioned only once, but with emphasis, as very useful and positive teaching methods.

If we compare this result with those shown in chapter two we can appreciate that there are some differences about the methods used as well as about the relative importance or percentages, which is explained because the interviews reflect personal opinions, and the graphics of chapter 2 are what was being done in the schools in 1972.

5.6 Listing and classifications of teaching methods.

"The dramatic success of new methods of teaching has made many teachers self-conscious and defensive about their continued use of traditional methods."(23)

Dramatic seems the right word to express what has happened with teaching methods that make that self-consciousness, mentioned by John Morris, a stimulus to try to learn about them finding that even to know all the names becomes difficult, not to mention the possibility to use them adequately.

We have found several lists, with or without definitions, of what they are and what they are useful for, of teaching methods that we would like to mention. Macleish produced a list in 1964 with definitions of teaching methods classifying them as: traditional methods, newer methods, and novel uses of traditional methods containing in the whole 25 methods.

Broadbent in his paper Teaching Methods of February 1970, lists

6 methods that are more than six methods, 6 groups with the exception of the first which is lectures, the others being like group discussions and tutorials a kind of method covering several possibilities.

Warren Piper in the Teaching Methods Course at the Institute of Advanced Architectural Studies in York presented a list of 25 different methods of which several correspond to the same methods of Macleish's list.

Bligh in his book 'What's the use of Lectures' presents in pages 150 to 154 a list of 29 methods alphabetically listed with a brief description of each one, and the educational objectives.

Not pretending to include in this work all this list and their explanations we present in the next page a summary of all lists mentioned with the exception of Broadbent's one, because we are sure that the meaning of his paper was not to present a comprehensive list of teaching methods.

The list of teaching methods is presented trying to group them according to their characteristics. From number one to six we have methods with use of audio visual or some other kind of technical or mechanical aid. From number 7 to number ten, methods that stimulate new ideas or are games of simulation. From number 11 to number 20 the methods that are based on discussions of various kinds in rather small groups. From number 21 to 25 methods based mainly on individual work or tutorial, including practices that may be conducted for groups but normally represent an individual responsibility. From number 26 to number 28 the methods that represent lectures of some kind including demonstrations. From number 29 to number 31 methods that are in themselves complex methods like project work, critiques, teaching practices and teaching itself.

	Bligh	Macleish	Warren Piper
1	- Audio tape	- Tape recording	- Sound-tape
2	- C.C.T.V.		- Video-tape
3	- T.V.	- Radio and T.V.	- Live T.V.
4	- Tape-slides		- Tape-slides
5	- Films	- Films	
6	- Prog. learn.	- Prog. materials - Comp.assisted inst.	- Automated teaching - Teaching machine
7	- Brain storming		- Brain storming
8	- Synectics	- Synectics	
9	- Simulation games	- Simulation exercises	- Simulation games
10	- Role-play	- Role-play	- Role-play
11	- T.group method		- T. groups
12	- Syndicate method	- Syndicate method	
13	- Step-by-step disc.		
14	- Prob. centred.group	- Analogue method	- Problem solving group
15	- Free group disc.	- Free group disc.	- Critic.disc.group
16	- Control. disc.	- Control disc.	
17	- Case disc.	- Case disc.	- Case solution
18	- Buzz group		- Buzz group
19	- Group tutorial	- Group tutorial	
20	- Seminar		- Seminar
21	- Counselling	- Counselling	
22	- Individ.tutorial	- Individ. tutorial	- tutorials
23	- Individ. task		- Essay written
24	- Reading	- Organised reading	- Reading
25	- Practices	- Exper. laboratory	- Practical exerc. - Lab. & field work
26	- Lectures	- Lectures	- Lectures
27	- Step-by-step lecture	- Step-by-step lecture	
28	- Demonstration	- Demonstration	- Demonstration
29	- Project	- Project	- Project
30	-	- Critiques	- Group project
31	-	- Teaching practice	- Member of Dept.

The main development is in the great variety of methods based on small groups and discussions, to get the active participation of students through stimulating discussion, in many cases with the lecturer only monitoring and giving assistance.

Several kinds of aids from the very simple audio visual aids to the very sophisticated teaching machine form a group of importance.

Individual study and individual tutorials placing responsibility on the student-individuality and freedom-are very much in use.

Probably the newest group is formed by the stimulating of new ideas and games and simulation group, that has no doubt many possibilities of developing more and more.

To consider the main aspects of each of the methods listed would be an enormous task producing a considerable amount of repetition when defining the methods and discussing objectives, therefore we shall consider them by groups according to the list on the last page.

5.6.1 Lectures.

A traditional method, widely used in the schools of architecture as we saw in chapter 2 is openly discussed, and apparently, at least, it will continue to be used.

"If there is no difference between the effectiveness of the lecture and other methods on tests of information, it seems reasonable to infer that lecture is as effective as these methods in transmitting information. By comparing results of tests before and after teaching, the experiments provide evidence that lectures and other methods do transmit information..."(24)

Donald Bligh established that of the three objectives he mentions for teaching, lectures provide for the acquisition of information as much as other methods, but he goes on to say that this does not justify the excessive use of lectures in tertiary education and points out another important factor:

"... However, it is not recommended that discussion methods should be used primarily to teach information. They are expensive in staff time, and the one significant comparison Dubin and Taveggia obtained was that unsupervised reading is superior to discussion for the acquisition of information." (25)

In fact, many of the lecturers in higher education, specially senior lecturers, are more prepared to use lectures than some of the new methods that require special skills and techniques, and very often become more expensive than the normal lecture method.

What cannot be discussed is that lectures are not 'the' main teaching method they used to be, and that the purpose has changed as much as its form and content. The purpose being restricted very much from an all range method to provide some information, very selected and basic, considered as a starting point to develop knowledge and not the knowledge itself. The form is adapted to the many aids found to motivate students using all kinds of technological possibilities. The content is made more of facts and stimulating concepts to be discussed than of truths to be accepted.

As lecture type method, besides the traditional lecture we find the step-by-step lecture and the demonstration that uses the advantage of lectures, and the fact that after 25 to 30 minutes students attention decreases and combine lecture with

some other method, like: demonstration, discussion, exercise, questioning.

The need of a good follow up after a lecture is clear as a way to fix information by using it in a direct and simple way, this follow up can be made of any method suitable for the subject taught.

Donald Bligh (1) in his book gives good hints as to how to prepare and organise lectures so as to transmit information, and even, if it cannot be avoided, to stimulate thought and try to change attitudes.

5.6.2 Seminars and Discussion groups.

As we saw in the list we have prepared the discussion and group work are the most varied and used methods in higher education. Bligh in his book, already mentioned, gives primary importance to this method to stimulate thoughts and change attitudes; and Abercrombie has dedicated considerable attention to group teaching recognising in this method the highest value as an educational tool.

"The group system of teaching focusses attention on the interaction between all participants, students and teachers, not on the polarized interaction of a student with a teacher. Like the tutorial, it recognises individual differences, but goes further and not only allows for these differences, but actually exploits them. Exposed to the same display of information, each student has taken in not only different amounts, but different interpretations, and each learns by comparing and contrasting his uptake with that achieved by his peers. There is a network of communication between all members.

In the tutorial setup, the student's omissions and mistakes are corrected by the teacher; if the teacher is good, the student's store of information tends to match his teacher's in both content and organisation.

In the group system, the student discovers his strength and weaknesses himself as he sees his behaviour in the light of others, and he modifies his attitudes or strategies as he sees that there are as many alternatives to them as there are members of the group."(26)

The characteristics and values of group teaching are clearly defined there, the emphasis is the interaction and an intelligent position of the teacher, allowing the ideas to develop without interfering unnecessarily.

"It is suggested that, if more learning were done in groups, the main objectives of both students and teachers could be brought closer together, the utilitarian with the liberal, and the cognitive with the affective."(27)

This kind of reproachment is important and not easy to get, therefore making group teaching a valuable tool for that reason alone.

"I am certainly not suggesting that group work should replace any other teaching methods, all of which have their specific values. In particular, it may well be extremely important that students should experience an expert's ways of thinking and behaving, in so far as they are demonstrated in lectures or tutorials, and should be able to incorporate a teacher's attitudes and values. I am suggesting that some varieties of group teaching can be used to achieve specific objectives and, in specific

contexts, to add to the effectiveness of the total learning experience."(28)

There Abercrombie points out the importance of the personal influence of an experienced teacher and the problem of transfer we have mentioned before.

Group teaching requires small groups to make possible the necessary interaction between all participants, and most of the methods defined around this concept are formed by 4 to 12 students, only occasionally more, requiring in that case an exceptionally trained teacher or a very well conformed group and/or situation.

Although there are big differences from one method to another, as from seminars to free group discussion, taking due consideration of the characteristics described above by Abercrombie we could say that to this type of method belong all the following: T. group method, syndicate method, step-by-step discussion, problem centred group, free group discussion, controlled discussion, case discussion, buzz group, group tutorial, seminar, group work.

They range from the organised situation of a seminar conducted by a teacher around a specific theme, to the free group discussion without previous arrangement or theme, and they may be used isolated or preferably in connection with others like buzz groups.

Very often the differences between one method and another are more in the form of organisation and performing than in the educational objectives themselves.

The limit between this group we have done and other methods is not a clear line but rather an overlapping border as in the case of some projects, simulations or synectic experiences.

5.6.3 Stimulating ideas.

The development of imagination and creative thought are said to be limited by a too scientific or analytic approach, and therefore the need to provoke and stimulate ideas has brought about some methods with this clear purpose.

The main characteristic is the setting up of a group of different personalities to set ideas around a subject without any inhibition or criticism of the ideas or persons involved, in the first stage, being a follow up depending on the purpose of the exercise.

Belonging to this type of method: brain storming and synectics especially. Brain storming is a free situation synectics, and the main differences are in techniques and organisation.

Both methods in some ways are group working or teaching situations, but the purpose being in this case the reason of the group, they are classed separately to that group.

5.6.4 Simulation, games, role-play.

In many respects these methods have the same purpose of stimulating ideas by representing some situations.

Again, a group is organised to simulate some situation around a real life pertinent problem, each person or small group is given a role to play, rules are established with one or a set of possible solutions. As important as the simulation or game in itself is the monitoring and observation of the alternatives, variations and behaviours taking place during the educational experience.

According to Ian Bracken (29) the objectives are: develop awareness around a certain problem, make the people

experience a dynamic situation, exercise open-mindedness to what other people do, reach a clear understanding of own situation in front of a problem, exercise a role: and the main dangers are: games are inhibiting for some people, the mis-use of the method, taking the play as the end and not as a means.

The methods in this type are: simulation, games, role-play. The variety is infinite because having an educational objective clearly stated and finding an adequate problem situation it is always possible to create an appropriate game.

5.6.5 Project and simulation.

Project work is the main teaching method in architectural education, and, as we have seen before, most of the schools are tending to organise their curriculum around the project as an integrative factor, whose importance have been enhanced by the design methods discussions.

"... the misconception of project work as the sole integrative medium for taught subjects has been added to its unreality as an analogy of professional design. Now neither of these major criticisms of project work is to deprecate its usefulness in the 'learning by doing' sense i.e. as a teaching method. A great deal of effort has been put into the development of the project mode and schools have succeeded to a greater or lesser degree in dispelling its unreality. What they have not done, and it has become increasingly obvious as more and more disciplines have been imported into the schools (originally it should be remembered, to diversify the education of the architect or planner) is to overcome the misconception of project work as an integrative medium."(30)

"... By this a mean that model building involves abstraction from reality, followed by some form of substitution, so that the part of reality that has been selected for study may beorganised into an easily manipulated system. Clearly this can be a lecture, a gaming simulation, a film, a computer analogue, a poem and so on." (31)

The project is not a real situation and, therefore, is a simulation whose unreality depends on the subject, the school, the staff, the students, and all kinds of academic and real world constraints.

"Project work would be expressly open as a teaching method in the courses and times to link with the pacing of the course. Students would be free to influence the degree of linkage with other aspects of environmental knowledge and the point at which project work was used as a teaching method might vary for different groups of students."(32)

"Projects then can be organised to cover a wide range of problems, some requiring tight logical thinking, some requiring the exploration of varying possible solutions, some the use of analytical methods but structured so that all involved - students and staff- are clear about the brief, any assumptions and the basis of assessment.

If projects are regarded as experiences in pproblem finding and solving rather than ways of how to design, there are possibilities open for collaboration with engineering schools interested in this form of education."(33)

Porject work as a 'teaching method' and as a 'form of education' and not only as a way of designing is the real value

of this method, considered by Stringer as one of the most valuable, and according to Broadbent not used enough in higher education.

"I believe that no matter how projects are diversified or specialised, the degree of integrative skill brought to bear by the participants depends upon the degree of integration already existant in his own cognitive map and only secondarily upon his skill at interrogating and using the instrumental sets at his disposal."(34)

Professor Musgrove discusses the real importance of project work as an integrative subject, and suggests that integration depends on the 'cognitive map' of the student.

As a method project work may have many forms, like problem solving exercises, a game, individual project, group working project, project appraisal, critiques, model design, briefing, planning.

5.6.6 Individual teaching.

Individual teaching or learning has a growing importance in higher education since it is one of the most efficient methods to develop the mind, individuality and freedom, the main objectives of education.

Individual teaching may be with or without technical equipment which may be as sophisticated as computer assisted teaching or as simple as a tape or record.

The main characteristics are that the student works alone, with periodical or occasional controls, and the purpose may be to get factual information, write an essay or discuss others ideas, as well as develop new knowledge.

The methods without use of technical equipment, although

books and normal reproductions are used, are: counselling, tutorials, individual task, reading, essay writing, field work, exercises.

The methods requiring equipment are: audio tape, radio, T.V., films, video tape, tape slides, programmed materials, programmed learning, automated techniques, teaching machines, computer assisted instruction, practical exercises, laboratory work. Of the methods listed some of the former are not more than aids for learning, not being a method in itself, excepting if we consider the teacher's work and the intellectual process of the learner; some others like: automated techniques, teaching machines, computer assisted instruction are only slightly different from one another, and the two last may be used individually or in groups, but for the nature and the purpose of the task are more individual than group teaching.

About the use of educational technology, it is useful to bring in some clear ideas established by Duncan:

"... the concept of educational technology is based on the teacher influencing the interpretation of imported information..." (35)

"... the steps to present the information are:

- preparation
- application
- production
- presentation...

a conceptual model of a typical instructional system have the following steps:

- provide learner knowledge of objectives
- motivate the learner

- present information
- stimulate discussion
- direct learner activities
- conduct drill and practice
- reinforce learning
- provide learner/simulator interface
- evaluation
- administration
- research and development..."(36)

In the first of these two quotations Duncan points out the fact that there is necessarily an interpretation by the teacher before the information is presented, this does not happen when the individual teaching is through reading for example.

According to Carmichael the steps of programmed instruction are:

- " - pre-requisite test
- instructions on use
- statement of final objectives
- sequence of teaching points
- review of teaching points
- criterion frame-test
- sequence of frames
- review
- criterion frame
- repeat
- final test, with feed back to the formal instructions." (37)

The use of programmed or machine learning leaves teachers time free, once the programme is prepared, and requires continuous actualisation, depending on the subject. Other individual methods

on the contrary, like tutorials, require more staff, well qualified, and become expensive.

5.6.7 Educational aids.

Some of the methods mentioned before, as I said, are more educational aids than methods and considering that there has been an increasing amount of new aids developed I would like to quote a survey presented by Duncan in 1972 during the IAAS course on Teaching Methods at York, although I imagine that in two years many other aids may have been found.

"... a survey of A.V. equipment and methods:

- manuscript
- duplicated notes
- duplicated pictures
- wall displays
- specimens
- working models
- epidascopes
- printed text-books
- programmed sheet
- audio tapes
- language laboratory
- still slides
- A.V. tutorials
- stereo grams
- moving over head projector
- silent films
- sound films - magnetic sound
- sound films - optical sound
- programmed tests
- radio-vision

- video-tapes
- audience-response systems
- live T.V. programmes
- computer based instructional systems
- sound broadcasts
- T.V. broadcasts..." (38)

They were presented as A.V. equipment and methods without differentiating properly one from the other. It is nevertheless a rather comprehensive list useful to inspire some ideas about the possibilities of finding motivating ways to teach.

5.6.8 Block courses.

Although block courses contain several courses and usually several teaching methods are used in each of them, they may be considered a method in itself, because they have a clear objective and characteristics as a teaching device.

They may be over one subject or several subjects, usually with several teachers taking part and lasting from one or even half a day to two weeks. They are mainly used to provide the necessary basic information and/or knowledge to be used in a project, and given at the beginning or immediately before.

They have advantages and limitations...

"The content of a course is given in relatively short period during which the attention is concentrated on the content of the course. It does enable many of the disadvantages of the extended courses to be overcome."(39)

"The intensive course usually does not provide sufficient time for the student to absorb the content effectively, while the loss of a day (say through illness) does mean that there is a considerable amount on which to catch up."(40)

There are different opinions as well about the problem of time to absorb the knowledge. Broadbent suggests that some more conceptual knowledges need some time to 'mature' and that other kinds of knowledge must be applied immediately through some kind of simple practical experience like measuring environmental conditions. Professor Hardy of Newcastle says that a lecture must be followed by a one hour practice to use the knowledge acquired.

" The extended course does have an advantage in that there is some time available between each successive division for the student to absorb the content. However, in contrast, sometime is often lost because of the length of time (usually a week) between each successive division which necessitates some recapping or repetition."(41)

"Where extended courses techniques are used exclusively, the scope of the methods are generally extremely limited. Methods used include: practicals/exercises; demonstrations/laboratory work; surveys/appraisals."(42)

Even considering the difficulties of one or another the block course seems to be an effective way to provide basic information for a project, that may be subsequently enlarged when necessary, and certainly gives the possibility to use several teaching methods and/or aids.

It is more easily applied to small or medium groups because it usually involves practices and exercises, and needs several staff members co-operating around a programme, which is a healthy example to students, and a teaching method in itself.

5.6.9 Team teaching.

Like group teaching, as mentioned above, team teaching is

a very valuable experience for staff and student considering that at present the profession requires more and more team work for designing the built environment.

"... I am not talking about the studio system as it was, but as it might be. The impressive thing about the well developed studio is the collective knowledge that can be built up. The problems have to be such that students and teachers feel them to be important and are equally involved. They will probably require the participation of teaching teams rather than individual teachers. The team presents a range of skills and outlook. It leaves open the possibility of involving visiting teachers from outside the school with some special knowledge of a factual situation relating to the problem, or new techniques that may be needed."(43)

Team teaching could provide a wider scope of knowledge and contribute to make the project more integrative and the learning more comprehensive, which is an important objective for an architect. It requires the participation of several professions which again is an advantage as an educational tool.

5.5.10 Selection of teaching methods.

The wide variety of teaching methods and their possibilities provides for a broad selection. To decide how to select and what to select will be a matter for each lecturer, because he must not only consider the subject, the level, the learners, the facilities and equipment, but also his own possibilities compared with the educational objectives of a course and each of its parts or divisions.

Teachers in higher education, with the probable exception

of those training teachers, are not professional educationalists but experienced practitioners empirically teaching with one or more short term courses, who must make strenuous efforts to keep pace with educational developments and, therefore, save exceptions may not be able to use successfully any teaching method.

"... there is a general educational argument for the use of varied teaching methods within a period of teaching. Briefly summarised, this argument is:

1. Different kinds of objectives are best achieved by different methods.
2. Teachers usually have a number of different kinds of objectives in any one lesson.
3. Therefore the objectives of any lesson are usually best achieved by different methods."(44)

Donald Bligh after this statement presents very convincing arguments for the use of several methods and then he goes on to the end of the chapter to say:

"The purpose of this chapter has been to persuade the reader that it is usually better to use a variety of teaching methods in a 'lecture' period."(45)

Later he points out three 'sets' of factors influencing the selection of teaching methods: the teacher and his limitations, the students and his limitations, and the physical conditions. As we mentioned before each of these 'sets' includes several considerations.

The selection of methods normally includes more than one and the way the selected methods are combined 'also requires preparation in the light of the objectives to be achieved'." (46)

5.7 Assessment.

There is a clear relation between teaching methods and assessment so much that some like project critics are considered a teaching method. Very often the kind of examination set for a certain subject determines the teaching methods to be used, and some schools complained about this to the RIBA about the Examination in Architecture, Guidance Notes and Regulations.

"... the evaluation of teaching and of students performance are inseparable..."(47)

In the schools studied the methods most used for assessment are: examination - mainly written, essays - and dissertation, projects, and tutorials, with great predominance of the first three.

"... the evaluation of students performance is made by:

- essay type examination
- objective tests
- projects, practical work
- tutorial, continual assessment
- interview, oral examination..." (48)

In fact, I have found very few cases when tutorial and oral examination are the only way to assess students in a subject.

5.7.1 Examinations.

Written examinations are the commonest way of assessment currently used, although many teachers agree with Butcher that:

" assessment by examination is one off method compared to a possibly continuing assessment..."(49)

Continuing assessment must not be a continual examination and places the responsibility on the lecturer, it being difficult to obtain working juries for all subjects.

The RIBA in their 'Examination in Architecture, Guidance Notes and Regulations' establish in their three part examinations: two oral examinations, a professional interview, two reports, several essays, one dissertation and ten papers or written, three or four hours, examinations, setting a pattern for examinations that most schools follow with the corresponding subjects.

There are many possible varieties in written examinations: the normal paper of several hours; the objective test effective for some kinds of subjects, and used with large numbers of students which is not the case in schools of architecture in England; the open book written examination, normally the kind of problem-solving exercise; and the 'do it at home' examination that allows one or more days for it to be done, and used currently more as an experience.

With all objections usually done to the written examination there seems not to be an easy way out of it, and it will probably continue to be used.

5.7.2 Project.

Project work, in itself a complex and very important teaching method, is used to assess not only the design skills of architectural students but, very often as well, conceptual and detailed knowledge of building technology and/or environmental engineering, depending on the project. It has been discussed, and some research done as how it must be assessed.

" What is wanted is a really detailed opinion of each design (and I use 'opinion' advisedly), instead of a pencilled mark which tells the student nothing except that in relation to their neighbours they are closer to,

or farther from, some abstract standard that they can't quite understand. I was present at a jury once and confess I couldn't understand it even then. Yes. I know that criticism is given as well as marks, but what I want to suggest is that this criticism ought to be fuller, and that marks add nothing but confusion. Maybe they are useful as records at the administrative end of the business, but that's not the end from which we should argue."(50)

The critics are here considered as assessment and teaching method, the 'fuller' criticism asked is not easy to get for it takes time and very often the examiners do not agree about the project, which would mean several criticisms and more lack of orientation for the student.

"... most evaluation of drawn work is done without thinking, using a variety of kinds of marking - numbers, letters, etc...

... $\frac{1}{3}$ of U.K. schools of architecture mark at random...

... it was clear that staff and students should be told what assessment was all about in writing, and that

Assessors should keep their own personal written record separately from the marking collection..."(51)

This kind of observation to the marking and assessment of project work produced some research due mainly to the importance of project work as the central core of architectural education.

In 1964 a work by Newton Watson was published:

"... After a great deal of discussion the following headings were agreed by the panel:

1. Communication...
2. Analysis of the problem...

3. Structure...
4. Materials...
5. Functional planning...
6. Services...
7. Inventiveness..."(52)

The panel was formed by year masters and other senior staff at the then Bartlett School.

"... it was decided to dispense with any use of the 'jury' at the end of each project as a marking panel, but to accentuate its role as a teaching medium. The principal teaching impact is by discussion, but it was felt that the student should also receive some definite structured comment on his work from the jury."(53)

" Systematic assessment by the method described earlier is now the established means of ranking studio work for examination purposes at the Bartlett School of Architecture and is carried out only at the end of each academic year. We are confident that it is very much fairer and consistent than any other method we know. But of course can only represent the collective and analytical judgement of a single group; the Bartlett Staff."(54)

The effort to find a framework to judge project work is a positive step, although some will say it tends to cut freedom, because it gives students as much as juries a common ground to consider besides the existing brief, which is always to be considered. But the optimism of Watson is contraried by this opinion published only two years later, less than two academic years afterwards...

"... Experience has shown that the crit sheet has not come up to expectation, and few people at the Bartlett

would honestly say that it is any more than an administrative chore..."(55)

The 'crit' sheet Dunster is referring to is a sheet containing the list of seven headings mentioned by Watson and some other features for each project.

In 1970, Jeremy Lowe published an interesting study with some good points about the actual assessment in architectural schools.

"... of the 28 schools referred to in reference 1, 14 used two or more explicit criteria when assessing student's design. The other 14 make a single overall assessment of the merit of each student's scheme."(56)

" The basic premise that there is a good possibility of reliable assessment by panels of staff must rest on experience, since evidence from controlled study is lacking. Teachers have assessed students' work for many years, without any great unease about the fairness of their activities, though the universal adoption of panels of assessors - the so called jury - suggests that few teachers are confident of the reliability of a single opinion."(57)

"... He noted that the judgements of a single lecturer, or even of a panel (if it was working under unfavourable conditions) might well be unreliable, but it is implicit in his proposals that, under the proper circumstances, a panel staff could make reliable assessments..."(58)

So there is, at least in some schools, a consent about the need to judge using 'explicit criteria' and Watson and Lowe accept the reliability of a panel over the individual judgement.

" The author has reached similar conclusions in relation to the task of assessing students' drawings for design qualities, namely, that it may be better for jury members not to attempt to agree on assessment of the design, but to record their separate opinions, so that they can be grouped by purely mechanically, preferably by summation, after the assessment process has taken place." (59)

That seems to be a logical proposal, it being very seldom that jury members agree about a project, but it leaves the students without a general opinion about their work and unless each juror states very clearly his opinions in a reasoned way the assessment will have no teaching value.

" The aspects of design said to be used as criteria for assessment up to third year level can be grouped as follows (number of schools using each aspect given in brackets): feasibility study, fact finding and analysis(6); synthesis, working method, decision taking (3); concept, realisation, satisfaction of users requirements (5); communication (5); functional planning, space organisation (8); structure (4); construction and materials, detailing (6); environmental design, services (6); site and landscape (3); cost (1); appearance (4); (total number of schools, 14)". (60)

This kind of analytical marking, Lowe suggests, could produce better assessment when applied with a general appreciation criteria 'en plus'.

In some of the interviews I did I received opinions favouring the working jury to provide continuing assessment which could be accompanied by a final crit with a teaching

purpose, and in which all stages of the design should be shown - not only the presentation design. Whether this is possible or not remains to be seen, and apparently it has some staffing problems as well as large time requirements.

5.7.3 Essay and Dissertation.

The essay seems to be a very good way to encourage students to individual study and to learn how to learn. Very much used in History and Social studies it helps to learn how to communicate and when the subjects are well chosen interesting results are produced in the opinion of most of the staff interviewed.

It has the additional advantage that may be assessed and discussed widely before a final decision is reached about a work.

The essay and especially the dissertation provides excellent opportunities to introduce students to research methods and to test potential skills.

The supervisor or tutor for this kind of work may have a decisive importance in the work itself and in the student interest.

5.7.4 Tutorial.

The individual or group tutorial, although an excellent teaching method, has not many uses, currently, as an assessment method, probably by the reason pointed out for project work, concerning the more reliability of a panel.

Tutorial as assessment means continuing assessment, permanent concern of the lecturer, plenty of time devoted to each student and awareness of the student that could inhibit his work, as well as stimulate it, depending on his personality.

All problems of examination, oral or written, are avoided when this kind of assessment is established, but as said before it is very seldom used.

5.7.5 Course Study.

Another kind of continuing assessment very suitable for field courses, laboratory work or even project work but it is almost never used, probably because it places too much responsibility on one person to monitor several students, or requires a working team of staff, that is difficult to get even in schools where most of the staff is on a full time basis.

5.8 SUMMARY

This chapter does not consider, except for some comparisons, the concept about teaching methods and assessment contained in chapter two about each school in particular, or all in general.

Some precedents like the historical development of architectural education, through the 'master' in studio work, and in general education, through the objectives to develop mind, individuality and freedom, have influenced teaching methods in architectural schools.

The objectives of teaching methods are to facilitate and make more efficient the teaching-learning process, that according to Bligh may provide for acquisition of information, development of thoughts or changing attitudes, what can be achieved by duplication or discovery in six different levels, according to Morris. The use of knowledge, that it is more important to acquire it, may be enhanced by learning the characteristics of perception and communication to make possible the conscious transfer of knowledge and use of skills.

Immediately after the Oxford Conference - 1958 - the BASA Conferences - 1961 to 1963 - asked for teaching methods tending more to develop the mind and the learning of principles than of

knowledge itself, and showed interest for automated learning as an answer to the acquisition of information needs.

The schools of architecture, at present, are looking for teaching methods able to solve the problem of excessive information available, provide a general education to design for the total environment with scientific criteria considering the human needs, allowing diversification and specialisation within the profession. This requires new methods to provide a critical thinking, self-consciousness, with a sound technological and scientific basis.

An analysis of teaching methods being used shows that the main increase in new methods is in those for small groups - 4 to 12 students - and based in discussion. The methods may be grouped in several different types: lectures (3 types), discussions (10), stimulating of ideas and simulation (5), individuals (5) with special aids (8) and some special methods like: project, group teaching, team teaching. See figures 33 and 34.

Depending on the objectives of a course or a 'lecture' several methods may be used to achieve the best results, and it is recommended that for any class lasting more than 30 minutes more than one method should be used. The selection of methods must consider besides the educational objectives the possibilities and limitations of teacher, learners and physical facilities.

For assessments are mainly used in schools examinations - specially written - and project work, next coming essays and afterwards, seldom used tutorials and course study.

There is a general consent about the inconveniences of written examinations and the way critics to project work are usually done but, nevertheless, short of a better known method they are used.

Continuing assessment seems to be a kind of assessment desirable

but difficult to achieve in practice.

5.9 CONCLUSION

There is a great development of new teaching methods that are too new to judge the results of its application so far. In the schools studied only some of the new methods are actually being used.

Most of the new methods try more to develop the mind and enhance the learning process than to provide information.

The use of new methods must not necessarily exclude the use of traditional methods, they are normally complementary and the use of them depends on educational objectives and not on the methods themselves. In fact, there seems to be very useful combinations according to some authors.

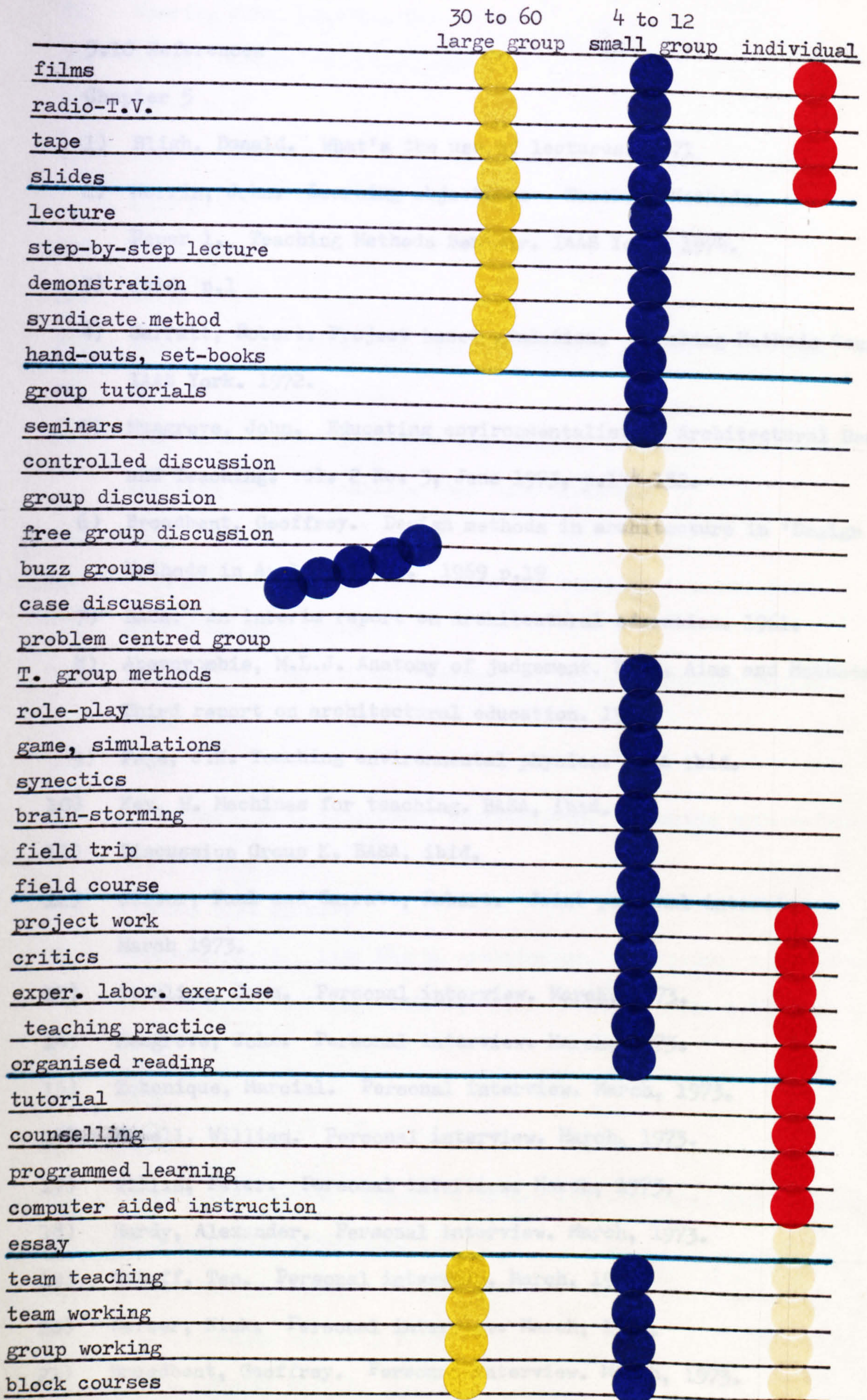
New teaching methods require of teachers new preparation, that so far must be done on a personal level appearing, as a consequence, here and there 'specialists' in one or other method.

Project work is a basic method of architectural education within which several methods are being used to improve its value as an educational tool and the end product - the project - as well.

Small groups, individual learning, team teaching, and personal inter-relations seems to be the preferred methods on architectural education.

Figure 32

Teaching Methods List (61)



5.10 References

Chapter 5

- 1) Bligh, Donald. What's the use of lectures. 1971
- 2) Morris, John. Learning objectives - Teaching Methods. Paper 1. Teaching Methods Seminar. IAAS York. 1974.
- 3) *ibid.* p.1
- 4) Garratt, Robert. Project based education. Teaching Methods Course. IAAS York. 1972.
- 5) Musgrove, John. Educating environmentalists. Architectural Research and Teaching. vol. 2 No. 3, June 1973, p.144-152.
- 6) Broadbent, Geoffrey. Design methods in architecture in 'Design Methods in Architecture'. 1969 p.19
- 7) BASA. An interim report on architectural education. 1961.
- 8) Abercrombie, M.L.J. Anatomy of judgement. BASA, Aims and Methods. Third report on architectural education. 1963.
- 9) Page, J.K. Teaching environmental physics. BASA *ibid.*
- 10) Kay, H. Machines for teaching. BASA, *ibid.*
- 11) Discussion Group K. BASA, *ibid.*
- 12) Oliver, Paul and Garratt, Robert. Joint personal interview. March 1973.
- 13) Starling, John. Personal interview. March, 1973.
- 14) Musgrove, John. Personal interview. March, 1973.
- 15) Echenique, Marcial. Personal interview. March, 1973.
- 16) Howell, William. Personal interview. March, 1973.
- 17) Willis, Peter. Personal interview. March, 1973.
- 18) Hardy, Alexander. Personal interview. March, 1973.
- 19) Matoff, Teo. Personal interview. March, 1973.
- 20) Mercer, Nick. Personal interview. March, 1973.
- 21) Broadbent, Geoffrey. Personal interview. March, 1973.
- 22) Russell, Barry. Personal interview. March, 1973.

- 23) Morris, John. op.cit., p.1
- 24) Bligh, Donald. op.cit., p.30/31
- 25) ibid. p.31
- 26) Abercrombie, M.L.J. Aims and techniques of group teaching.
1970 p.4/5
- 27) ibid. p.29
- 28) ibid. p.5/6
- 29) Bracken, Ian. Lecture in Teaching Methods Seminar. IAAS York, 1974.
- 30) Musgrove, John. op.cit.
- 31) Rae, John. Linked models in the academic project. Paper 4.
Teaching Methods Seminar. IAAS York 1974. p.2
- 32) ibid.
- 33) Newcastle Papers in Architecture and Building Science. p.16
- 34) Musgrove, John. op.cit.
- 35) Duncan, C.J. Educational technology. Teaching Methods Course. IAAS,
York. 1972.
- 36) ibid.
- 37) Carmichael, W.F. Programmed Instructions. Teaching Methods Course.
IAAS, York, 1972.
- 38) Duncan, C.J. op.cit.
- 39) Adleson, Lyall. Lighting in architectural education. Architectural
Research and Teaching. vol. 2, No. 2 November 1972. p.88-95.
- 40) ibid.
- 41) ibid.
- 42) ibid.
- 43) Martin, Sir Leslie. Education around architecture. RIBA Journal.
September 1970 p.398-402.
- 44) Bligh, Donald. op.cit., p.185
- 45) Bligh, Donald. op.cit., p.208
- 46) Bligh, Donald. op.cit., p.223

- 47) Butcher, H.J. Evaluation. Teaching Methods Course. IAAS, York, 1972.
- 48) *ibid.*
- 49) *ibid.*
- 50) Furneaux, Robert. Address to A.A. general meeting 1949.
As quoted in: Gowan, James. Projects Architectural Association
1947-1971. 1973.
- 51) Lowe, Jeremy, B. Project Assessment. Teaching Methods Course.
IAAS, York, 1972.
- 52) Watson, Newton. A method of assessing studio work of architectural
students. RIBA Journal, August 1964. p.358
- 53) *ibid.* p.359
- 54) *ibid.* p.360
- 55) Dunster, David. Crit on Crits. The Architect's Journal. 1 June 1966
p.1366
- 56) Lowe, Jeremy, B. The assessment of student's architectural design
drawings. Architectural Research and Teaching. vol. 1 No. 1,
May 1970 p.37-45
- 57) Watson, Newton. *op.cit.*
- 58) Lowe, Jeremy, B. *op.cit.*
- 59) Lowe, Jeremy, B. *op.cit.*
- 60) Lowe, Jeremy, B. *op.cit.*
- 61) Teaching methods list prepared based on the following lists:
- Macleish
 - Bligh, Donald. reference(1)
 - Warren, Piper, David. Educational Objectives. Teaching
Methods Course. IAAS. York, 1972.
 - Broadbent, Geoffrey. Teaching Methods (paper) 1970.

chapter 6

DESIGN METHODS

6. DESIGN METHODS

Objectives

6.1 Introduction

6.2 Precedents

6.3 Conferences

6.3.1 London 1962

6.3.2 Birmingham 1965

6.3.3 Ulm, Germany 1966-1967

6.3.4 Portsmouth 1967

6.3.5 Manchester 1971

6.3.6 London 1973

6.4 Schools of Architecture

6.4.1 Architectural Association, School of Architecture

6.4.2 University College London, School of Environmental Studies

6.4.3 University of Cambridge, School of Architecture

6.4.4 University of Bristol, Department of Architecture

6.4.5 University of Newcastle, School of Architecture

6.4.6 Leeds Polytechnic, Department of Architectural Studies

6.4.7 Portsmouth Polytechnic, School of Architecture

6.5 Current opinions

6.4 SUMMARY

6.7 CONCLUSION

6. DESIGN METHODS

Objectives: Study the development of design methods and its application in Schools of Architecture.

6.1 Introduction.

In chapter 2, about the schools of architecture, we looked into the use of design methods in particular - appendix 5 - and in general, so that in this chapter we will not insist on the points already made.

The development of design methods and the reasons for that development as well as the current situation in Great Britain, will be the main interest of this chapter, specially considering that it will not be possible, as a part of this work, to try to analyse all design methods known to have been invented.

6.2 Precedents.

Design methods according to many authors are as old as design itself it does not matter how apparently asystematic the design could seem. Christopher Jones in his book 'Design Methods' begins the study of 'traditional methods' of design with the crafts.(1)

Architectural design methods are as old as architecture, and during too many centuries the methods of design were strongly influenced by the presence of styles, or the change of styles, so was architectural education influenced until this century.

"... But by and large, each building was begun as though it were without precedent, as fresh exploration in a new direction. To a limited degree this was the result of his

methodology; the determination of the design by what he called the 'possibilities' of the site, and by local materials and building tradition. But fundamentally the absence of a developing vocabulary or 'style' was due to the conviction that none could or should be imposed which had not been generated by a deep-rooted social impulse. And this may well explain his intense admiration for the work of William Butterfield."(2)

This quotation, of Macleod, mentions the traditional influence of style in design, and he describes this special personal position of Philip Webb as a kind of methodology and the influence of 'social impulse' as generator of design, a fact that, as we shall see later, seems to be one of the essential problems confronted by design methods at present, in the early seventies.

Broadbent in a short review of 'the teaching of architectural design' from 1900 to 1970 places design methods as one phase, together with: Beaux Arts (1900), Bauhaus, Gropius (1920), International Style (1932), Bauhaus, Meyer (1927), Neo-picturesque (1945), Environmental Science (early 1960's), Design Methods (mid 1960's), as we saw before (3), presenting all those periods as different design methods.

Tzonos, in his work about the theory of design (4) established that the emphasis of design has changed from aesthetics to technological, scientific (1955) and social, the scientific emphasis being the reason for the development of design methods, and I should dare to add the social emphasis, although not the only one, of the important reasons why design methods have not achieved better results.

But let us use the words of Alexander to synthetise the reasons of this design methods evolution:

" There has been already one loss of innocence in the recent history of design; the discovery of machine tools to replace hand craftsmen. A century ago William Morris, the first man to see that machines were being misused, also retreated from the loss of innocence. Instead of accepting the machine and trying to understand its implication for design, he went back to making exquisite handmade goods. It was not until Gropius started his Bauhaus that designers came to terms with the machine and the loss of innocence which it entailed.

Now we are at a second watershed. This time the loss of innocence is intellectual rather than mechanical. But again there are people who are trying to pretend that it has not taken place. Enormous resistance to the idea of systematic processes of design is coming from people who recognise correctly the importance of intuition, but then make a fetish of it which excludes the possibility of asking reasonable questions.

It is perhaps worth remembering that the loss of intellectual innocence was put off once before. In the eighteenth century already, certain men, Carlo Lodoli and Francesco Algarotti in Italy and the Abbe Laugier in France, no longer content to accept the formalism of the academies began to have serious doubts about what they were doing, and raised questions of just the sort that have led, a hundred and fifty years later, to the modern revolutionary ideas on form... The doubts and questions were forgotten. Instead, in late eighteenth century Europe, we find evidence of quite another atmosphere developing, in which architects based their formal invention

on the rules provided by a variety of manners and 'styles' like neo-Tudor, neo-classicism, chineiserie, and neo-Gothic. It is possible to see in this course of events a desperate attempt to ward off the insecurity of self-consciousness, and to maintain the security of innocence...

Now it looks as though a second recession from responsibility is taking place. It is not possible today to escape the responsibility of considered action by working within academic styles. But the designer who is unequal to his task, and unwilling to face the difficulty, preserves his innocence in other ways. The modern designer relies more and more on his position as an 'artist', on catchwords, personal idiom, and intuition - for all these relieve him of some of the burden of decision, and make his cognitive problems manageable. Driven on his own resources, unable to cope with the complicated information he is supposed to organise, he hides his incompetence in a frenzy of artistic individuality. As his capacity to invent clearly conceived, well-fitting forms is exhausted further, the emphasis on intuition and individuality only grows wilder.

In this atmosphere the designer's greatest gift, his intuitive ability to organise physical form, is being reduced to nothing by the size of the task in front of him, and mocked by the efforts of the 'artists'. What is worse, in an era that badly needs designers with a synthetic grasp of the organisation of the physical world, the real work has to be done by less gifted engineers, because the designers hide their gift in irresponsible pretension to genius." (5)

This synthesis written in 1963 or 1964, well into the scientific trend of architecture, recognises the 'gift of intuition', the enormous complexity of the designer's task and asks for 'reason' in problem-solving situations.

"It all started innocently enough, when Alexander, Archer, Asimov et al realised that systems, mathematical structures, and operational research may make the traditional task easier or quicker, or may at least explain what went on. It was necessary to emphasise the difficulty of the traditional task (the vastness of the solution space, the 700 million ways of placing 12 cubes into a 2 x 3 x 2 matrix) in order that the little techniques should appear big and general."(6)

Professor Markus makes the point of the 'difficulty of the traditional task' as the innocent start for developing design methods, and suggests that the purpose was to do the task easier, quicker and explain 'what went on'.

Before we leave the precedents we are trying to put forward it may be interesting to look at some definitions of what actually is a design method.

"A procedure covering part or all of the design process and comprising at least one technique related to that procedure. (Being a design process: "The outline sequence of work events from the inception of a design to its completion and evaluation in use."(7)

"... the process of design; the process of inventing physical things which display new physical order, organisation, form, in response to function."(8)

Apparently according to this definition the design method need not be comprehensive, but the design process is an 'invention'

and goes from the 'inception' to 'evaluation in use' a very wide scope indeed.

6.3 Conferences.

Several international conferences have been the proof of the importance and development of teaching methods, allowing for much discussion and getting to know of the research and experiences done.

For the purpose of our work we shall try to follow briefly the Conferences held in Britain with the belief that they may have influenced the development of teaching methods and architectural education more than others realised in other countries, which I recognise might have had direct or indirect influence but, I consider, out of the possibility of this work to follow all over the world.

Several other conferences have, in fact, been held mainly in the States and some in continental Europe, but most of the movement has occurred in Britain.

"The location of the Conference in London is intended to make available to American designers the wealth of European experience, particularly that of the British, in design methods and research. The British have a great tradition of analytical design research effort ...

There have been four previous conferences on design methods in Britain (1962, 1966, 1969 and 1971) (*) and much published material has been produced by the British. Design research and methodology is in a more advanced state in England primarily due to their longer and more extensive governmental-supported experience in both education and application."(9)

(*) The dates are not accurate.

The only exception to this criteria of examining only the Conferences held in Britain will be the Ulm Conference, due to the enormous influence of British experience.

6.3.1 London 1962.

The first conference was held in London in 1962, and there in the opening address Dr Christophersen said:

"... discover because we don't know how to teach a designer..."(10)

and then went on to define the task of the designer as a three stage one: conception, realisation and communication.

In the foreword of the book, by Jones and Thornley, containing the report of that conference, Peter Slann states what must have been the general feeling of the conference, or at least of organisers and editors of the report...

"... design could be taught as a creative process that could be aided by a systematic process of conscious thought, integrating experience with academic knowledge whilst at the same time keeping the imagination free from inhibitions". (11)

The main concern seemed to be how to teach design, and Slann, asks for creativeness, systematic, conscious thought, experience with academic knowledge and free imagination; all of which is easier to put into a phrase than to get, and are today, twelve years later, some of the points important for good design.

The central concern of the conference was to find out about: methods, processes and psychology of the design act.

Thirteen works were presented and discussed, only three of them were of an architectural nature, two of planning and one of education; six were about theory, three of them about

creativity and one about psychology; one about computer use on design²; and the other three about industrial or engineering design.

Only three of the lecturers came from Schools of Architecture, corresponding with the three papers presented, and three came from private organisations not connected with design education.

The papers called to have more repercussion in the future would be those of Alexander and Jones, the first on architecture and the second on industrial design.

The review of the papers presented is magistrally done by Professor J K Page and I cannot avoid taking some of the more general and valuable points as a synthesis.

"... a common point of agreement, systematic design is a three stage process:

- analysis

- synthesis

- evaluation, dissidents support four stages...

... need of a common language...

... the essential human mental problem in systematic design is clearly one of methodical thought structuring processes and methodical thought restructuring processes...

... systematic methods proposed try to get as many alternatives as possible, to avoid the heresy of the single solution...

... the whole process of morphological analysis might be described as planned relearning within the framework of a system which forces divergent thought rather than convergent thought.

... the organisation behind the process of systematic design is vital to the process itself...

... in practice in the building field, architects, services engineering, structural engineering, speak different language and use different design strategies..."(12)

6.3.2 Birmingham 1965.

The College of Advanced Technology, today the University of Aston, organised this second conference under the direction of the Design and Innovation group, with more than 200 participants taking part.

The theme of the conference was distributed in six sub-themes:

- Design methods 3 papers
- Human perspectives 6 papers
- Elements of design 7 papers
- Design techniques 10 papers
- Management and desing 5 papers
- Design research 4 papers; with a total of 32 papers -
of which 8 were by Gregory.

Of the contributors only one was an architect, Geoffrey Broadbent, who presented a paper about creativity; and one was an architectural sociologist. Only two foreigners presented papers.

It was mainly a national conference with emphasis on the design process for industrial and engineering design with little relation to architecture or architectural education, that, nevertheless produced some very valuable works like those of Gregory, Jones and Broadbent, among others.

The relation 'sociology and design' was stated in a

paper of that name as follows:

"Sociology and design can cover two separate kinds of social situation: the situation of designing and the people concerned with it, and planning for it; and the situations for which designs are carried out..."(13)

Gregory in his paper 'Design Science' tries 'to promote the concept of design science' and proposes a definition and aims stating clearly his beliefs that design science is 'interdisciplinary' and must consider 'the social implications of design'. (14)

6.3.3 Ulm, Germany 1966

This conference on design methods has some characteristics that contribute to make it a very special one: important British participation, emphasis on architectural design, establishment of groups and a second stage called 'reporting back' held in 1967.

Twelve works were discussed, five of them on architectural design, and seven on theory but applied to architecture, of which one to psychology and one to creativity.

The most important participants presenting works from England were: Jones, Thornley, Hinton and Broadbent who presented four works.

In 1967 'reporting back' conference, several works were presented as a consequence of application of the methods discussed in 1966, studied in two working groups.

In the report of group two, presented by Denis Broadbank of the London Polytechnic there are the following general conclusions:

"... advantages in emphasising the value of systematic design in Year 3..."

... the programme help to avoid random thinking, discourage piecemeal solutions and students understand process of design decision making...

... students expected too much...

... it may be wise not to set a special programme on this subject but to integrate attitudes and techniques involved into the course structure at all levels..."(15)

There were some expectations about the possibilities of using design methods in schools of architecture, after this first attempt.

6.3.4 Portsmouth 1967.

"In many ways, our expectations were vastly exceeded. Although we had only two months from first inception of the idea to the event itself, the Symposium snowballed on us. Four hundred people turned up, including over fifty delegates from overseas, and as our requirements for accommodation escalated..."(16)

These words of Geoffrey Broadbent, one of those responsible for the 'Symposium', explain clearly the interest existing at that moment, December 1967, for design methods and the report produced as a consequence is a very interesting document.

Seventeen papers were presented, nine related to architectural design, four to theory, one to engineering, two to industrial design, and one about philosophy concerning the language used by designers.

Of the contributors nine were architects, seven of them working on architectural education.

The scope of the conference was so wide that it is difficult to say that there was a specific theme excepting

'design methods'.

"There were Subjective-Objective, Abstract-Real, Value-Fact, Process-Product, and Determinist-Existential polarities which were each discussed at the levels of both philosophy and application."(17)

These words of Ward show, in effect, that the papers presented to the conference covered a wide range and the discussions were about theory as well as about practice.

There was, nevertheless, one central point of interest in the conference 'Christopher Alexander in his absence, who provided the core of the discussion', and the reasons...

"All previous conferences on Design Methods have laid great emphasis upon the essential independence of means and ends, and although architects have made contributions at these gatherings, their presentations have never had very far-reaching influences upon their own profession. Perhaps the one significant exception is Christopher Alexander whose contribution to the Imperial College Conference of a complete Design Method has had a broad if misguided effect in many schools of architecture. ... Perhaps because Alexander is the only architect to have had such an influence in his own field, much of the symposium was devoted to a philosophical and operational analysis of his work."(18)

Another important fact, coinciding with this, is also mentioned specially by Anthony Ward:

"One of the pleasing aspects of the Symposium seemed to be the emergence of a very solid awareness of the contribution that architects can make to the field of

Design Method. This point was very effectively demonstrated by the contingent from the Bartlett School of Architecture, University College, London..."(19)

The increasing participation of architects in this conference, and the one at Ulm, reveals the necessity of finding out some explanation and 'a way' for designing, as well as a departure of the first conference main concern.

The conclusions of such an open symposium could not be an agreement about a method or a process, but something much more general, as Broadbent explains it:

"Our conclusions? That design method is moving into a new field of enquiry. It is no longer adequate to take techniques straight from O.R. (*), or even from Graph Theory, and to foist them onto the designer. They may inhibit him, or they may be quite irrelevant to his purposes. The new approach will be based on a passionate concern for people's needs. It will draw on the resources of philosophy and the psychology of perception to help define these needs (sociology has shown itself almost impotent to deal with this problem, based, as it must be, on the analysis of people's past experience). There is much work to be done, at a personal level too, on the designer himself, what he does, and how he gets his results. It is likely that the new design methods will look remarkably like what the designers thinks he does already, but there will be a difference. They will draw on all the techniques available from O.R., Systems Analysis, Computing and the New Maths. But they will not be dominated by these

(*) O.R. Operational Research

techniques.. The process itself will determine which techniques might seem to be relevant...

... But there are enough people now, in the field, who obviously care about satisfying people's needs to ensure that in the long run there could be a philosophical shift which could make this desirable aim a fashionable one. And design method then could begin to serve its purpose."(20)

The synthesis seems to be the emphasis on peoples need, the use of several techniques, considering the ends and not the means as important, and as well a new kind of designer with self-observation abilities.

6.3.5 Manchester 1971

After Portsmouth four years elapsed before the Design Research Society decided to organise the Manchester conference, its first, having as its theme 'user participation in design'.

The conference gathered 150 participants of very different disciplines, due to the broadness of the subject, and in spite of many opinions suggesting that design methods have died, this was a complete success for participants and organisers, according to the proceedings published as 'Design Participation'.

Twenty six contributors presented papers of which 21 are contained in the mentioned proceedings, seven being foreigners, six from the USA and Canada belonging to Schools of Architecture, and one - Robert Jungk - from Germany.

Of the fourteen contributors from Britain, or Britain based, only four belonged to schools of architecture and one of them was a psychologist, three to institutions of Building Science, Science Technology or Engineering, two to the Design field, one to Economics, one to Fine Art, one to computing

and two others to private work.

Although some of the papers presented examined the possibilities and lack of participation - users participation - on design there were no convincing facts about how this may be achieved.

"However, one regrets the absence of any papers covering actual implementation of even simple non-computer systems for consultation and participation. Of course, the conference organisers can only work with the papers they receive..." (21)

Nigel Cross, editor of the proceedings explains the reasons for choosing the theme of the conference...

"Yet the professional designers in every field have failed in their assumed responsibility to predict and to design-out the adverse side effects to their projects. These harmful side effects can no longer be tolerated, and regarded as inevitable, if we are to survive the future. The increasing amount of protest against a wide range of dubious developments is an indication that many people are now prepared to go on accepting the rising "price of progress"."

A popular response to this conflict has been to call for wider participation in the planning and design processes. There is certainly a need for new approaches to design if we are to arrest the escalating problems of the man-made world, and citizen participation in decision making could possibly provide a necessary orientation. Hence this conference theme of 'user participation in design'."(22)

This call for participation as a way to overcome the problems encountered by designers for acceptance of their end products is not an old approach according to Banham:

" But, the fact is that the wonder ingredient 'participation' hasn't actually been around all that long. If I stand on my own professional skill as an Historian of Contemporary Affairs in the world of Architecture and Design, I only have to go back to 1965, to the Vienna Conference of the International Council of Societies of Industrial Design, to recall a situation in which the concept was still unknown..."(23)

The difficulties of achieving this 'participation' seem to be clearly expressed by his final words...

"... I deduce from this, is that do-it-yourself is the only real design participation. When the resources are in the hands of (here they come again!) 'the people', and 'the people' invent their own rules for the game, then I think design participation is getting somewhere..."(24)

Or expressed in another way by Peter Stringer...

" The layman is very experienced, and often quite good, at planning other parts of his life. What is necessary is that he should be able to exercise that talent at some level of the more technical planning of his environment. It seems to me that this will only be possible with a radical redefinition of what we understand now by designing and planning..."(25)

Certainly this new way of planning and designing to make possible participation has as many technical as social and political

implications as John Lansdown in his review of the proceedings states.

" Except in the paper by Thomas Markus, perhaps the strangest manifestation, and one touched in his closing remarks by Robert Jungk, is the apparent lack of awareness of the political consequences of a movement towards greater participation, particularly in what might be called the macro-design areas. Despite the growth of interest in participation there is still a large and powerful group to whom such ideas are anathema and who would politically oppose further development in this direction."(26)

Robert Jungk in his 'closing comments' believes that participation must be developed now, because in the future the technocrats and political structures will tend to make it impossible.

" In the next thirty years, as we meet mounting crises, the danger is that there will be a very strong argument that we do not have the time for participation. The people themselves may turn to the technocrats and say, "This is too difficult for us, we have to act fast, so do it for us." There is a great danger that we will short-circuit the decision process, and hand it all over to the technocrats.

There are two responses to that, I think. One is that, until the crises become really unbearable, we should try to go on with the participation process. In ten years, it may not be possible to participate, because the political structures will have become so firm, and

so repressive. If we start now, perhaps we shall create a sort of underground of people who will survive the technocratic period. The second response is that we could talk not about participation at the moment of decision but about participation at the moment of idea generation. I think that it is important to get as many ideas as possible - we now have too few ideas. If people get used to contributing ideas to society, then this would make the decision process richer and more varied, it would be possible to draw from a larger pool of possible conceptions."(27)

In his summing up of the conference Professor Page also expressed his belief in the importance of participation, and the need to think in the future, doing something immediately.

"... Clearly we have lots of possibilities of advances in the wide field of user participation in design. Some of the ideas are clearly a long way off in terms of practical feasibility. The black box interactive system is not going to be a thing that everybody is going to set up tomorrow, I suspect. It might be useful therefore, if we were to discuss improved user participation in design on three time scales:

- 1) What might happen now,
- 2) What might happen say ten years ahead,
- 3) What might happen by the year 2000 A.D.

We could, from the ideas of this conference, perhaps identify certain fields where effective application of new ideas is possible now, certain other fields where there is considerable preparatory work to be done, but where one can see some application within a fairly short

period of time. Finally we might review the long term scenarios for user participation, requiring a lot more detailed development."(28)

The Manchester conference introduced to the design scene a new range of possibilities and variables, mainly a possible way - very difficult to accomplish apparently - to solve the difficulties to satisfy the users through participation in the design process itself, which could be done, according to Jungk, not only at the decision making stage but rather in the idea generation stage.

Page and Jungk seem to suggest that this is a task for the future that must be initiated now, that meant 1971, the moment of the Conference.

6.3.6 London 1973.

This conference organised under the co-sponsorship of the Design Research Society of Great Britain and the Design Methods Group of the U.A.S. produced a tremendous amount of works that were distributed well in advance in the form of several hundred of pages very tightly copied, that make it virtually impossible for anyone to assimilate all that, very often, very valuable information.

The theme was presented as follows:

" The conference will investigate the Design Activity by examining five major themes:

1. Design Morphologies: the nature of the design decision-making activity as a whole - philosophical, ideological, behavioural, informational, linguistical, representational, political.
2. Design Processes, Techniques and Algorithms: systems analysis, combinatorial programming, markiv chains,

logosynthesis, graph theory, hierarchical decomposition, simulation, gaming, computer applications, data bases, spatial location and allocation, optimisation, cognitive mapping, socio-economics, statistical analysis, appraisal.

3. Design Objectives: objectives and constraints; value-judgements; the politician, the designer and society; action research, advocacy and participation; the de-mystification of design decision-making.

4. Design case studies: systematic design methods applied in the real world - including the application of a wide variety of specific techniques to schools, hospitals, cities, urban regions, offices, houses, components, toys, chemical engineering plant and communes.

5. Design Education, Professionalism and Management: undergraduate and mid-career education; team-working and professional roles; office management; career structures."⁽²⁹⁾

Quite a wide theme that allowed the presentation of 154 papers of which 62 were British, and only 18 presented by schools of architecture which is a really low percentage.

On sub-theme one, design morphologies, 25 papers were presented, ten British, of which 4 were presented by schools of architecture.

On sub-theme two, design processes, techniques and algorithms, 41 papers, only ten were British and four from schools of architecture. Only ten were about architecture besides those of schools.

On sub-theme three, design objectives, out of 29 papers thirteen were British, and 6 of schools of architecture.

On sub-theme four, design case studies, 46 papers were presented, of which 16 were British and only 4 of schools of architecture. Out of the 46 only eleven were actually about buildings of twenty related, one way or another, to architecture.

On sub-theme five, design education, professionalisms and management, only thirteen papers were presented, all of them British, 8 about engineering education and most of them from the University of Liverpool.

It was obviously a very important conference about design, but architectural participation, number of papers considered, was outclassed by engineering and design specialists. Fourteen of the Schools of Architecture of Britain took part and among those five of the seven are considered in this work: U.C.L., Bristol, Cambridge, Newcastle and Portsmouth.

Not having the final report it is difficult to know the conclusions, therefore we shall look into the expectations of the Conference.

Thomson and Grant of the organising committee, for the American side, speaking about the possible application of design methods wrote:

"Among the specific problem areas in which design methods must be applied are:

Marshalling and organising existing sources of knowledge information for use in environmental design.

Developing practical problem solving techniques for designers to use in handling increased amounts of information and conflict.

Evaluating existing environments and proposed designs in terms of their suitability for human use.

Monitoring the indicators of future problems requiring design solutions.

Designing to minimise energy demand, both on the scale of buildings and the community at large.

Developing means for the designer to accommodate the divergent social values of the users of the designed environment.

Evolving ways and means of transforming present urban structures into those which enhance rather than hinder human activity.

Orientating and educating the public to be concerned and knowledgeable about urban systems and problems."(30)

Very pragmatic approach showing that they are speaking about different design methods for different purposes, and several of them for one purpose if necessary.

" The organisers of the 1967 Portsmouth Symposium (see Ward A., and Broadbent, G., DESIGN METHODS IN ARCHITECTURE, Lund-Humphries, 1969) observed that a characteristic of the development of architectural design methods up to that time had been a heavy dependence on borrowing methods from other fields, and that perhaps that symposium should mark a turning point toward the emergence of new methods and approach generated from within the field, and aimed at the problems unique to architectural design. Perhaps the coming DRS/DMG conference should aim at being a turn from the first generation in design methods toward the second generation, and from a basically academic and theoretic orientation towards application in practice."(31)

Application in practice being one of the aims of the conference mentioned in this 'stimulus statement' by one of the organisers. He is referring to Rittel's two generations of designers.(32)

"Depending upon one's job and view of the world it is now back to the individual to undertake the interesting or the arduous task of linking together bits of computer application to produce adequate designs.

To go further in computer application needs more understanding of the activity of design, particularly by the individual...

I think we need some careful reviews of what is actually being achieved and used within the most advanced regions of technological design in the three working sectors already noted: individual activity, computation, and the operation of groups. These would need to be carried through to provide some kind of comparability and to reveal the maximum of useful knowledge about design activity as such. The emphasis should be on practice and the possibilities of practical application."(33)

Again, the emphasis on application and on practice, and before that the recognition of the limited use of computer application unless we get 'more understanding of the activity of design'.

" It seems to us that design methods are better applied to the design of software than hardware. By software we mean such things as governments, institutions, laws, rules, education systems, packaged holidays, careers, information systems and the like. We see design methods

as the means by which imagination can be applied to all these barren areas of life from which it seems to be so absent... So we propose a Software Design Workshop at the conference..."(34)

One of the most experienced specialists in design, as Professor Jones, propose an application during the conference and suggest that software may be better designed with design methods than hardware, being, according to his definition, architecture hardware.

" No doubt the underlying theme of this conference will be that progress in design research will emancipate users of the environment, give them better solutions, more control in use, and release the designer from the onerous duty of making value judgements on behalf of the clients whom he does not know, with whom he shares no values and amongst whom he will never live. Participation with a vengeance. To support these views we will hear about, and see, demonstrations of optimisation techniques in which goals are user-selected and, no doubt, user monitored; we shall observe computer-aided design techniques which make the process 'transparent' to all; we shall see architecture machines which sense what is needed without the intervention of human brain or hand, and execute it; and we shall certainly be asked to participate in design games of a great variety. The games people play. Just who are the design researchers kidding?

... I would add that what researchers are currently engaged on is positively dangerous; they are adding to

the tools of repression, by producing powerful simulations and systems which merely enable the manipulation of communities to take place more efficiently."(35)

Professor Markus brings very strongly into question the problems of politics and ethics of design, blaming the orientation of the research being done, and asking 'has anyone even proposed the outline of a political theory of design?' underlining the problems of relation designers - employers, land ownership, tenancy terms that would certainly influence the design.

The main expectations seem to be an orientation towards practice and application, the needs and problems of participation in the design process of the people with the designer, and the transparance or clarification of the process.

This very brief study of the conferences held in Britain, and the one of Ulm, show a tremendous amount of methods for designing that even to classify them, not to mention the possibility to list them all, seems difficult, although some authors like Jones have done that with some of them.

6.4 Schools of Architecture.

With that kind of development of desing methods it is very important to see what is happening in the schools of architecture, and for that I would like to quote the opinions I received during my visits to the schools.

6.4.1 Architectural Association, School of Architecture.

"... no design methods are applied..."

... Design methods is an intellectual activity not a real method, it cannot handle psychological and

social problems...

It uses only second hand narrowed information...

... the use of a computer in the A.A. is orientated to find what's the use in architecture and in schools, but never intended to design... it is purely a calculator..."(36)

6.4.2 University College London, School of Environmental Studies.

"... a game that involved many people - 1960 to 1966 - but failed to produce a definitive method... it could not work because of the inductive approach...

... and we are still in the process of trying to evolve ideas about what really happens when a person designs...

... cannot apply test of inductive approach and analytical techniques until first steps are taken...

... it is not possible to optimise more than one factor of the too complex environment, not even a computer can do that...

... the step of creative design is a part of data and the analysis-synthesis evaluation process...

... some schools are still trying to put together research in studio work and design methods...

... the design methods of the 60s did not take account of the 'time' factor..." (37)

6.4.3 University of Cambridge, School of Architecture.

"... it is now 'old-fashioned'...

... the intuitive approach is good to go to the heart of the problem...

... the student is now less influenced by heroes and magazines..."(38)

"... C.L.U.B.F.S., has done automatic design only of very small houses...

... computer is used to develop models of problems, to produce descriptions of what a problem is, not to design because this implies value-judgement...

... in urban problems is possible set a problem and manipulate variables to observe changes in the system...

... even the RIBA plan of work is far too complex..."(39)

6.4.4 University of Bristol, Department of Architecture.

"... at Bristol there are lectures about design methods, and much research is going on specially about the use of computers...

... members of the staff are currently involved..."(40)

"... students are informed about design methods...

... most of the staff believes that the exercise is wrong...

... systematic processes are useful and valid for the evaluation of work but not for the generation of ideas..."(41)

"... Of this time, some 6 hours a week is allocated to Design Mathematics, which is seen as one of the most important design tools of the future and is tackled as a two-part subject."(42)

6.4.5 University of Newcastle, School of Architecture.

"... resistance from studio masters in the school, but Building Science is doing research about it...

... team design is a good way, every significant decision must be taken with all people involved present...

... rational design process, computer aided enables a number of alternatives to be assessed...

... We are short of data for the computer, specially

input about inter-relations...

... the creative leap is helped by the design methods...

... human behaviour is the field where research is most needed..."(43)

"... it is useful to tell the students about design methods, attracts only weak students...

... no good architect uses design methods, no good architecture has even been produced with it..."(44)

6.4.6 Leeds Polytechnic, Department of SarchtecturaalStudies.

"... they are not used in the School...

... they are good only for bad students..."(45)

6.4.7 Portsmouth Polytechnic, School of Architecture.

"... students are taught about design methods and specific techniques of design, but students are free to use them or not..."(46)

"... students don't follow a systematic design method, neither are compelled to...

... the process of design is a craft process...

... the way of viewing life and the world, come as a part of the design process...

... alternatives have resulted in a reduction of what it is possible to do with design methods...

... there is a danger that too deterministic things can take over the idea..."(47)

" This design process has been developed for the use of students in the Portsmouth School of Architecture. It is one of some half dozen which are presented to them (the others include Alexander, Archer, Jones, and Indeterminate Process for use in changing conditions, and a process which taps the concepts which people hold, on

various aspects of their building by means of
Semantic Differential)..."(48)

As it is very easy to see, design methods are not being used in the Schools, although in some of them they are 'presented' to the students who are free to use them or not as the staff are free to suggest, but not impose, their use or not.

This general opinion received in 1973 seems to differ, nevertheless, to what happened during the middle 60s - 1965 to 1967 - when because mainly of Alexander's influence his method was used in several schools with some simplification to put it in the time scale of a school project.

Of the schools visited in at least four something is being done about design methods - Bristol, Newcastle, Portsmouth and Cambridge - and in two of those the use of a computer is considered a good aid, if not a method for designing - Bristol and Cambridge. Newcastle is trying to develop, and using, a design method based on team working. Portsmouth has considerable more lecture time devoted to the subject than most of the schools in the country.

6.5 Current opinions.

It seems useful to start this review of current opinions about design methods, that will include mainly those related to architectural education, being the design method field, as we have seen, so wide open and not always related to architecture or architectural education, with a remark of Broadbent, back in 1967, that is still valid today.

" Systematic design methods, so far, have tended to complexity and abstraction to such an extent that few practising architects believe that they have much validity in the 'real' situation. These notes are intended to show how

design methods could be applied in the office or, for that matter, in the school of architecture, so as to result, finally, in the actual design of real buildings."(49)

Application of design method to the design of actual building seems to be one of the critical weaknesses of all this development.

Even with the great varieties of design methods existing some attempts have been made to classify them. Nigel Cross in 1970 published (50)an article analysing the difficulties to apply methods in architectural education, pointing as the majors: usable design methods seem to be few in number, design methods have been applied indiscriminately, the methods themselves have not been understood; and classifying 20 methods showing relevance to a six-part sequence. Figure 35, in which we can see that no one of these methods is useful in more than two of the six sequences.

In a report specially prepared for the Design Methods Group in 1971, R M Crofton finds only nine methods of 'generalised type' useful for architectural design.

"These methods are aids to the solution of problems and any comprehensive survey of Design Methods would include them, but the greater claims of the more generalised methods and their domination of architectural debate made them the obvious subject of this study". (51)

In Figure 36 we can see the very interesting graphic he developed showing when each one can be applied in a sequence considering the RIBA Plan of Work. Of the nine methods only those which are merely a technique may be applied in all stages - brainstorming and synectics - and only two 'procedures' may be applied from stage A to F - the morphological approach and analysis of interconnected decision areas.

The conclusions of his work are among others:

" The author expresses reservation about the methods studied, finding that in some cases the elaborate theoretical justification of Methods, possibly occasioned by academic and/or competitive influences seems to have made some methods rigid and inflexible and these, ironically, therefore, are often less applicable than those that have looser theoretical bases..."(52)

"... First there has been no convincing demonstration that Design Methods result in 'better' designs, even assuming that the practising architect has a clear idea of what is better for him..."

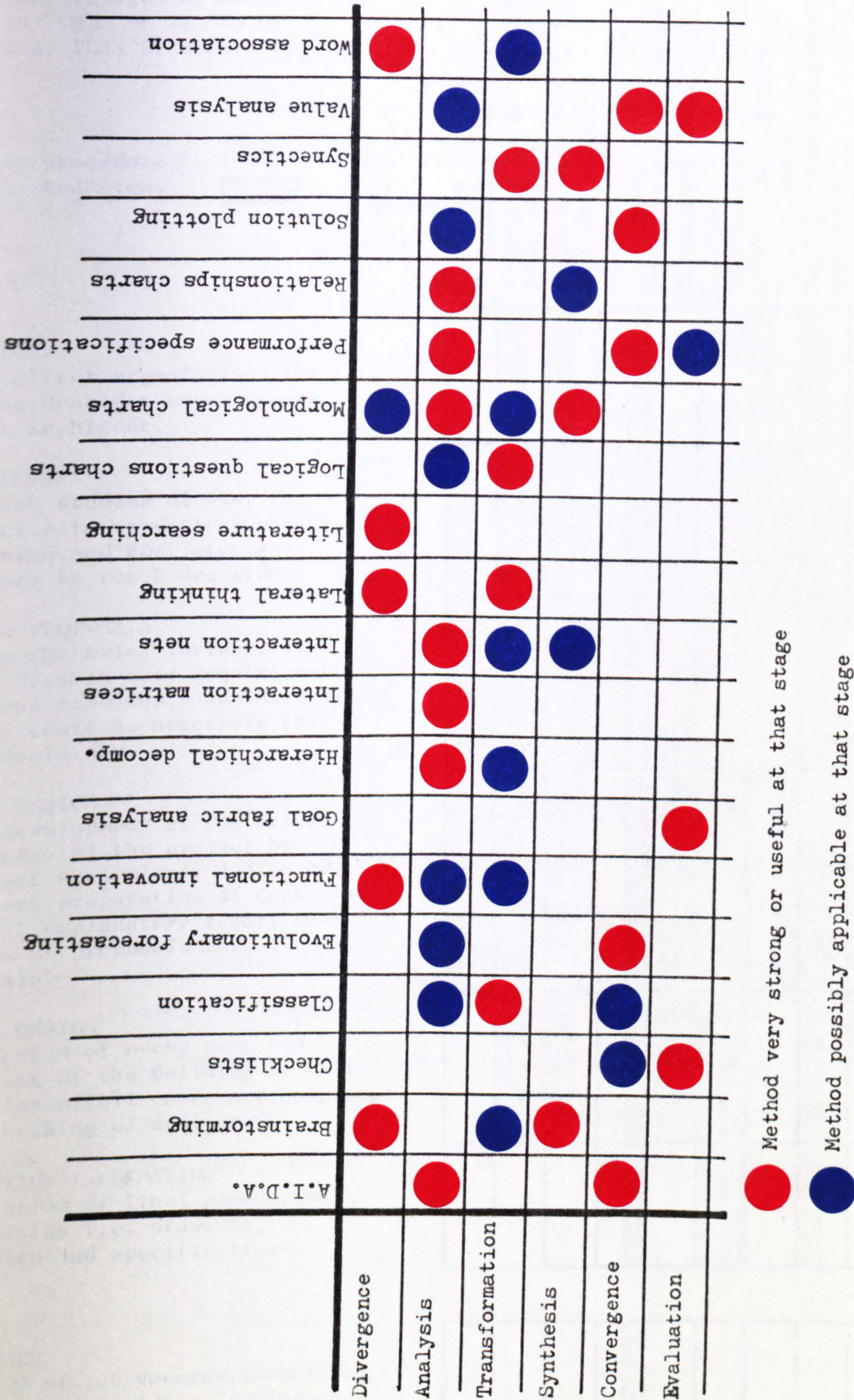
... Further, Design Methods for most architects probably mean more not less work, at least in the short term, while designers get used to new ways of working...

Finally and this cannot be overstressed, the extensive testing of Design Methods in practise by disinterested parties is needed. Most architects will not be impressed by theoretical virtuosity. Design Methods will gain currency in the profession only if practitioners are convinced that they offer real advantages to the designer. Evidence that they do is, at present, lacking". (53)

Although this report is related to the profession the reasons for not using design methods in offices seem to be equally valuable for architectural education: complexity, no evidence of better results.

During the Education Year - 1970 - declared by the RIBA, some very useful discussions were held and design methods were not out then:

"Design methodology has been developing very steadily over the past two decades. It became clear that engineering designers, architects, industrial designers, graphic designers and so on might have different products, but they employed essentially



● Method very strong or useful at that stage

● Method possibly applicable at that stage

CLASSIFICATION CHART OF DESIGN METHODS SHOWING RELEVANCE TO SIX-PART SEQUENCE BY NIGEL CROSS

Best Copy
Available

the same methodology...

The emergence of whole ranges of analytical disciplines gives to the design process a precision and an insight which were inconceivable in the early 1950s...

In design or architectural education the aim of the programme should be to increase the student's ability in the design process. ... the widening of design to include the total environment is discernible in the various courses mentioned above, but it also reflects a general social concern. The reaction to this is seen in schools, not only in terms of curricular policies discussed above, but also in the creation of cross-disciplinary faculties, in changes in staff structure, and in the US by the appointment of social scientists as leaders of some schools." (54)

John Lloyd is mentioned there probably two of the main reasons for the difficulties encountered by design methods to be used in architecture: the use of the same methodology of other designers, and the enlargement of the field of design.

During 1971 DMG Newsletter (*) published a series of interviews with some outstanding names of design methods asking for the state and the future of design methodology.

" There are at least four areas which seem important for future work in design methodology: first, to improve acceptance of design methodology in its various aspects; second, to overcome the shortage of empirical observations upon and rational explanation of individual designer work strategies; third, to extend the little that is known about small group behaviour in design; and fourth, to get people at large more involved in design in a conscious manner." (55)

(*) D.M.G. Design Methods Group.

Behaviour - designer and group - and participation seems to be the main concerns pointed out by Gregory in this quotation.

"... The mistake, I think, has lain in trying to use models from these new disciplines to describe generalised design processes, which - it was hoped - could be used in all fields of designing...

... It seems to have been much less successful (referring to design methodology) so far in highly complex situations, such as the design of buildings in which many systems, human, environmental, structural and the like, interact..

My view is that future work in design methodology should center on complex systems in which variables of many different kinds interact. In order to do this it will have to move beyond the rational and empirical processes which I have outlined above, to a more holistic, systems approach..."(56)

Broadbent suggests the need for methods specific to architecture and the need for more 'holistic' systems.

"... "Design Participation". I mention this because the list of participators there includes many of the people whose work I think points to the right direction for the future, namely that of integrating design teaching with politics, social work, and other activities which affect the 'quality of life'. "(57)

Again, in this case, Christopher Jones searches for a broader approach to design asking for integration of politics in design teaching, a point that Markus mentioned in his 'stimulus statement' for the 1973 conference.

" The main purpose of design methodology seems to be to clarify the nature of the design activity and of the structure of its problems. This role of design methodology seems to me to be

much more important than its practical use in dealing with concrete problems.

... If you are asking for examples from architectural design I wouldn't know of any building that has been done discernibly better than buildings done in the conventional way ...

The reason for this may be that it takes considerable time before such methods find their practical application within the professions. Another reason may be that the present state of the art in methodology is such that it has little economising effect on design work - in fact it makes it more involved and time consuming - and you can get away without applying it in most design fields.

... There should be two areas of emphasis in further work in design methodology. One is the further development and refinement of the argumentative design process, and the study of the logic of the reasoning of the designer...(58)

Horst Rittel opposes the view that application is important, and points out two of the conditions he considers as basic to the second generation of design methods as areas of further development.

"... Obviously the intent is to try and create well-defined procedures which will enable people to design better buildings. The odd thing is that in the vast proportion of the literature people have lost sight completely of this objective. For instance, the people who are messing around with the computers have obviously become interested in some kind of toy. They have very definitely lost the motivation for making better buildings. I feel that a terrific part of it has become an intellectual game ...

... All of that is completely disturbed by the pretentiousness,

insistence and complicatedness of Computer Graphics and all the allied techniques. So that my final objection to that and other types of methodology is that they actually prevent you from being in the right state of mind to do the design, quite apart now from the question of whether they help in a sort of technical sense, which as I said, I don't think they do.

... Well, as far as I am concerned, the whole thing has been a painful and drawn-out misunderstanding. My situation in 1958 was very simple. I wanted to be able to create beautiful buildings. I didn't know how, and nothing that I was learning in school was helping me. Yet at the same time, I had a very clear sense of the difference - I knew what beautiful buildings were - and as far as I was concerned, not only was I incapable of making them, but so were most of the architects now practicing ...

... Whenever something doesn't help me make better designs, I get rid of it, fast. What I am most anxious to convey to you, and to the people who read this interview, is the idea that if that is your motive, then what you do will always make sense, and you get somewhere - but that if your motive ever degenerates, and has only to do with method, for its own sake, then it will become dessicated, dried up, and senseless." (59)

Alexander makes strongly the point of application of design and concretely to buildings, showing great disillusion about 'the loss of sight' of objectives on design methods which are not, according to him, the methods themselves, but to do 'better buildings'. Important words coming from the architect who had more influence during the 60s in design methods in architecture.

Broadbent in a book review in 1972 mentions this statement

from Alexander, commenting on the reaction to mathematics in design:

" The mathematics of design has had a bad press lately, culminating in Christopher Alexander's distressed and distressing statement that the whole design method, as developed from his 'Note on the Synthesis of Form' has been a painful and drawn out misunderstanding. Christopher Jones in his otherwise comprehensive book on Design Methods excluded mathematical techniques on the grounds that they could be used 'only for optimising'..."(60)

In my view the statement of Alexander was much broader and deeper than a mere reference to his method, but involved everybody working on design methods without giving first priority to the objectives of better buildings as he clearly puts it. Concerning the bad press of mathematics on design that has been so for the last years; there seems to be a reaction against the automatisisation of design, as a consequence of the emphasis on social and environmental facts.

Amos Rapoport in a survey about 'man-environment studies' has found some interesting concepts related to design.

" Designers have taken two positions either they have argued that the organisation of space proceeds on the basis of certain absolute, largely aesthetic needs which are self-evident to the designer, or they have taken a very mechanistic 'functionalistic' approach. Much of the work in this problem has shown that:

- a) the determinants are complex, largely sociocultural, and
- b) they are variable between cultures....

... Finally there is another important participation in the design process - the public. Designers have neglected, forgotten, and indeed, tried to eliminate the effects of this particular participant and have tried to create a totally

designed environment. The notion that people desire participation in, and control over, their environment rather than merely adapt passively to it is receiving more attention. Open-endedness and indeterminacy in design is a recent idea and is increasingly being studied."(61)

Participation and the position of the designer are again mentioned here. It is interesting to note, as well, that in the concept of 'open-endedness and indeterminacy' Rapoport coincides with John Musgrove, when he insists on the need to consider the time factor in design, referring to the use of them in the future.

Somewhat in the same line of thought is this very brief quotation of Professor Page:

"... one must attempt to design for the future on the basis of the past, in the present..." (62)

The answer may be in this 'indeterminacy' of Rapoport and the 'building types' of Musgrove.

About the position of the designer Tzonos says:

"... Thus the designer needs to develop an extremely subtle sense of balance of the relative importance of these four aspects in each specific design problem."(63)

He is referring to the aesthetical, technological, scientific and social aspects, to which I would dare to add the total environment aspect and the need for a self-insight of the designer during the whole process.

Like Alexander, Tzonos, who observed the evolution in British schools, refers to the complexity of methods and the position of students using methods for building design.

" One could, however, raise the question whether it is basically right to try to overtake the increasing complexity of the problems by increasing the complexity of the methods.

Where do the practical limits to this competition lie?" (64)

" The incomplete data, perplexity because of his lack of control over the development of the solution, the splitting up of an intellectual process which is by its very nature an integral one, weaken the enthusiasm he may once had. This is easy and natural to explain: the student is interested in the design of the building and not in the design of its sections or elevations. One section, one floor plan, one site plan and a few 'interiors' do not constitute the building." (65)

Some more serious critiques to design methods have emerged lately about the nature of the procedure itself.

"... Briefly, it was assumed that rational design would proceed characteristically by decomposing the problem into its elements, adding an information content to each of the elements, then 'synthetising' a solution by some more or less rational procedure which may or may not include an 'intuitive leap'. This is the analysis-synthesis model of design, which is widely and on the whole uncritically accepted...

... The analysis-synthesis model is, however, fallacious and unlife-like at a very fundamental level. In real life, complex problems are solved by having some pre-existing theoretical or quasi-theoretical cognitive map, which acts as a kind of plan for finding a route through indifferentiated problem material... in architecture, where no rules or rationality have yet been successfully proposed, it more often than not takes the form of a previous example of a built solution to a particular problem...

... In real life architecture, the essential sequence is more like cognitive/map/conjectural solution/analytic testing,

followed by a process of hardware finalisation. In other words, the real life situation reverses the research assumption of the analysis-synthesis mode, and makes the role of analysis and testing and proofing out of conjectural solutions which may be arrived by a number of means". (66)

Bill Hillier is definitely showing a different way, that in some stage must assume that 'a previous example' was good enough or analyse it thoroughly, what it may prove so difficult as to find a new form. In the same article he analyses very well some aspects of design, its relation with environment and research:

" It is not hard to show that it is impossible to optimise mechanistically across all factors involved in design, particularly the human factors, and indeed that there are normally contradictions between them which could not only be resolved by value judgements; also that computers had to be programmed with values and assumptions as well as data, and that design would remain, however far as quantification was developed, a 'compromise based on insufficient evidence'.

... The result was that a considerable research effort did not lead to significant improvements in the performance of buildings or in the built environment generally. This should not surprise us. In building whether you look at it from a research point of view, most factors tend to affect most other factors...

... This led to the very important idea that 'design' decisions and 'environmental' decisions in building design are virtually inseparable, and that it was only by defining itself in relation to the problem of the whole building that the science itself could develop in an effective way. Above all, it began to focus on the needs for integrative theories and

concepts of which the building as a climate modifier was a pioneer example...

... Research thus became more or less permanent component of a continuing process rather than an ivory tower activity. What is more it potentially transforms the process as well as the product." (67)

Hillier points out the limitations presented by some kind of data - the human - to be quantified, the constant relation building-environment, and that research 'is a permanent component of a continuing process' - the design process - opinion that opposes that of Rittel who says that the design process should be considered independent of application.

The concept of the building as climate modifier is part of the four functions model developed by Hillier, Musgrove and O'Sullivan:

" In brief a building is a climate modifier, a behaviour modifier, a cultural modifier, and a resource modifier, the notion of 'modification' containing both the functional and displacement aspects.

Each of these functions can be conceived of separately as a people-thing relationship and each, in contrast to research orientated towards the 'atom of environment' deals with a holistic set which constitutes one way of looking at a design problem...

It is notable, by the way, that the emphases implicit in this model shift architectural research right from the study of procedures of design and into the study of buildings and their occupants, as well as away from 'results' and towards theory. We are beginning to look again at ends rather than means." (68)

This model seems to be one of the interesting contributions to the field of research and design in architecture, and includes some of the concepts mentioned by others as important, namely: participation, social concern, relation with environment as a whole, more holistic procedures, and the need to look for ends, being in this case the end the 'building' - as Alexander wants - and the human.

Coming back for a moment to process, I would like to quote a conclusion presented by Steadman, in his 'stimulus statement' for the 1973 London conference:

" Many writers on design methods have identified a typically cyclic character to the process of design. Authors may differ as to the exact number and names they give to the various stages in this cycle, but all ultimately agree that the process consist centrally of alternating phases of invention and criticism..."(69)

This cyclic charactersitic of the process, agreed by many as Steadman states, and the existence of phases of 'invention' and 'criticism' recognises the 'creative leap' and the possibility of thorough analysis by different techniques, even the computer.

The use of computers in design generally, and in design methods have been widely discussed and, therefore, I would like to mention some of the latest conclusions about it.

" Modelling of the architectural design activity has become, over the last few years, a major occupation. It will continue to be a less than totally successful business while a single model attempts to combine the complexity of one man's concern of the activity with a desire for universal validity, this completeness/understandability conflict requires resolution in the modelling of any system." (70)

" Relating the attributes on this list to the steps in the design process, it is immediately apparent that the potential of the computer lies mainly in analysis and appraisal. This being so, the cyclic process of design will involve man-machine interaction and it is in the area of this interface that a great deal of hardware and software development is being concentrated...(71)

" The goals of a computer aided development plan can now be stated as the production of a suite of appraisal programmes for each stage in the design morphology. The goals are seen as making possible the achievement of the design objective - a costly performance balance... which optimises the return on investment. As to the ideals, the four necessary and sufficient conditions - a wealth of alternative schemes, and understanding of how they perform, an opportunity for the resolution of conflicting needs and an opportunity to conceptualise innovation - are, at least, not contravened.

The challenge presented by the computer is perhaps the most exciting one yet faced by the profession. If we truly seek the ideal state, let's get going on the goals." (72)

According to Maver then the computer application lies 'mainly in analysis and appraisal' within the 'cyclic process'.

In 1972 in the York Conference about the use of computers, Bruce Archer summarised his opinions saying:

" It is suggested that the future development of computer-aided architectural design should be constrained under four conditions in descending order of priorities. Firstly... the profession should apply ethical controls to ensure that under no conditions will CAAD be allowed to reduce the amount of

time, money and effort which an architect is able to spend in dealing with the qualitative aspects of his designs... Secondly, (CAAD package should include) means for ensuring that the architect has adequate time, information and control opportunities for handling the qualitative aspects... Thirdly, those... supporting... research should give a high priority to studies calculated to raise the level of understanding of the property/attribute relationship... Fourthly ... a proportion of the effort devoted to CAAD should be directed towards the computer modelling of the property/attribute relationship." (73)

This statement seems to reveal a defensive position of the profession to CAAD, stressing the importance of qualitative aspects of design, and of more research about the property/attribute relationship.

More recently, in 1973, John Carter has done a study about the use of computers in the profession, and although not related directly to architectural education the use of computers in design is a common activity to schools and offices, when used.

" Carter concludes that we should now make an effort to identify the real problems which computers might help to solve. He further suggests that human relations should take precedence over administrative convenience, and that our objective as a profession should be to offer a higher level of creative understanding as distinct from trying to be more efficient than the computer. This means giving considerable thought to the essential qualities of architectural design, which computers may be unable to reproduce let alone improve on, if we are to make better use of machines in the future."(74)

In this opinion it seems not to be doubt that the computer must be used in the problems in 'which computers might help' and at the

same time consider that the 'profession' should 'offer a higher level of creative understanding'.

In all these opinions it is clear enough that computers don't design but help, with analysis and appraisal, within a cyclic process in which 'invention' or creativity are important.

Let us finish this review of current opinions with a more optimistic note ...

" Asked some time ago to write a 'state of the art' piece on design methods for *Perspecta* 15, I was tempted to reply: ' there is nothing to say; design method is dead'. It certainly seemed so at the time, specially as some of its major exponents had withdrawn the field, stating fairly potent reasons for doing so." (75)

Broadbent, architect and one of the major exponents himself, started a paper with those words in 1973, and after explaining his four 'modes of designing' - pragmatic, ironic, analogic, and canonic - his belief in the 'four function model' already mentioned, and the experience of the 'taller de arquitectura de Barcelona', as he puts it, he ends up saying:

" ... Design methods therefore is far from dead. It is alive, well, living in Barcelona, and providing some of the most beautiful, habitable and economical architecture to be had anywhere." (76)

Independently of the fact that there will never be a general consent of how good or bad an architecture is, there seems not to be doubt that design methods are far from dead even if they are not being entirely applied, and of the fact that most of them are apparently not quite suitable for architectural problems, especially considering - sufficiently - the human, social and environmental implications.

6.6 SUMMARY

Design methods - as opposed to systematic design methods - have existed a long time, being the beginning in the crafts, according to some authors, developing towards the design by drawing - Jones - later.

During many years the tight relation between theory, history and design with the influences of styles - understood not only as formal appearance - made design in architecture a rather dependent subject. With the advent of the modern movement, design moved away from styles and came closer to technology and science.

The scientific emphasis on architecture during the 50s, the Oxford Conference on architectural education with its influence in research, produced a search for systematic design that at present is being modified by the social, environmental concern on architecture.

Successive Conferences on design methods - London 1962, Birmingham 1965, Portsmouth 1967, Manchester 1971, London 1973 - show the development on design methods and the fact that with the probable exceptions of the Ulm Conference - 1966 - and Portsmouth 1967, and Manchester 1971 the outstanding points of them were not architectural design, what seems to have particular problems when the moment for applying methods comes.

In the Schools of Architecture in Britain, in spite of the tremendous number of methods in existence, design methods are not applied although in some they are explained and presented to the students. During the middle 60s - 1965 to 1967 - they were more used because of the influence of Alexander, currently the use of computers in some stages of design - analysis - is common to several schools.

Now there seems to be a trend to work more in application of design methods and less in theory.

The areas of agreement around design methods may be summarised as being: it is a cyclic process in which creativity and invention are alternated with analysis and evaluation; it is necessary to do more research about the human, social and environmental variables and their inter-relations to incorporate them in its real values to the design process; it is important to develop special methods for architecture considering the complex relations building-environment; the only way to convince about the usefulness of design methods is to use them and produce better buildings.

6.7 CONCLUSION

Systematic design methods have developed enormously in the last 15 years specially in theory and industrial design.

Architecture needs to develop or to adapt methods to architectural problems that must consider in a very special way the human - individual - and group - behaviour as much as the environment.

Very few of the methods developed so far cover all stages of the design process in architecture, and therefore they are not used.

Methods tend to be far more complicated and time consuming than what is normally expected to be a tool for design.

The lack of application, with success of design methods in architecture has greatly influenced its respectability.

To apply design methods in architecture it is necessary to use more than one, in the different stages and the need to consider at the same time: creativity, participation, quantitative-mathematical or not - qualitative - human - analysis and requirements, consideration of different alternatives or models - by computer or not - seems to call for a design team specially organised to cope with the task of designing in co-operation.

The principle to study and clarify the process is valid, and the need to find ways to apply it to some stages or to the whole process of design undoubtedly exist. The important thing is to keep in mind that the end is to design architecture and not the process and that as well as those who must suffer our design, architects are ordinary human beings unable to use esoteric methods.

REFERENCES

CHAPTER 6

- 1) Jones, Christopher. Design Methods. 1970. p.17-24.
- 2) Macleod, Robert. Style and Society. 1971. p.51
- 3) Broadbent, Geoffrey. Teaching design (Paper) p.1/2
- 4) Tzonos, Panos. The development of the theory of design since the beginning of the modern movement, from the point of view of our days. 1972.
- 5) Alexander, Christopher. Notes on the synthesis of the form. 1964. p. 9-11
- 6) Markus, Thokas, A. Design for revolution or reaction. D.M.G., D.R.S. Journal. Design Research and methods. vol. 7 No. 2 April-June 1973 p.89
- 7) Crofton, R.M. A design methods study. For the Design Methods Group. Royal Institute of British Architects. 1971. p.9/10
- 8) Alexander, Christopher. op.cit., p.1
- 9) Thomson, Thomas, L. and Grant, Donald P. The D.M.G. and the Design Activity Conference. D.M.G., D.R.S. Journal. Design Research and Methods. vol. 7 No. 2 April-June 1973. p.87
- 10) Christophersen, D.G. Discovering designers. Opening Address. In Jones, Ch. and Thornley D.G. Conference on Design Methods. 1963.
- 11) Slann, Peter, A. Foreword, ibid.
- 12) Page, J.K. ibid.

- 13) Penny, A.M. Sociology and Design. The Design Method. Ed. Gregory, Sidney. 1966.
- 14) Gregory, Sidney, Design Science. The Design Method. Ed. Gregory, Sidney. 1966.
- 15) Broadbank, Denis. Ulm reporting back. (A report) 1967.
- 16) Broadbent, Geoffrey and Ward, Anthony. Design Methods in architecture. 1969. p.9
- 17) Ward, Anthony. *ibid.*, p.11
- 18) *ibid.* p.11
- 19) *ibid.* p.11
- 20) Broadbent Geoffrey. *ibid.*, p.20
- 21) Landsown, John. Design Participation. Book Review. D.M.G., D.R.S. Journal. Design Research and Methods. Vol. 7 No. 2 April-June 1973. p.161
- 22) Cross, Nigel. Here comes everyman. Design Participation Ed. Cross, Nigel. p.11
- 23) Banham, Reyner. Alternative networks for the alternative culture? in Cross, Nigel, *op.cit.*, p.15
- 24) *ibid.* p.18
- 25) Stringer, Peter. A rationale for participation. In Cross, Nigel. *op.cit.*, p.29
- 26) Landdown, John. *op.cit.*, p.161
- 27) Jungk, Robert. Closing Comments. In Cross, Nigel, *op.cit.*, p.121
- 28) Page, John. Planning and protest. In Cross, Nigel. *op.cit.*, p.119
- 29) Design Activity International Conference. Conference Themes. Progress Report. April, 1973.
- 30) Thomson, Thomas L and Grant, Donald P. *op.cit.*
- 31) Grant, Donald P. The Second Generation and beyond. Stimulus Statement. The Design Activity International Conference. 1973. August 29-31.

- 32) Rittel, Horst, W.J. The D.M.G. 5th Anniversary Report.
D.M.G. Occasional Paper No. 1. January 1972. p.5-10
- 33) Gregory, Sidney. A need for understanding and cross-fertilisation.
Stimulus Statement. The Design Activity International Conference.
1973. August 29-31.
- 34) Jones, Christopher and Crickmayk Christopher. Software Design
Workshop. *ibid.*
- 35) Markus Thomas. A Design for revolution or reaction. *ibid.*
- 36) Starling, John. Personal interview. March 1973.
- 37) Musgrove, John. Personal interview. March 1973.
- 38) Howell, William. Personal interview. March 1973.
- 39) Echenique, Marcial. Personal interiiew. March 1973.
- 40) Farmer, Ben. Personal interview. March 1973.
- 41) Silverman, Richard. Personal interview. March 1973.
- 42) Department of Architecture Bristol. A booklet. Degree Courses p.7
- 43) Hardy, Alexander. Personal interview. March 1973.
- 44) Willis, Peter. Personal interview. March 1973.
- 45) Henkins, Marshall. Personal interview. June 1973.
- 46) Salim, Ricardo. Personal interview. March 1973.
- 47) Russel, Barry. Personal interview. March 1973.
- 48) Broadbent, Geoffrey. A design process. (paper)
- 49) Broadbent, Geoffrey. Notes on Design Methods. 1967.
- 50) Cross, Nigel. The relevance of Design Methods. *Building*. March 1970.
- 51) Crofton, R.M. *op.cit.*
- 52) *ibid.*
- 53) *ibid.*
- 54) Lloyd, John. The dynamics of design. *RIBA Journal*. September 1970
- 55) Gregory, Sidney. The state of the art in design method. *D.M.G., D.R.S.*
Journal. Design Research and Methods. Vol 7 No. 2 April-June 1973.
p.138

- 56) Broadbent, Geoffrey. *ibid.*
- 57) Jones, Christopher. *ibid.*
- 58) Rittel, Horst W.J. *ibid.*
- 59) Alexander, Christopher. *ibid.*
- 60) Broadbent, Geoffrey. Book Review. *Architectural Research and Teaching* Vol. 2 No. 2 November 1972. On: *The geometry of the environment: An introduction to spatial organisation in design.* March, L. Steadman P. 1971.
- 61) Rapoport, Amos. Some observations regarding man-environment studies *Architectural Research and Teaching*. Vol.2 No. 1 November 1971 p.4-15
- 62) Page, J.K. Future models. Teaching Methods Course. IAAS York 1972.
- 63) Tzonos, Panos, *op.cit.*
- 64) *ibid.*
- 65) *ibid.*
- 66) Hillier, Bill. Architecture and Engineering in environmental education. *Architectural Research and Teaching*. Vol. 2 No. 2 November 1972. p.111-118.
- 67) *ibid.*
- 68) Hillier, Bill. Musgrove, John. O'Sullivan, Pat. *Knowledge and Design*. 1972.
- 69) Steadman, Philip. An evolutionary approach. Stimulus Statement. The Design Activity International Conference. 1973. August 29-31.
- 70) Maver, Thomas W. A Theory of architectural design in which the role of the computer is identified. *Building Science*. Vol. 4 1970. p.199-207
- 71) *ibid.*
- 72) *ibid.*
- 73) Archer Bruce L. York Conference in computer use. 1972.
- 74) Programming the professional future. A.J. Editorial. *The Architect's Journal*. Vol.158 No.44, 1 October 1973. p.1016.

- 75) Broadbent, Geoffrey. Methodology in the service of delight.
(Paper) 1973. p.1
- 76) *ibid.* p.5

chapter 7

HISTORY OF ARCHITECTURE

7. THE TEACHING OF HISTORY OF ARCHITECTURE.

Objectives

7.1 Precedents

7.2 Present reality

7.3 Objectives of the courses

7.3.1 Cultural background

7.3.2 Basic knowledge

7.3.3 Analysis, interpretation

7.3.4 Methodology

7.3.5 Conservation

7.3.6 Research

7.3.7 Future of the courses.

7.4 Content and form.

7.5 SUMMARY

7.6 CONCLUSION

7. THE TEACHING OF HISTORY OF ARCHITECTURE

Objectives: Study the teaching of history of architecture in the schools of architecture.

7.1 Precedents.

The teaching of history of architecture had always been considered basic to architecture until the modern movement.

It seems interesting to look into some precedents, before we study the present situation.

"... But it emphasises the importance of buildings as historical documents, with a relatively new tone of impartiality. All periods of history were of intrinsic value, with lessons to be learned from each. They must therefore be carefully studied with a view to finding both continuing and expanding principles, and individual elements which might be of relevance to modern times..."(1)

This need to study 'carefully' all periods of history was an important part of the art of becoming an architect.

" The use of history as a technical aid to design culminated in the 19th century and the modern movement, by rejecting historical precedents for design, has created a different and much more propitious climate for historical study of architecture."(2)

"... With the intervention of historical thinking a long era of successive change in architecture led to the curious impasse of 19th century eclecticism, and then the rejection

of history as an element in architectural design. But what we threw out of the front window has come in again at the back and I think an historian has to warn the practising artist against the dangers of using history wrongly."(3)

This rejection of history 'as an element in architectural design' logically enough meant the 'throwing out', or at least the intention, of architectural history as a necessary course in schools of architecture, although as professor Allsop says, the study, historically of architecture gained a new importance.

"... and now it is faced with a social and scientific revolution which is probably even more fundamental and potentially traumatic. With what concept of history, if any, with what sense of structural continuity, of process, do the architects of the present day face this revolution? or are they adrift in a boat without a compass?"(4)

" During the last half-century great alterations have taken place in both architecture and history. Not only has the modern movement transformed the practice of architecture from a heavy reliance upon historical precedents to a possibly even more lop-sided reverence for technology and finance, but the study of architectural history, as such, had undergone great changes..."(5)

The growing importance of technology and social facts in architecture have had influence in architectural history and its teaching.

Several times history and design were mentioned together in the above quotations, being, therefore, interesting to see where the difference lies between history, design and theory.

"... history is the contrary of design: design is synthesis... history is analysis... when design is prospective history is retrospective... one cannot be without the other.."(6)

"... history and theory can each be functionally distinguished from the other...

- study of history = study of causes

- study of theory = study of ends...

... Where the writer of theory, therefore, may in the interest of his scheme close selected doors, the historian may not, for it is his function to achieve, as far as possible, the re-creation of history by his own inherent meaning."(7)

According to David Anstis they are different things, although in his words about history and design 'one cannot be without the other', history being the 'study of causes'.

Professor Banham says that 'the history of architecture is in a certain way the history of design' (8), a point of view that not necessarily opposes the above mentioned, but leaves again wide open the subject of how close history, design and theory of architecture are for those who believe that there is one.

7.2 Present reality.

Between 1930 and 1955 history of architecture was apologetic for the modern movement as theoretical basis, according to Macleod (9) and by 1955 it was considered irrelevant in the schools of architecture. In Banham's opinion the big debate was around 1960.

In 1962, Llewelyn Davies and John Weeks described the course of history of architecture in these words:

"... we describe a sequence of study: first the study of

form in relation to an individual human being, second the study of form in terms of material and structure, and third building in relation to the human community, the city and the country... these are the headings under which we feel the history course must in the future be organised if it is to make its proper contribution to an architect's education.."(10)

The scope of the course is wide, and has to do not only with buildings and forms, but as well with humans - individual and society - and relations between them.

Opinions, nevertheless, differ about the scope and usefulness of the course as we shall see through a short review.

"... there has not been significant changes in the teaching of history since 1958, only minor changes...

... the history course is cultural background mainly, it has not other possible uses...

... through our course in Conservation architects get interested in old buildings... learn not to endanger them in a repair work, and some of them made a profession of it.."(11)

Cultural background for all students, and conservation for some, are the purposes of the course for Thomas Burroughs.

"... the purposes of the course are:

- not to give information
- give the students historical awareness
- give a method for historical interpretation
- the cultural historical context

... students come to the school with little knowledge of general history...

... it is necessary an emphasis in: social, economic, political history..."(12)

There is a coincidence about cultural background, but the scope is wider and the purposes ambitious, particularly concerning interpretation.

The same David Anstis have some other concepts about history and the historian that help to clarify his ideas about the course.

" History is not a sequence of facts, but of its relationship and meanings..."(13)

"... the historian must act free of ethno-centrism (own way of life is the best), with professionalism - even with boredom... and needs additional knowledge in anthropology and economics..."(14)

In the School of Newcastle, where the subject is strong, it was possible to collect some opinions ...

"... history teach about precedents, history of buildings systems and design ...

when properly taught introduces capacity of analysis...

... is a good discipline... all greatest architects were really concerned and aware about it...

... the dissertation usually used is a good method for learning..."(15)

"... it is a useful course, the important thing is to teach:

- social aspects : why and for what buildings were built

- technology: how they were built ..." (16)

Both ideas have in common, besides the importance of the subject, the concept of analysis.

Professor Allsopp has studied the problems of teaching the history of architecture and produced very clear ideas.

" Briefly the study of architectural history has never been so ardently and professionally undertaken, as it

now is by architectural historians, and at the same time the history of architecture is perhaps less studied by students of architecture than at any time since the Renaissance..."(17)

"... We have the paradox of professional architects and town planners who know far less about the history of architecture than many laymen, and I suspect that the main reason for the neglect of history in some of our schools of architecture and town planning is that so many modern architects are only dimly aware that history has changed..."(18)

The professionalism of architectural historians seems not to help, the students and the architects know less history.

"... architectural history is becoming remote from the practice of modern architecture though some historians try hard to maintain a relationship, specially those few who teach and do their research in schools of architecture..."(19)

The reason for this remoteness is in part, no doubt, in the courses of architectural history in schools, but as well in the difficulties of keeping contact with both the profession and teaching as we can infer from these quotations:

" In this age of specialisation, when the mass of literature in every branch of the field of art-history is increasing to almost astronomic proportions, it is hardly possible for a single individual to be an expert in all the fields; for him to be at one time an authority in aesthetics, a connoisseur, a critic of the modern movements, an art-historian who knows intimately the work of every phase from the Palaeolithic to Picasso, and a good popular lecturer, is a rarity if indeed he can be found at all! Inevitably a man must choose to

specialise along some particular line and to occupy himself in the main with some particular period. Indeed, specialisation must often be very narrow if the man is to become a master, and one who is concerned with the Italian Renaissance can today hardly hope to be an expert in the fullest sense of the word no more than one of the greater schools comprised by that term in a port-manteau sense." (20)

"... We owe a great debt to architectural historians who are not architects, and I do not think it is possible to combine architectural practice as a career with any great depth of historical scholarship..."(21)

Specialisation is seen as a necessity to achieve the grade of scholarship required in architectural history.

Historians are recognised by Professor Allsopp but:

"... and that it is necessary for the health of architecture that there should be architects who think and write about architecture with authority and with knowledge beyond the limits of the present..."(22)

he is asking for architects to do the job.

"... As result we have the alarming symptom of architectural history either disappearing from the courses in schools of architecture altogether or being replaced by highly specialised courses which may have some value as academic discipline, but fail to kindle any enthusiasm in the majority of students. It is, of course, arguable that any discipline is good for the soul, but when the effect is to make the student think that the history of his own subject is boring and irrelevant to his thinking about architecture, something has gone badly wrong."(23)

Professor Allsopp seems to ask for a course clearly discernible as history of architecture, with all its values, instead of new courses with some history content.

No During 1972 the RIBA Journal published some answers to the question: What's the point of architectural history? by Reyner Banham, Mordaunt Crook and Bruce Allsopp, that I consider important, all three being architects and lecturers, or, better still, historians in schools of architecture. First Bruce Allsopp to make easier the comparison with his opinions from 1968 to 1970 quoted above.

"One aspect of history seems to me to be of special interest and significance in architectural education: the awareness of continuity. Mankind is not one generation deep."
"... But for those who do not bury their heads in the sand, the sense of history stimulates an extrapolation from history into the urgent problems of sociology and ecology. Thus history overflows into the future. By being aware of history, by thinking historically, we develop our awareness of the future and a sense of our historical responsibility for the future."(24)

A good understanding of the past helps to interpret the present and prepare the architect for his responsibility with the future.

"History is not a body of knowledge to be learned. It is an attitude of mind and a method of procedure in thinking. This attitude and method are valuable and they constitute an antidote to the all too prevalent disease among architects of trusting to creative intuition unscaffolded by knowledge. Properly taught, I think, history can provide the modern architectural student with a methodological discipline which

many are blindly seeking in places where it is not to be found.

It is easy to advocate that students of architecture should study the social and economic history of architecture, but accomplishment is far more difficult because of the lack of suitable teachers."(25)

Architectural history could provide a methodological discipline and provide basis for creativeness says Professor Allsopp and apparently makes a critic to design methods that 'are blindly seeking in places where it is not to be found'.

Then he repeats the idea that no one person can 'supply' architectural history:

"... architectural history cannot be supplied in a single person within a single institution, but I do think that schools of architecture have a research contribution which must be made if architectural history is to be taught successfully."

About the relation 'causes and effects' mentioned above by Anstis and the role of the architect in society he says:

"... history of architecture is about buildings, but it should also be about the history of bad as well as good buildings and about what was not built and for what reasons, as well as what did materialise - also about what has survived and what has not survived and why."

"... Historical study of the relationship of the architect to society and the sources from which the character of his design was derived can help us to make sense of this difficult question.."(26)

Finally in his answer Professor Allsopp makes a judgement he calls 'a historical judgement' about technology to stress the need to discuss important issues in the schools, pointing his opinion about

the poor participation of architects in moulding architecture.

"... the technology value system has broken down.

This is a historical judgement of the kind which we should discuss in teaching the history of architecture in schools, but to discuss it sensibly we need a scaffolding of knowledge about value systems, about aesthetics, about the way architects and their clients or patrons really behave or behaved. Provided that the relevance of history is seen to exist, I find that there is an increasing eagerness to study it."(27)

" The argument from practice - that one goes along with what is being done, instinctively seeking for artistic leadership - needs to be looked at with historical knowledge if the influences that have moulded architecture, and I suggest that the role of the architects has been more passive than many architects are prepared to admit: he has responded both to theories and to fashions as well as to social and economic pressures. It is obviously an important modern question whether the architect is captain of the ship or merely the rudder." (28)

Clear and interesting call for more responsibilities from architects influencing architecture based on historical knowledge, what it is consequent with the ideas above mentioned of Professor Allsopp for more architects devoted to the study of teaching of architectural history.

The answer of J. Mordaunt Crook to the same question has some common points with that of Bruce Allsopp, but also some different concepts about the architects responsibility to architectural history.

" The point of studying architectural history lies, quite simply, in studying architectural history. In other words, the process is its own justification. It stands or falls as an academic methodology leading to an expansion of aesthetic awareness...

First of all, what is architectural history? I recently defined it as 'the study of our built environment in its historic context'. I see no reason to change that definition..."(29)

Architectural history is a discipline by itself, an academic methodology 'leading to an expansion of aesthetic awareness' and to 'the study of our built environment in its historic context', which explains the approaches proposed by Mordaunt Crook.

" How, then, must the architectural historian approach his subject? Broadly speaking, there are three approaches to architectural history...

... that is the archaeological approach ...

... that is the documentary approach...

... that is the visual or art historical approach...

... architectural history must encompass all three methods..."(30)

Then he emphasises the need for a holistic approach...

" But the connection between architecture and politics, between architecture and economics, between architecture and religion, is more easily demonstrable than (for example) the cultural origins of music or painting. The evidence is so abundant. The study of architecture and the study of history are both weakened by their separation. History adds a fourth dimension to the three dimensional language of architecture..."(31)

About interpretation and good and bad buildings he, like Bruce Allsopp, thinks that ...

"... Certainly an historian reveals his prejudice as much by what he leaves out as by what he puts in. And that is where the historian of architecture often parts company from the historian of painting: the architectural historian must study bad buildings as well as good ones. He cannot confine his attention to masterpieces."(32)

Then his opinion about architects and architectural historians differs from that of Professor Allsopp, mentioned above, although agreeing on the need for specialisation.

" ... But on the whole, one man's lifetime is scarcely enough to design important buildings or to undertake significant research in architectural history. I am not saying that architectural history has no place in the training of an architect. It should have a place in anyone's education. I am not saying that architectural history cannot be taught by non practising architects... The future of architecture lies in the hands of architects. The future of architectural history lies in the hands of historians. Architects make architectural history and historians write about it. That is merely a statement of a necessary division of labour."(33)

He also has some words to say about the special responsibility of architectural historians.

" In a sense, any historian, but specially an art historian, is a cultural evangelist. And the job of an architectural historian in particular must be to open people's eyes...

... It is surely no accident that art history has developed as the world around us has become more ugly. On Sunday

afternoons the churches are empty and the art galleries are full, crowded with people seeking spiritual therapy. In the long run, any architectural historian must be sustained by a belief in the therapeutic value of beautiful buildings."

Spreading the wings of our civic consciousness and expanding the range of our aesthetic awareness are what architectural history are all about."(34)

In this case - as opposed to the former opinion - the architectural historian need not be an architect and the importance of aesthetic awareness 'as the world around us has become more ugly' is more clearly separated than the architect's role in society 'moulding' its architecture.

Professor Banham has given to the same question a more pessimistic or realistic answer, one never knows, but in any case different in approach to the other two.

" The point of architectural history, right now, seems to be that if architects had better command of it, they could make fools of expert witnesses called by preservationists at planning enquiries."(35)

Although to make a fool of somebody is not an objective for architectural history, this answer implies that architects know less of the subject than 'expert witnesses' that it is one of the worries of those who see as objectives for architectural history a cultural background or basic knowledge necessary to architects.

Concerning the reasons for teaching history he says:

" The fact is that, at present, architectural history is, overwhelmingly, a fringe university activity, and would stop almost completely without university support...

... The books that are written by the rest of us would yield

even lower royalties than they do unless we had captive audiences to whom we can recommend them as required reading...
... because the only reason why history is studied at any university school or whatnot in universities is because it always has been studied there. There's no flywheel effect like an unquestioned academic flywheel effect. None of my fellow academics in the school has ever offered me a valid reason for the continuation of those studies: I have to invent my own reasons, two or three a year.

... But what justification can we offer for tackling our rarified subjects, other than personal gratification and the pursuit of Ph.Ds.?" (36)

Indeed, a very somber panorama that he himself changes to a more optimistic view in the same article saying:

" I suspect that the bulk of it is for the moment done. The attention of historians will wander away from architecture, even in the architecture schools, into previously ignored fields like patronage, finance, land ownership, the internal sociology of the profession. The point about architectural historians is that we can always find new subjects to historise about - we shall probably be around and busy long after architecture has disappeared from the face of the earth."(37)

The idea that architectural historians shall continue to be 'around and busy' is shared by Anstis and Allsopp, and not only because new fields will be explored but also because analysis and interpretation allows for new studies of the same subjects or because, as the same, Banham puts it...

" Such bias is essential - an unbiased historian is a pointless historian - because history is an essentially critical activity,

a constant rescrutiny and rearrangement of the folk memory of the profession."(38)

7.3 Objectives of the courses.

There seems to be several possible objectives for the courses of architectural history in the schools of architecture, according to the opinions revised so far, and therefore we shall devote some time to study those possibilities.

7.3.1 Cultural background

As we saw earlier Burroughs believes that this is a good enough objective for courses of history of architecture in schools.

Professor Allsopp mentions this as one of the objectives for the courses, when he says:

"... It is not unreasonable to expect that any prospective student of architecture will be familiar with the general development of architecture before he starts his professional education. If he is not, he should be able to remedy this by reading and should be required to do so."(39)

but evidently he sees this only as a basis or requirement to start the course with.

In fact, not many students of those interviewed showed concern about that kind of cultural background being important to them.

7.3.2 Basic knowledge.

The knowing of history as a basic knowledge sometimes seems to have common edges with analysis and interpretation, and with cultural background, but even so basic knowledge

may be seen as going deeper than a cultural background, and although indispensable to analysis or interpretation not having that purpose.

"... To achieve good architecture there must be a dialogue, and I feel that the modern architect is becoming less and less able to sustain his side of it. This is partly because he is less able to see his job in the perspective of history."(40)

Good architecture and history are usually found together in fact, as Peter Willis pointed out earlier in this chapter and Professor Allsopp suggests here.

"... The object of the teacher should be to re-create the situation, the brief, the client, the pressures upon the architect, the technology available at the time. This requires both imagination and scholarship, a marriage which can be very fertile. It also requires that the historian should understand the practice of architecture and it suggests that the profession should encourage its own members to specialise rather than tending to borrow art historians to teach the history of architecture to architects."(41)

The re-creation asked is, indeed, a very difficult task that requires a high degree of scholarship, if the information exists.

David Anstis considers the history an instrument to perceive human truth, but he sees some dangers in the avoidance of personal value judgements when presenting the history.

"... it is true that history is a discussable and blunt instrument; but it is valid because it is, nevertheless, one of the best instruments in the perception of human

true by its ability to synthetise and inter-relate several separate complexities..."(42)

He is clearly saying that a historian must do value-judgement when presenting his knowledge.

7.3.3 Analysis, interpretation.

Strictly speaking, analysis and interpretation are not at all the same thing but in this case arguments are presented together for one and the other as objectives for the courses of history because the limits are difficult to find in those arguments, being interpretation based on knowledge and analysis.

Peter Collins in his book 'Changing Ideals in Modern Architecture' says about the book:

"... It is concerned more with the ideas than with the buildings, and its intention is to convey an idea of what architects have been trying to achieve since the modern age started..."(44)

This search for what architects have tried to achieve, not only in modern times, but in all times with respect to their societies seems to be the reason why so many historians see history as an interpretation.

"... discover and re-discover without ending.... that will last as long as the human race... which is the true essence of history..."(45)

"... the greater the knowledge possessed by the historian of all facets of human behaviour, the greater should be his understanding of the events he is attempting to evaluate..."(46)

"In all this, however, the historian must still work by searching for the truth, for the knowledge of 'how

it happened'; and his reconstruction of the historical event is his attempt to do this. That previous historians were 'wrong' in various ways should not worry society too much..."(47)

After establishing this basic belief about the need for rediscovery and reconstruction, after searching for the truth, David Anstis goes on to propose certain criteria for studying a problem.

"... is necessary to isolate a problem within certain boundaries... and disregard relationships which are seen to be irrelevant to a particular inquiry..."

"... with the historical problem set in a clear context of causation, the reasons for the judgements of both student and teacher can be more clearly seen and related back to their origins..."

"... no complete historical truth may be inferred from only one criterion..."

" Can we not, therefore, reconsider all our building artifacts, not merely against the architect's or professional critic's pertinent but confined criteria, but also against the total context of the whole of society and the physical world in which it has its beginning and end?" (48)

The definition of boundaries, which is in itself a decision that requires vast knowledge and value judgement, contributes to make the exercise accessible, but one wonders if accessible enough to students.

" The compilation of facts is a necessary stage, yet without interpretation it is history at a low level. But the problem of interpretation also presents dangers."(49)

Bruce Allsopp recognises the importance and value of interpretation in history, but at the same time points out that there are dangers in it. He points out the values of history for the architect.

" I would suggest that for an architect the important thing is to cultivate a historical way of thinking rather than to acquire a great deal of knowledge of the history of architecture..."

"... and an architect needs to be a whole man. Being an architect is quite a problem in living, and historical study can help the architect, and the student architect, to understand himself and the way of life he is trying to follow. If architectural history were taught humanely in schools of architecture there might be less stress and fewer break-downs and failures. The great difficulty for an architect without a sense of history is to see himself and what he does in perspective."(50)

Taking again his other argument about the importance of 'compilation of facts', he insists on the need to use buildings as a documentary source, more than until present.

"... but there seems to be a clear preference for documentary sources, and, it must be said, that were documents exist, the other kind of evidence, including architecture, seems to be regarded as of less value and is not infrequently neglected."

"... the state of mind of the writer of a letter - due perhaps to a quarrel with his wife, a hangover or some indocumented factor - may be a very important influence upon the course of events and the historian is entitled, indeed he must, to some extent speculate about motivation.

He is inevitably and 'interpreter' of evidence,
an honest judge rather than a purveyor of fact.

He is concerned to find out the truth rather than to
present the appearance of what happened."

" Until recently it may have seemed that history suffered
in this respect as compared with science, because science
appeared, to many people, including scientists, to be
concerned with immutable and final truths. This view
of science is no longer acceptable: probability, judgements
based upon the accumulation of evidence and recognition
that there are physical limits to the possibility of
cognition have now brought historical and scientific
attitudes nearer together. There is even less excuse
than there used to be for dogmatism."

" The other main difficulty of architectural history is
that the most obvious and incontrovertible fact in any
architectural historical study is the actual buildings."

"... This actuality of the building which is the subject
of historical study requires that we should have techniques
of studying existing buildings, and this implies competence
in architecture, in knowledge of the actual technique of
building, or so it would seem to me, and we have not gone
very far in developing ways of studying the actual fabric
historically as distinct from critically. It would
appear that we have to develop a fusion of critical
appreciation and scholarship, and this applies, of course,
throughout the discipline of art-historical studies. We
cannot ignore the actual artifact." (51)

Then he goes on to say that, because of this necessity to
use buildings as evidence in architectural history, the presence

of architects in this field is important, an idea he has put forward consistently.

"... Concurrently there will need to be more architects with historical understanding and knowledge to evaluate the evidence of the actual buildings, because one of the conspicuous areas of error in current architectural history is where scholars with no practical knowledge make architectural judgements based upon the lack of knowledge..."(52)

About the value of historian's judgements he says:

" No kind of history is entirely proof against prejudice because judgements have to be made and they are coloured by the opinions and feelings of the historian."(53)

Even with this remark and the convincement that interpretation has its dangers he seems to agree with it in architectural history.

7.3.4 Methodology.

Give a methodology to students it may be an important objective of the course in architectural history, be this for 'historical interpretation' - as in Portsmouth - or for buildings analysis. The only condition should be to give the students, at the same time, the awareness that the method can be 'transferred' to other uses of examples.

" The recognition of casual relationships and of casual evidence is therefore one of the major constituent parts of the historian's methodology..."(54)

As a great believer in interpretation Anstis sees causes, its findings, its relations, as very important to methodology.

The need for rigour and truth in methodology are stressed by Bruce Allsopp.

" History seeks to find out the truth, and its method is rational examination of evidence. It is thus scientific. It is also humanistic in that it is about man and his doings..."

" The contribution of Greek science to architecture was not technological. It did not facilitate construction or improve environment, but it did provide an absolute foundation for the theory of design by relating architecture to the scientist's concept of an ordered world constructed out of elements which all bore a due proportional relationship to each other..."(55)

Then taking his idea of the buildings as evidence, he emphasises the need for a method to use them adequately as source material.

"... It is a measure of how much is still to be done in developing the techniques of architectural (and art) history that buildings are inadequately used as source material by other kinds of historian and when they are used the evidence is often misunderstood, to the detriment of history. If any justification were needed for the study of architectural history it could be that the evidence for many forms of historical study is incomplete without the study of architectural evidence at a comparable level of scholarship."(55)

7.3.5 Conservation.

The course preparing for conservation, as happens during fifth and sixth years in Portsmouth - although optional studies - or in a lesser degree in fifth year at Bristol, seems to be more a programme for post-graduate studies, as happens with the one year Diploma course at the Institute of Advanced

Architectural Studies in York.

In any case I have not found this objective being mentioned for undergraduate architectural students.

7.3.6 Research.

The importance of research to be able to interpret history is self-evident, and in several of the schools visited, and in many others, it constitutes the basis for postgraduate courses in architectural history.

Even so, it seems adequate to bring in one argument of Bruce Allsopp about the possibilities open to research.

"... There might be plenty of evidence if it were looked for in the right places by suitably qualified scholars. This indeed is one of the excitements of history which is obscured from those who have never done research and believe that history is a finite subject. In fact a great many questions remain to be asked and answers to be wrung from the evidence of the past."(57)

As in the case of conservation, research seems now more an objective for postgraduate studies of architectural history, although no doubt those who recognise 'learning by research' will believe that this could be done as well to undergraduate level.

7.3.7 Future of the courses.

The arguments that we put forward by Professor Banham seem to indicate that the courses of architectural history in schools of architecture will continue to exist, even if with a different approach than it used to have.

Professor Allsopp sees the courses as expanding in the future, and finds for them pragmatic applications such as correcting untrue references already being made 'because of ignorance'.

" An important contribution which history could make to the development of architecture, in the present strange situation of rapid flux, is that it could apply the healthy corrective of truth. In arguments about modern architecture reference is often made to the past and quite untrue things are said because of ignorance."

" I hope we shall see a wide expansion of the study of architectural history, as a part of art history, and that it will tend away from the present, but necessary labours of compilation, towards the application of the ideas of history to the whole human phenomenon of artistic activity."(58)

7.4 Content and form.

As we saw in the analysis of the courses actually being given in the schools of architecture, they have different content, form and time sequence and therefore it seems important at this point, having looked into the objectives, to see some opinions about content and form for this course.

"I had thought at one time that this book would end with an indication of lines upon which architectural historical studies might proceed, but any attempt to define in advance what our exploration may reveal would, I think, be unwise."(59)

These words by someone so experienced as Professor Allsop, reveal that there are some difficulties to define a course, and that in some way it must be an 'exploration'.

Let us now take some of his words suggesting the importance of the social content of architectural history.

"... The name 'barbarian' has been overloaded with woadish connotations and the evolution of Romanesque architecture in the

so called 'Dark Ages' has been misrepresented by most architectural historians (Lethaby was a notable exception) because the social component in the architectural history of the 4th to 9th centuries far outweighs the stylistic component."

And then how he sees the relation between technology and 'the human problems'.

" Technology must be subordinate to the mind, and three restraints can be brought to bear upon it. The first is aesthetic, either formal or intuitive. The second is science, which in architecture means distilling the essential truth of function and structure. The third is history, which is about the human context of the building, for a building is not a thing of an instant, like a Roman candle, but an enduring structure for man".

"... The technological answer so arrogantly propounded by La Corbusier and his many followers, ignored the human problems which it was possible to foresee if one saw man historically, and so humanely. Man is not a new phenomenon and there is much to be known about him."(60)

As immediate consequence he argues about the need of a holistic, environmental approach to architectural history.

"... History is the study of the process of human development in the environment where man must live, in the environment which he makes for himself; and the effects of what he creates upon what he is, are the proper study of the historian of architecture."

"... If we start with the proposition that architecture is the built environment which man has created for himself, its history is obviously a vast subject, and it cannot be

considered in isolation from the general history of mankind."

Applying this concept to the courses in schools of architecture he says:

" At the school of architecture it is necessary to start seeing the history of architecture in quite a new light - from the inside, from the point of view of an architect. Thus whereas at school the boy or girl is told that architects did this or that and the reasons why they did it were thus, the architectural student should be encouraged to see the activity of designing in the past as 'something he might have been doing himself if he had lived then'.

"... I would not like to be dogmatic about whether this aim will be achieved better by concentration upon short periods of history, or a smaller number of selected examples, or by more generalised studies. One could learn a great deal about being an architect from studying the work and life of Inigo Jones..."(61)

The first of these two last remarks supposes, like interpretation, a high degree of knowledge of an epoch before going to the architectural aspect itself. The second suggests that there are several possible forms to achieve an objective.

Later on, coming to the form of the courses, he attaches importance to research and travel.

" Two very important aspects of architectural history are research and travel. History is not just something you read about and learn. The architectural student should experience the excitement of finding out for himself, not necessarily and always from original sources, but sometimes by bringing things already known together and discovering a

new relationship. The compilation, sifting and comparison of evidence is excellent mental training for an architect and helps him with planning buildings. It is a good corrective to the technologist's method of plotting parameters because it helps to develop judgement. The more we use computers the more we need judgement so that we can tell the truth to the computer, which is otherwise a dangerously credulous beast. Historical research is a necessary and valuable part of historical study".

" Travel is also essential because architecture is bulky and immobile. No photograph can give the 'feeling' of it and such buildings as Santa Sophia in Istanbul, which are notable as enclosures of space, must be felt as enclosing spaces to be understood..."(62)

This view seems to be accepted in Britain by many schools that place importance on research, although mainly at postgraduate level as we saw before, and on travels doing 'visits' from one place to another in the country, and even abroad, with an emphasis on historic buildings in the programming of them.

"... but I do not think that the present divisions of specialisation, mainly by period and location within the field of establishing the facts about the design and erection of the building (date, architect, client, etc.,) will continue to be acceptable and I suggest that in future the architectural historian will have to know more history, particularly more social and economic history."(63)

The point of the need for new concepts on periods, on architectural history, based more on social and economic factors than in pure aesthetic consideration is an important one and he stressed

it saying:

" The history of architecture as of any other art must not be confined to masterpieces, nor is it primarily concerned with aesthetic evaluations which, in any case, are bound to fluctuate from time to time. The subject is much bigger and comprises all that man has done and is doing by means of building to shape his environment. It cannot be properly understood without knowing the forces - social, political, economic, ideological - which have influenced building..."(64)

In fact, most of the history of architecture studied refers to buildings considered masterpieces, which are the exception and consequently don't represent the architecture of a period.

Professor Banham mentions, as a consequence of his studies, some other aspects to be considered.

" As a result, a vast range of historical topics extremely relevant to the development of architecture is neither taught nor mentioned in many schools of architecture and departments of architectural history. Some are external to the buildings - patronage, legislation, professional organisation, etc., - others are internal - changes in use, changes in users' expectations, changes in the methods of servicing the users' needs. Of these last, the mechanical environmental controls are the most obviously and spectacularly important, both as manifestation to the ancient primacy of structure, yet they are at least studied".

"... The history of the mechanisation of environmental management is a history of extremists, otherwise most of it would never have happened. The fact that many of these extremists were not registered, or otherwise recognised as architects, in no way alter the magnitude of the contribution they have made

to the architecture of our time. Perhaps find such a men a proper place in the history of architecture will be some help in resolving the vexed problems of finding their proper place in the practice of architecture."(65)

This kind of content would, no doubt, establish a new scale of values for some buildings and periods, providing a new point of view, that must be explored thoroughly to find the necessary information, as he himself points out in his book explaining the lack of adequate comprehensive documentary sources.

David Anstis who has examined the subject of methodology for architectural history studies and made some proposals for content of courses in schools of architecture has formulated valuable ideas.

About social and human facts of life and history he says:

" The subject matter of history is human life in its totality and multiplicity... history of architecture is a part of it.."

"... historicism may have exaggerated the dynamic character of social phenomena in denying the presence of a (partially) unchanging human nature." (66)

When speaking about the periods in which history is currently being divided he quotes Collingwood's 'Principles of Art' to show the need of new criteria to study history today.

" ... at the present day we are constantly presented with a view of history as consisting of good and bad periods, the bad periods being divided into the primitive and the decadent, according as they come before or after the good ones. This distinction between periods of primitiveness, periods of greatness, and periods of decadence, is not and never can be historically true. It tells us much about the historians who study the facts, but nothing about the facts they study."(67)

In an 'Advisory Memo to the RIBA' he presents the following ideas about courses:

"... not for learning historical facts or reproduce by memory...

... not pretend to study all architectural history...

... but awareness of general history, with some depth in some studies...

... scope must not only be on Western architecture but also in Aztec and Japanese architecture...

... more time must be devoted to XIX and XX centuries...

... multipersonal course (staff)...

... as free as possible

- fostering of an inquiring mind
- skills of gathering information
- communication
- interpretation

... a general study at the beginning, lengthen consideration of modern history, in the final years more depth in studies by groups or individuals...

... need for parallel courses

- fine arts
- social history
- aesthetic
- philosophy..."(68)

This kind of course on architectural history coincides and is consistent with the ideas about history as interpretation expressed before by himself, and according to his personal opinion difficult to achieve because of lack of adequate staff and time.

In fact, to be able to interpret history in a course of architectural history in a school of architecture requires particularly

keen and devoted staff, specially at a moment when these courses are only one hour per week and the subject itself is questioned.

"... The staff... must be prepared to start afresh at any time, to work hard and enthusiastically in a particular direction and at the same time be prepared to abandon this work at once if found necessary. They must try to ensure that all student does is ultimately creative and beneficial rather than of transitory interest. They must be prepared to accept student criticism of the course but to balance it against the purposes of the whole educational pattern. They must be prepared to search, read and discuss far and wide connection with their teaching in the hopes of discovering the relevance of new areas of knowledge and at the same time they must beware of frantically pursuing learning, like a general knowledge quiz expert, for its own sake..."(69)

Excellent description of an attitude that would require a very open mind and the kind of dedication that Mordaunt Crook and Bruce Allsopp insist is indispensable to an architectural historian.

7.5 SUMMARY

History of architecture was a basic subject in the schools of architecture, specially for theory and design itself, until the development of the modern movement.

From approximately 1930 to 1950 the courses were devoted to explain the modern movement mainly, except in the case of schools where the lecturer had such prestige as to justify the course by his mere presence.

Between 1955 and 1960 the subject was considered irrelevant and some schools diminished its importance or dropped it altogether.

After that the courses followed a new orientation, with greater emphasis in the XIX and XX centuries, with particular importance being given in some schools to the last 50 or 20 years, and using the buildings as a source for investigation.

The specialisation of staff - architects or architectural historians - is considered indispensable to reach the necessary scholarship to be able to understand history so as to interpret it.

At present all schools have courses of architectural history with a very varied degree of importance or orientation, depending in many cases on the presence of a prestige lecturer more than a defined policy or philosophy.

The objectives of the courses are one or more - usually more than one - of the following: cultural background, basic knowledge, analysis or interpretation, methodology, conservation. Research is considered basic to architectural history being at present placed at postgraduate level.

There seems to be optimism about the future of the courses of architectural history, in the schools of architecture, specially with those who believe that history of architecture must be reinterpreted in a wider context than the one studied so far.

Concerning content and form of the courses, they must be directed to open the mind, give capacity for analysis with solid knowledge as the necessary foundation; give awareness to future architects of their own positions in history when designing, using history for those purposes without pretending to learn all architectural history.

The staff needs to have enough scholarship and dedication so as to be able to 're-create' history by analysis and interpretation, doing the course a creative activity for students.

7.6 CONCLUSION

The courses of architectural history in the schools of architecture in Britain are mainly concerned with European architecture and the emphasis is in British architecture of the XIX and XX centuries, although some time and interest is devoted to other periods, like the middle ages or renaissance.

The general purpose being not so much specific knowledge but a general awareness of history, which, nevertheless, if we judge by the RIBA requirements and examination papers of the schools, requires a good degree of knowledge of the periods involved.

Currently there is a great deal of interpretation, perhaps too much, going on in the courses.

The courses are very seldom related to design work.

In most of the schools studied research in architectural history is being done at post-graduate level, and by the staff.

The importance of the courses seems to be coming back due to new orientations. Architectural history is studied very much related to social, economic and politic context in a more holistic way than before, trying to embrace not only masterpieces but 'good and bad' buildings within the total environment.

One of the basic concepts to teach architectural history in the schools is that the architect needs to be able to analyse and interpret the reasons - why, for what, for whom, and how - the built environment was produced or altered by man to be able to place himself in perspective when designing.

REFERENCES

Chapter 7

- 1) Macleod, Robert. *Style and Society*. 1971. p.31
- 2) Allsopp, Bruce. *The study of architectural history*. 1970. p.108
- 3) *ibid.* p.111
- 4) *ibid.* p.62
- 5) *ibid.* p.11
- 6) Anstis, David. *A synoptic methodology of architectural history study*.
M.Phil. Thesis. University of Bath. 1970. p.4
- 7) *ibid.*
- 8) Banham, Reyner. Personal interview. March 1973. London
- 9) Macleod, Robert. Personal interview. September 1972. York
- 10) Llewelyn Davies, Robert and Weeks, John. *Educating for building*.
Main Paper No. 3 BASA Building for people. Second report on
architectural education. 1962.
- 11) Burroughs, Thomas. Personal interview. March 1973. Bristol.
- 12) Anstis, David. Personal interview. March 1973. Portsmouth.
- 13) Anstis, David. *op.cit.*, p.3
- 14) *ibid.* p.129
- 15) Willis, Peter. Personal interview. March 1973. Newcastle.
- 16) Hardy, Alexander. Personal interview. March 1973 Newcastle
- 17) Allsopp, Bruce. *op.cit.*, p.11
- 18) *ibid.* p.11
- 19) *ibid.* p.11
- 20) *ibid.* p.75 Quoting Professor Talbot Rice from Finley, H.P.R. Ed.
Approaches to history.
- 21) *ibid.* p.89
- 22) *ibid.* p.89

- 23) *ibid.* p.76
- 24) Allsopp, Bruce. A sense of responsibility. RIBA Journal,
August 1972 p.336
- 25) *ibid*
- 26) *ibid*
- 27) *ibid*
- 28) *ibid*
- 29) Mordaunt, Crook, J. Opening peoples' eyes. RIBA Journal.
August 1972 p.337
- 30) *ibid*
- 31) *ibid*
- 32) *ibid*
- 33) *ibid*
- 34) *ibid*
- 35) Banham, Reynore. Only an academic flywheel? RIBA Journal
August 1972. p.338
- 36) *ibid*
- 37) *ibid*
- 38) *ibid*
- 39) Allsopp, Bruce. The study of architectural history. 1970. p.86
- 40) *ibid.* p.86
- 41) *ibid.* p.86
- 42) Anstis, David. *op.cit.* p.13
- 43) *ibid.* p.141
- 44) Collins, Peter. Changing ideals in modern architecture. p.17 1965
- 45) Anstis, David, *op.cit.*, p.3
- 46) Gawwronsky. History: meaning and methods. Quoted in Anstis, David.
op.cit.
- 47) Anstis, David. *op.cit.*, p.70/71
- 48) *ibid.* p.141, p.143, p.147
- 49) Allsopp, Bruce. *op.cit.*, p.76

- 50) *ibid.* p.81, 89
- 51) *ibid.* p.76, p.103, p.105
- 52) *ibid.* p.105
- 53) *ibid.* p.106
- 54) Anstis, David. *op.cit.*, p.135
- 55) Allsopp, Bruce. *op.cit.*, p.15. p.18
- 56) *ibid.* p.105
- 57) *ibid.* p.32
- 58) *ibid.* p.79, p.116
- 59) *ibid.* p.116
- 60) *ibid.* p.80, p.81
- 61) *ibid.* p.87,p.88
- 62) *ibid.* p.89
- 63) *ibid.* p.105
- 64) Banham, Reyner. *The architecture of the well tempered environment.*1969
p.13, p.17
- 65) Anstis, David. *op.cit.*
- 66) *ibid*
- 67) *ibid.* Appendix
- 68) *ibid.*

chapter 8

RESEARCH

8 RESEARCH

Objectives

8.1 Introduction

8.2 Precedents

8.3 BASA Conferences

8.4 Current situation

8.5 Schools of Architecture

8.5.1 Architectural Association, School of Architecture.

8.5.2 University College London, School of Environmental Studies

8.5.3 University of Cambridge, School of Architecture

8.5.4 University of Bristol, Department of Architecture

8.5.5 University of Newcastle, School of Architecture

8.5.6 Leeds Polytechnic, Department of Architectural Studies

8.5.7 Portsmouth Polytechnic, School of Architecture

8.6 Scientific Research in British Universities and Colleges.

8.7 Register of Research into Higher Education.

8.8 SUMMARY

8.9 CONCLUSION

8. RESEARCH

Objectives: Study the development of research in the Schools of Architecture.

8.1 Introduction.

The development of research in the schools of architecture has been, and still is, so important, that even not being one of the purposes of my studies, by its relation with the subjects of my interest, I consider worthwhile devoting a chapter to study which are the fields of research and review opinions about its validity and application.

I shall not try to relate the research being done in the schools with that done for other institutions for the development of the building industry, because that would mean a considerable effort as to constitute a research work in itself.

8.2 Precedents.

Even that today we recognise very easily the possibility to do research in such fields as aesthetic matters, the true expansion of research began in schools of architecture when the scientific trend developed, after the profession experienced some needs after the war.

" The immediate post-war need for rapid school building to cater for an unprecedented rise in the number of school age children, and later to deal with the higher school leaving age, resulted in the development of a number of industrialised building systems..."(1)

" Research of one kind or another has now a longish history in building. By and large this increased

investment in research has proceeded side by side with a marked deterioration in the quality of building..."(2)

This history is not so long in the schools and received a big impulse with the Oxford Conference.

" When the concepts of 'environmental research' as opposed to technologically orientated building research began to emerge a decade or so ago, there seemed to be good reasons for hoping that these new concepts in research would lead to new relationships between research and action...

Ten years ago, when the ground was being cleared for great expansion of architectural research activity, programmatic statements took a clear line. Design was a problem solving activity, involving quantifiable and non-quantifiable factors...(3)

" Now all that is the result of research, and that is theory. At Oxford in 1958 it hardly existed; now it extends architectural thought to a deeper level as a natural part of the educational process."(4)

"... conference at Oxford in 1958, when it was decided: ... c. - that the educational curriculum for architecture should be based on research rather than current practice."(5)

This expansion on architectural research in the schools meant, as Broadbent points out, a change from practice to theory in the curricula - knowledge and skills - that produced, almost immediately, some reactions.

" Most architects in practice were naturally horrified when these students arrived for practical training in their offices, almost unable to draw but highly critical of the designs on which they were asked to work. Yet their criticisms were

well founded, being based on the theories from environmental science, psychology, sociology and so on, which they had been taught. To take a familiar example, many architects at the time (mid to late 1960's) followed the then current fashion..."

" The public, on the whole, disliked these buildings intensely, but architects persisted in building them, even though their defects had been subject to physical, physiological, psychological and other forms of research. Much of this had been published and the students were familiar with it; it had entered the curricula in their schools of architecture. But most of the architects they went to work for were ignorant of it, nor did they care to be told about it. The successful practitioner, almost by definition, was far too busy to keep up with research or to consider its implications for the work he was going..."(6)

The reactions of offices to the new breed of architects, with a theory based research curriculum is more by the lack of skills for making construction drawings or details and a general 'I know everything' attitude than for the kind of inquisitive mind they usually possess. And this means, at the same time, that they are not useful and besides that their questions or discussions take time out of the more concrete reality of the office.

8.3 BASA Conferences.

The BASA Conferences of the early 60s - 1961 to 1963 - reflect very much the feelings going on in the schools during those years, and produced some opinions about research.

About the aims for Graduate research:

" 1. basis for correct design decisions...

2. Spearheads of architectural thinking... the schools

of architecture...

3. Architecture is a method of ordered thinking...

Implementation

1. Broad (multidisciplinary) post-graduate research
2. Co-ordination: a. Schools not to duplicate research
b. Communicate research to all schools
3. More research fellowships..." (7)

During the second Conference on architectural education more importance was devoted to research.

"... need for more research...

1. rational and functional design...
2. Financial, long-term investment...
3. Follow - check up results.
4. Central for information is vital...

... at post-graduate level..."(8)

"... undergraduate can take minor part in research work...

... university research on social sciences...

... need for a register of research..."(9)

"... research is the first ingredient of the building process...

... three types of research...

1. General original research - discover general principles...
2. Development research - means of putting principles into practice...
3. Appraisal of existing knowledge...

... present systems of communication of research are inadequate..."(10)

And during the 1963 Conference again some references were made about research, in a more general way.

"... research requires skilled personnel to understand and

use methodology.

... undergraduates must not do research...

... post-graduate and all academic staff ought to do some research..."(11)

In all three BASA Conferences the importance of research was recognised. One of the common points of agreement was the need for a system for communication and centralising information. Others were research at postgraduate level and a basis for design and advancement of knowledge in architecture.

About information and communication something has been done although even now, schools are isolated one from another, and some projects are repeated unnecessarily.

Research is at present mainly in the hands of staff or postgraduate students as demanded.

8.4 Current situation.

During 1970 - Education Year - as a consequence of the importance attached to architectural education and the Cambridge Conference, research in the schools was discussed.

"... First, how should one select the most important problems for research to tackle? Secondly where should this research be done? Thirdly, how can we ensure that sufficient funds are available?

The main answer given to the first question was that the choice of subjects should arise from practice, in order both to encourage new techniques and to meet changing user requirements and social needs...

... In other words, let all the existing research groups have a go, provided that there is some central co-ordination,

perhaps through this clearing house, to avoid unnecessary duplication of effort and to share expensive facilities...

"... The building industry still spend less on research and development in proportion to its turnover and profits than any other major industry in the country."(12)

This summary, by John Kay, shows that in 1970 there was an interest to relate more research to practice, the convenience to let research flourish, but avoiding unnecessary duplication, and optimism about the funding for new research.

Sir Leslie Martin emphasises the importance of research, stating, nevertheless that it is a kind of specialisation.

" I place research firmly within the educational process and with the greatest respect for the research work in related disciplines: I believe that the study of architecture as I have described it generates its own special areas of work. This is not something that everybody in the profession has to do, or even has to know about. It is something which particular groups of skills can produce. It grows from the educational system and will go back into it...

... The typical research subject in architecture is, like architecture itself, concerned with cohesiveness, with how things come together..."(13)

Elizabeth Layton seems to believe that there is money for research in the schools in spite of the fact that 'the money for higher education is spread more thinly'.

" There is now much more government research money for research in the architectural field than trained people in the schools to supervise it - mainly because the schools are too small to sustain the extra effort needed to produce them."(14)

Alan Lipman commenting on the editorial of the first number of Architectural Research and Teaching makes some important points about the relevance of research for designing buildings and the existence of a certain gap for application.

" First the implication that access to knowledge will invariably, even inevitably, increase man's ability to resolve his problems. The text stresses a need for research findings that are 'relevant to the designer' and for 'effectively linking' research and design. Indeed the author's overriding aims may be described as encouraging design orientated knowledge, and as mobilising research resources toward achieving this end.

Exemplary though the intention may be, one questions the assumption that there is a direct and explicit relationship between knowledge and action; that intervening issues will not frustrate, or distort, the promise implied in the paper."⁽¹⁵⁾
"... one wonders whether encouraging the 'diffuseness' of research approaches and topics reported from schools of architecture, and disapproved of by the paper, might not be a viable strategy for research, particularly in universities, where fundamental research is likely to be attempted. Diffuseness may well be an inherent characteristic of the initial stages of developing a body of theory founded on accumulation of research findings."⁽¹⁶⁾

These views about the relation between knowledge and action, and about the possible advantages of 'diffuseness' of research, opposed to those sustained by the editorial commented prove that although much research has been, and is being done, the opinions about the orientation and broadness of the field of research are very different

even within the schools of architecture, where most of the members of the editorial board of 'architectural research and teaching' belong, and within the board itself.

" My second area of concern lies in what I take to be the underlying theme of the paper - the call for 'bridge building' activities and personnel to close the 'applicability gap' between the needs of designers and findings from research. Here too the paper favours a more optimistic view than I feel is warranted by circumstances. It suggests that certain organisational adjustments and a number of changes in attitude - largely on the part of research workers - are required 'to integrate' research findings and design problems..."

" In the main design may be described as a synoptic process in which particular solutions are sought for specific problems: the process is integrative in that solutions tend to be arrived at by bringing to bear information from a range of disparate sources. On the other hand, the research process is primarily analytical..."

" This is not to imply that design and research interests are incompatible. On the contrary, most designers and architectural research workers may be expected to welcome a state of affairs in which design decisions are generally supported by research findings and research is directed towards supplying the support. But, considering the current absence of agreement about the nature of architectural design or research, this is a long term objective..."(17)

The above three quotations relating research to design, although not optimistically, seem to coincide with the idea expressed by the same author when he asked for a theory of architecture based in

research, this is an idea that many other educationalists don't accept.

Lately the work 'knowledge and design' by Hillier, Musgrove and O'Sullivan proposing the four function model has suggested a new orientation for research, specially that directed towards design procedures.

" It is notable, by the way, that the emphasis implicit in this model shift architectural research right away from the study of procedures of design and into the study of buildings and their occupants, as well as away from 'results' and towards theory. We are beginning to look at ends rather than means."(18)

The ends of research being in this context: theory, buildings and humans, as users.

" If we are right in thinking that this is the underlying direction of the new lines in environmental research, then, the notion of research simply as a service to design and the by-product of an eclectic variety of disciplines has to go by the board. Research is of course necessarily multi-disciplinary. In fact in the environmental field there appear to be no limits to the disciplines that could contribute to the advancement of the subject. But the contributions of the wider areas of science will only become effective through the integrative theories which will increasingly form the fundamental disciplines of environmental action itself, and these disciplines are not separate from design, but extensions of it in that their subject matter is design just as the subject matter of design is sets of instructions for building."(19)

The 'new lines' of research should be, according to this proposal,

towards 'environmental research' and 'through integrative theories' and not a 'service to design'.

Even then there is evidence that much of the research done so far in the schools has not been applied, and this is taking time, or will not happen unless the orientation is changed. Broadbent as late as 1972 insisted on the Schools 'responsibilities', particularly those in universities.

" One thing is clear; the long term future of architecture is determined by what goes on in the schools. It has been RIBA policy, ever since the Oxford Conference, for this, as far as possible to be research based. The long-term intention - that architecture itself should be improved - is bound to be undermined by the perpetuation of attitudes from current practice. If fifteen years from now architecture has not been improved to the extent which research now makes possible, those universities will have a lot to answer for."(20)

About funding for research, that is one of the areas of concern Professor Musgrove wrote in 1972.

"... At any rate, the latest D.O.E. (1) survey of research and development for the construction industry shows that architectural design has had the greatest proportional increase in R & D expenditure between 1968 and 1970 compared with other designed areas, including materials: but the real amounts are still insignificant. There is a long way to go."(21)

In 1973 the RIBA published its 'action programme' in which some of the claims made on different occasions were put as goals.

" Active learning.

Objective: To make the RIBA increasingly a centre of active learning.

(*) D.O.E. Department of the Environment.

Action: Council will increase the pressure on government and centres of research funding to finance architectural research; support the efforts of groups in government and academic centres involved in architectural research and development; establish the RIBA as a centre for policy and information on architectural research, and as forum for interdisciplinary debate; and extend and seek additional outside help for the library and drawings collection as a major resource centre for scholarship and for technical support for the profession."(22)

That is, support for research in a broad sense, and a policy and information centre based in the RIBA itself, are areas of agreement, even with the widely differing opinions about the orientation of the research itself.

8.5 The Schools of Architecture.

As we have seen, at present the schools of architecture have a share of the responsibility on the research being done, and the participation has grown tremendously in the last years.

" Five years ago the RIBA carried out a survey of research in schools of architecture. The results could then be summarised on a single sheet of paper. Today the situation has changed out of all recognition. In at least five of the fourteen university schools, research is established as a major aspect of their work. In a further seven, research is firmly established and can be expected to gain strength in the next few years. Of the 19 schools in future polytechnics and colleges of art, at least six are beginning to approach the scale of activity of the less advanced university schools.

At least six others are in the early stages. Only a few schools have not succeeded in taking the first steps in establishing research as part of their work."(23)

These words, on the editorial page of *Architectural Research and Teaching* number one in 1970, show the progress experienced in five years, that is still going on as the magazine itself proves.

8.5.1 Architectural Association, School of Architecture.

"... A.A. with a wide-ranging and active postgraduate educational system. This will make available for British students a much needed opportunity on a full or part time basis and is already bringing to London growing numbers of serious and research orientated students from all over the world, who characteristically utilise the entire resources of the A.A., its Membership and the expertise of London wherever it may be found."(24)

" A Research Office has recently been established to further the development of existing research projects of the students and staff, and to bring additional research to the Architectural Association. Negotiations are underway with the Council for National Academic Awards to institute a Doctorate thesis research programme.

In addition to the research work of students and teaching staff, there are a number of advanced research projects with researchers working on a full time basis..."(25)

This Office seems to be a real necessity in a place like the A.A., where the freedom of studies is complete, and the student is encouraged to look for his own way out, allowing for any field of search if not of research. In 1968, four to five years before that office was established John Lloyd wrote:

" There is a widespread interest in the School for research, but this lacked a policy, co-ordination or an organisational framework. This is being provided by the formation of a Research Board, which hopes to effectuate the considerable but hitherto dispersed and to some extent hidden activity..."(26)

In fact much of the research looks like a 'hidden activity because...

"... In the graduate school, fourth and fifth year students will still group according to their interests, research work can often be combined with passing theses..."(27)

Excepting three projects, named specifically as being developed by full time researchers, it has not been possible to find a precise list or explanation of the research projects being done in the A.A., probably by the implications of the last quotation.

It seems, nevertheless, that some research is being done about the use of computers in architecture, history, environmental problems and settlements in Africa, this last being a sort of fashionable subject in the school.

8.5.2 University College London, School of Environmental Studies.

" The School welcomes applications from suitably qualified persons who wish to study for a higher degree by research..."

There are at present 24 M.Phil, and 14 Ph.D. students who are doing research in most of the fields of study covered by the School of Environmental Studies."(28)
Research in the school is done by staff and postgraduate

students, and the figures for 1972, mentioned above, are high if we consider that the School had at that moment about 140 undergraduate students.

The school has several research units with specialised personnel and is carrying out research programmes financed by outside bodies in which students find resources for their work.

The research units and fields of work are:

- Unit for architectural studies.

Studies about the use of spaces and facilities in complex buildings.

- Buildings economic research unit.

Research activities associated with the Chair of Building. The field of industrialised building.

- Environmental design and engineering research unit.

Quantitative and qualitative requirements in buildings and the built environment.

- Joint unit for planning research.

General and special problems of planning and its communication.

- Planning methodology research unit.

Studies of methodology and evaluation in planning activities.

- Countryside planning.

"Current research programmes include work on rural and urban land use, the future need for agricultural land in Great Britain, and the problems of the urban/rural fringe." (29)

- Development planning unit.

Advanced training of students from developing countries to enable them to make a career in planning.

The School publishes since 1971 a yearly Bulletin on research, whose introduction by Llewelyn Davies, among other things, says:

" The purpose of this Research Bulletin is to bring together in convenient form summaries of all the research work which is currently being done within the School of Environmental Studies...

This is the first occasion that the School of Environmental Studies, which was created at the beginning of 1970 by the amalgamation of the Bartlett School of Architecture and the Department of Town Planning, has presented a comprehensive survey of all its research work covering the research units, personal research by members of staff and research for higher degrees...

... We should be pleased to receive similar information from other organisations which conduct research in the field of the environment..."(30)

Unfortunately there seems not to be many Bulletins like the one produced by this school, and there is a real need for them.

At the moment of this work being written it has been possible to get only two Research Bulletin corresponding to 1971 and 1972.

Research Bulletin number one contains the summary of 44 research programmes distributed so:

Architectural education	2
History	8
Social	1
Building Sciences	3

Environmental Sciences	9
Theory	4
Planning	14
Housing	3

Research Bulletin number two informs about 40 research programmes distributed as follows:

Architectural education	3
Social	2
Building Sciences	9
Environmental Sciences	6
Theory	1
Planning	14
Housing	2

The main emphasis is placed on planning with 28 programmes, environmental sciences 15, building sciences 12, and history 10. There were not - at that moment - researchs on Design Methods or Teaching Methods.

8.5.3 University of Cambridge, School of Architecture.

"... The second, or postgraduate level, extends this attitude into larger scale and more complex issues but it is now extensively supported by research (the third level of study) which increasingly provides both theoretical basis and method."(31)

" The school provides facilities for research work and for those wishing to read for a higher degree. Research workers read for a Ph.D. involving three years of study or an M.Litt. which can be taken after two years. Other research workers may be visitors, or those engaged on research work carried out under contract or grant. The types of research work that can be appropriately

developed in Cambridge have always included studies in the history or theory of architecture. More recently the School has developed a specialised research centre."(32)

Like most universities postgraduate studies are based on research work, which is used as a basis for the last years of the school, considered in this case as postgraduate studies.

" The Centre for Land Use and Built Form Studies was established in October 1967 as a research division of the University of Cambridge School of Architecture. It is supported by research contracts and grants from Government and other sources...

Studies include the following:

(i) The Urban Systems Study...

This consists of research into the special structure of medium sized towns and the development of a data bank and model of urban activity systems and the built environment...

(ii) The University Study...

(iii) The Offices Study...

(iv) Computer Aided Design Study...

A pilot study to identify the possibilities of co-ordinating data structures and using interconnective graphics for building design."(33)

The Centre has developed so much that it has more staff than the school itself. Some of its members have teaching responsibilities, and the school uses the centre as a teaching resource.

The centre publishes all its works and although not all

of them are research, some of them are only application, the works until 1971 showed the following distribution:

Planning	26
Housing	3
Computing	5
Environmental Sciences	7
Building Sciences	1
Simulation	2

All these works done by the Centre include the use of computers and those works mentioned as computing are more directed towards the theory and methods of using the computer itself than to a specific architectural problem.

In this case it was not possible to find out what other research projects are being done in the school, although there must be several since there are students working for higher degrees outside the Centre.

8.5.4 University of Bristol, Department of Architecture.

"In the short time since the Department of Architecture was established, the University has seen rapid development in the range and scale of architectural research which now forms a very significant part of the Department's work.

At present, in addition to academic staff and post-graduate students, there are eleven research appointments. A great deal of use is made of the University's Computer Unit...

While the subjects of research are very diverse, there is a common discipline unifying the majority of projects which in its own right forms an important element of the work. This is the development of techniques and

models which can be used effectively in the context of architectural design..."(34)

In fact, the Department has found support for several projects currently being developed, and has good facilities for research and experimenting, specially on environmental sciences.

Of the ten major areas of research mentioned next, only two are financed by the university itself, all others have external support:

1. Social stress on rehousing.
2. Pilot study of the application of Heuristic techniques to problem solving.
3. Optimisation of circulation and natural lighting in buildings.
4. Development of simulation techniques for the prediction of circulation systems.
5. Prediction of thermal performance of buildings and building components by means of special purposes analogues.
6. Component design.
7. Acoustic scale model
8. Natural ventilation
9. Computer design of services installations
10. Condensation.

Higher degrees are won by research or through the course of M.Sc. in Advanced Functional Design Techniques, recently opened in 1973, in which it is also possible to do research in functional design.

Again, in this case, it was not possible to find information of all research work going on in the school, except that already mentioned which is only that being done by contract or special grant.

8.5.5 University of Newcastle, School of Architecture.

" In the universities and other institutions of higher education there is a tradition that teaching is fertilised by original research and the quality of the teaching may depend, in large measure, upon the extent and quality of the new thinking generated by research.

The research degrees are M.Sc., M.Litt. and Ph.D.

The subjects of research vary widely and are individually agreed with each student, the limiting factor being the availability of adequate supervision in the subject of study..."(35)

Like other schools research is at postgraduate level of students, is done by the staff or researchers, but in this case more research is encouraged at undergraduate level.

" An additional feature of the B.Arch course in very recent time, which it is intended will become an element of the course in future, is the involvement of a small number of students in sponsored research projects directed by members of the staff...

Such exercises are valuable in the teaching of research method as well as in experience in a thorough study of a limited subject. In the developing field of postgraduate research in the Newcastle School these projects at undergraduate level provide a nursery for future research workers."(36)

But the main impulse to research was given with the Building Science Section.

"4. The development of postgraduate research, specially since the forming of the Building Science Section. This

has led to a major development in that contacts with other learned and professional institutions has grown while contracts have been negotiated with Research Councils, research and development departments and industry. The effect of this work and the enthusiasms and attitudes of the research workers is now feeding into undergraduate level."(37)

" The Building Science Section of the School of Architecture is essentially a research department with facilities for the study of the physical and psychological environment in relation to building design, but it also provides teaching in the B.A. and B.Arch courses, and undergraduates have the use of its very extensive laboratory facilities."(38)

The importance of building science in the school is big not only on research but in teaching as well...

" Building Science has thus become a basic subject in the First Degree architecture course, and in some ways it could be considered as a design generator, a factor which is basic to all design decisions."(39)

The research projects completed or in progress in the Section are nine, there are two under negotiation (1973) and several others are being developed in association with outside organisations like: DoE, Design Council, IAAS York University, RIBA etc.

Excepting the information of this section it was not possible to get lists or summaries of other researchs being done, although there are some in history and other subjects.

8.5.6 Leeds Polytechnic, Department of Architectural Studies.

The Department has its research work done through: project and research office, computer unit, architectural science unit, and landscape survey.

" The Office (project and research office) operates from the Department in co-operation with the DOE and has active links with the research units below.

Computer unit... Students are given instruction in computer practice applications and subscribe to the research papers produced in the unit. These currently include applications to data retrieval and banking, user requirements, environmental and structural solutions, cost analysis and design process elements.

The staff of the unit includes three computer programmers... Architectural Science Unit... Investigation in this unit ranges from structures to environmental control... Landscape survey... historical and ecological aspects of the region and closely co-ordinates with the planning investigations undertaken in the Department of Town Planning."(40)

Apparently the most important of the research work is done in the computer unit.

Not having the department higher degrees by research as happens in the universities the research work is limited.

8.5.7 Portsmouth Polytechnic, School of Architecture.

" The work of the School has attracted attention in many countries and the staff is widely based with nationals from USA, Turkey, Switzerland and Yugoslavia. Research is centred on the related topics of design method and integrated environmental services..."(41)

The school has in effect international prestige mainly for the head of the school, and because research is done in a variety of subjects.

In 1972 there were 9 'research associates' of several different countries and covering varied fields of research. The same year the staff was working on several projects distributed, by areas, as follows:

Architectural Education	4
History	2
Building Sciences	3
Environmental Sciences	5
Theory	5
Housing	2
Design Methods	1
Teaching methods	1
Management	3

Research in the School is encouraged for the staff, and fifth and sixth year students through optional studies and the dissertation work.

8.6 Scientific Research in British Universities and Colleges (42)

The Department of Education and Science, publishes in three volumes: physical sciences, biological sciences, and social sciences the 'scientific research' in British Universities and Colleges that are interesting to study to complement the information received from the schools, that being incomplete.

In volume one, physical sciences, and volume three, social sciences, under the headings of architecture, buildings, building, and design, are listed the research programmes being done by the schools of architecture, and a few other institutions about

architectural education.

The researchs listed as being done by the Schools of Architecture are 72 corresponding to 13 schools, among them being four of the schools studied for this work. The schools not mentioned are: Cambridge, Newcastle and the A.A. in all of which, as we have just seen, research is going on.

The programmes listed in the books, corresponding to 1971-72 are, by fields, as follows:

Architectural Psychology	8
History	2
Building Sciences	8
Environmental Sciences	17
Housing	7
Design	13
Teaching Methods	5
Management	1
Planning	3
Computing	7
Landscape	1

Some of the programmes are listed several times because they are in different volumes by its nature or because they are considered under different headings.

It is possible that as some of the Schools are known to have research, like the examples mentioned above, there might be some others that have not 'submitted entries' as the introduction to volume one says, to make possible the publication of the works.

8.7 Register of Research into Higher Education.(43)

Compiled and published by the Society for Research into Higher Education, the Register provides some more information about the

research in schools of architecture.

The study of the Register, that is cumulative, until 1973, provides information about only four schools: University College London, Strathclyde, Cambridge and the A.A., this last two being among 13 others included in the D.E.S. publication, making the number of schools reporting - there or here - reach a total of 15.

The fields of research covered in the Register, in the 8 programmes reported are:

Architectural Psychology	3
Teaching Methods	1
Computing	1
Human Behaviour	1
Architectural education	1
Architectural Project	1

The incorporation in the Register of the A.A. and Cambridge is by no means complete, because each of them appears with one programme, and we positively know that in Cambridge several research projects were being done in 1972, as they are currently.

8.8 SUMMARY

Architectural research began a new rhythm of development during the early fifties, with the massive schools programmes that meant new building systems and special sets of requirements, such as lighting, being developed.

Later the scientific trend and the important Oxford Conference - 1958 - placed the emphasis of teaching on research based knowledge.

The Schools responded rapidly expanding research, specially the university established, and as early as 1962-63 the BASA Conferences were asking for a centre for information and co-ordination

that now ten years later is still missing.

The research developed towards building science first, and then to environmental sciences, design and lately to social and human factors in architecture.

In 1970 the Cambridge Conference saw a well developed research in the schools but without much application in practice, and with increasing financial support.

Currently, more than half of the schools have developed good research programmes, and very few are not doing it with enough interest.

The chapter is ended with a review of publications by the D.E.S. (*) and the Society for Research into Higher Education that show that only 15 of the schools care to inform about their work and in an incomplete way.

According to that review the trend is still on Building and Environmental Sciences with 25 out of 80 projects followed by design with 13, and the newest trend being architectural psychology with 11 projects.

8.9 CONCLUSION.

The very considerable development of research has not had influence so far in a better architecture, and the findings have not been applied because they are not relevant to the designers or because they are the result of analytical research difficult to apply in such an integrative practice as architecture.

There is no agreement concerning the orientation of architectural research in the schools, some believe that it must be orientated towards application and practice and others believe that it must be orientated towards theory, although all believe that it must be useful.

Some of the schools doing more research are based on newly

created sections or centres of building sciences, environmental sciences, computing services or units.

There is comparatively little research on social aspects, although some is being done in psycho-social and behavioural aspects.

There is a need, as well, for more research on architecture as an integrative discipline concerned with the total environment - built, natural, social.

The need for co-ordination and information about the research work going on in the schools is evident. Works on building and environmental sciences are being unnecessarily duplicated in almost identical conditions.

The contributions of higher degree students to research is considerable and a good way to find out new researchers.

The small size of some schools makes it difficult to get the facilities, staff and fundings for more research.

The schools should find a way to apply the research in practice to test the results and use of feedback, at least in those programmes in which this is possible, this could provide for more fundings and give to teaching the real sense proposed and accepted in Oxford.

REFERENCES

CHAPTER 8

- 1) Working party. Research in action: an integrated design study applied to schools development. Architectural Research and Teaching. vol. 1 No. 2 November 1970 p.4-19
- 2) Hillier, Bill. Musgrove, John. O'Sullivan, Pat. Knowledge and Design 1971.

- 3) ibis.
- 4) Martin, Sir Leslie. Education around Architecture. RIBA Journal, September 1970. p.401
- 5) Broadbent, Geoffrey. Architectural Education. (paper) 1972
- 6) ibid.
- 7) BASA An interim report on architectural education. 1961.
- 8) Conclusions. BASA. Building for people. Second report on architectural education. 1962.
- 9) Discussions Group F. BASA. ibid.
- 10) Discussions Group G. BASA. ibid.
- 11) Discussions Group B. BASA. Aims and methods. Third report on architectural education. 1963.
- 12) Kay, John. Research and practice. RIBA Journal. September 1970.
- 13) Martin, Sir Leslie. op.cit.
- 14) Layton, Elizabeth. The lessons of Cambridge. RIBA Journal. September 1970.
- 15) Lipman, Alan. Strategies for architectural research: a comment. Architectural Research and Teaching. vol. 1 No. 2 November 1970 p.56-57
- 16) ibid.
- 17) ibid.
- 18) Hillier, Bill. Musgrove, John. O'Sullivan, Pat. op.cit.
- 19) ibid
- 20) Broadbent, Geoffrey. op.cit.
- 21) Musgrove, John. Scan: more about R & D. RIBA Journal. November 1972.
- 22) RIBA action programme: responding to a crisis. 2. What the RIBA should be doing? RIBA Journal. vol. 80 No. 5 May 1973. p.225
- 23) Editorial. Strategies for architectural research. Architectural Research and Teaching. vol. No. 1 May 1970. p.3

- 24) Postgraduate Education. The Architectural Association.
Educational Policy 1973. p.1.2
- 25) *ibid.* Research.
- 26) Lloyd, John. Educating for choice and change. *Arena*. June-July 1968.
- 27) The A.A. now. Restructure of A.A. teaching.
- 28) Information for applicants for research. M.Phil. and Ph.D. degrees.
University College London. School of Environmental Studies.
June 1972. p.1
- 29) *ibid.*
- 30) Llewelyn Davies, Robert. Introduction. Research Bulletin.
University College London. School of Environmental Studies.
No. 1. May 1971.
- 31) Information for the RIBA visiting board. University of Cambridge.
School of Architecture. 1971.
- 32) Handbook of the School of Architecture. University of Cambridge. p.4/5
- 33) *ibid.* p.5/6
- 34) Research. Department of Architecture. Bristol. 1972
- 35) The Art and Profession of Architecture. School of Architecture.
University of Newcastle. 1972. p.19, p.25.
- 36) Wise, Douglas. The B.Arch. Course. Newcastle papers in Architecture
and Building Science. No. 1. 1970 p.26
- 37) J.H.N. A theory of architectural framework. *ibid.*
- 38) Building Science Section. The Art and Profession of Architecture.
op.cit.
- 39) Building Science in the School of Architecture Curriculum.
Newcastle Papers in Architecture and Building Science. *op.cit.*
- 40) Leeds Polytechnic. Department of Architectural Studies. Courses
in Architecture and in Landscape Architecture. Research and
Practice.

- 41) Architecture at Portsmouth Polytechnic. Research interests.
- 42) Scientific Research in British Universities and Colleges.
Department of Education and Science. 1971 - 1972. Volume 1,
Volume II, Volume III.
- 43) Register of Research into Higher Education. Society for
Research into Higher Education. 1970 - 1973.

chapter 9

EDUCATIONAL PHILOSOPHIES

9. EDUCATIONAL PHILOSOPHIES.

Objectives

9.1 Introduction

9.2 Learning by doing

9.3 Teaching-doing.

9.3.1 University College London, School of Environmental Studies

9.3.2 University of Cambridge, School of Architecture

9.3.3 University of Bristol, Department of Architecture

9.3.4 University of Newcastle, School of Architecture

9.3.5 Leeds Polytechnic, Department of Architectural Studies

9.3.6 Portsmouth Polytechnic, School of Architecture.

9.4 SUMMARY

9.5 CONCLUSION

9. EDUCATIONAL PHILOSOPHIES.

Objectives: To present the educational philosophies of the Schools studied.

9.1 Introduction.

Although, as we have said before, there is great freedom for the schools to decide their orientation, and that the influence of the Head of the School is decisive, there seem to be some points of agreement on architectural education, such as:

- studies must tend more to foster the mind than to give knowledge
- architectural education must be research based
- project work - problem solving - is the central discipline
- maximum freedom must be permitted
- the profession is changing and architectural education must prepare for change
- the architect must be able to solve problems of technical complexity with scientific mind aware of his - human-social-environmental - responsibilities.
- the architect must be prepared to solve complex problems in multi-disciplinary co-operation.
- there is no one 'unique' way to form an architect.

All those points, and some others consequence or combination of them, provide for a very open framework for architectural education within which it is possible to find different educational philosophies(*), and I have found four in the schools studied: learning by doing; teaching doing; teaching-maturing-doing; and teaching-learning-doing-

(*) The word philosophy is used in the ordinary connotation.

testing-doing. The three latter being possible to put together as 'teaching-doing'.

9.2 Learning by doing.

This seems to be the educational philosophy, most generally accepted opinion at least, behind the architectural education characteristic of the A.A.

The School, that functions as a centre for meeting and information, expects that each student will define his own interest and accordingly will decide what to do to become an architect, offering his contribution, 'doing' something of his interest and 'learning' through it.

This approach needs extreme freedom, that is not always completely true, or possible, for example the Units established for project work set some requirements for the students that they follow with acceptance, in fact, in 1972 the so called 'Greek' unit recognised to be the more defined had almost twice as many students as the other units.

John Lloyd in 1968 discussing the alternatives - the extremes - to give everything to students and guide them step by step, or leave them free to do what they think of value, said that the School was trying to keep a balance between both.

Learning by doing seems to require mature students according to the school staff, and in 1973 the average age of first year students was 23, and most of them had some other academic qualifications or practical experience in architecture or allied professions.

Two of the basic principles of this educational philosophy seem to be:

- architects in practice are continuously searching for information to

- tackle new problems, and the student must learn to find the information and use it, as he will do in practice.
- knowledge to be really learnt must be used, and in this way the student looks for information he needs, and he uses it getting the necessary knowledge, relevant to his work.

9.3 Teaching-doing.

All other six schools seem to be using this kind of approach to architectural education, although the degree of teaching and doing as the 'what' and 'how' of the 'teaching' and the 'doing' are different from one school to another, and as we saw in the introduction, some have varied the basic formula.

9.3.1 University College London, School of Environmental Studies.

The school provides a large number of theoretical courses(*) that run parallel with project work, the student must select courses and derive the necessary knowledge for his project work within which there are as well some possibilities of selection.

The reason for the amount of courses and freedom for selection is that the school's objectives are to form a generalist on environment, who after the three year course may opt for architecture or other professions or academic studies related to it.

At present there is no clear co-ordination or integration between project and the other subjects, and Professor Musgrove in his paper 'Educating Environmentalist' states the need for it.

The student is supposed to learn, or better be taught about some subjects and then do through projects.

(*) Courses composed of lectures and - very often - seminars and some practical work, essay writing, lab. exercises, etc.

9.3.2 University of Cambridge, School of Architecture.

The School believes in the need of a framework of knowledge, 'firm framework', to be given to the students before they start doing.

Professor Howell, head of the school, is a firm believer of 'teaching through doing', as opposed to learning-by-doing.

The teaching in the school has some characteristics such as: team teaching in project work, more theoretical subjects are taught through regular lecture courses during the year, technological subjects are given related to the project in block courses.

The block courses and the team teaching provides for a better integration between 'teaching' and 'doing'.

9.3.3 University of Bristol, Department of Architecture.

In the department the basic concept is to teach the student and then ask him to use this knowledge, but the simple formula 'teaching-doing' has been developed to 'teaching-learning-doing-testing-dping'.

This means a genuine concern for the learning and the use of the knowledge, in a preliminary way, through the testing before the definitive using or 'doing'.

The school attaches great importance to functional design and to environmental sciences in which the 'testing' is generally done.

Block courses are considered important and like Cambridge in project work the staff acts as a team.

9.3.4 University of Newcastle, School of Architecture.

In the school the students after the three year course may opt for architecture or some allied professions, which means

that the course must be open-ended although the number of subjects offered is not nearly as big as at U.C.L.

The studies have a strong orientation towards building science whose 'teaching' is provided through block courses designed to fit the project well, so as to make the 'doing' effective.

Block courses and a tendency to develop a team design system through Building Sciences and the Project Office provides for the integration with project work.

9.3.5 Leeds Polytechnic, Department of Architectural Studies.

Within the department the idea is not to give everything to the student but not to leave them completely free, they must be given: ideas, skills, and a know-how to communicate, before they start 'doing'.

There are subjects running through all the year to provide basic knowledge and block courses for the projects needs.

In the last years, in fifth year an experience called 'inter-disciplinary studies' is being done to integrate, in the best possible way, the 'teaching' with the 'doing' in project work.

9.3.6 Portsmouth Polytechnic, School of Architecture.

This school is another one having varied the 'teaching-doing' to, in this case, 'teaching-maturing-doing'.

The idea is that teaching is necessary before doing, but depending on what is taught there must be a different lapse between the two actions. Technical knowledge and techniques must be applied almost immediately to be really learnt; but conceptual knowledge, containing new ideas or theories, take time to be assimilated for use, the time may be a few weeks or

several months. This is the maturing time.

In the school the 'teaching' is done through three groups of subjects that have a continual theoretical line during the year that is complemented by block courses for project works providing for co-ordination with 'doing'.

The maturing is in some way made - or attempted - consciously giving the students knowledge of mental processes of perception and communication.

9.4 SUMMARY

Even with the great freedom with which the schools of architecture may organise their courses and try to form architects, there are several points of agreement about architectural education.

Two big lines emerge as educational philosophies from the seven schools studied: learning by doing; teaching-doing.

Learning by doing seems to be the educational philosophy of the Architectural Association, School of Architecture, although not all opinions coincide.

Teaching-doing seems to be the general philosophy of the other six schools: University College London, Cambridge, Bristol, Newcastle, Leeds Polytechnic, Portsmouth Polytechnic.

Bristol, Department of Architecture, has developed the formula to: Teaching-learning-doing-testing-doing.

Portsmouth Polytechnic, School of architecture has changed to: Teaching-maturing-doing.

The other four, more or less, keep close to the: 'teaching-doing' formula.

As for the 'what' and 'how' of the teaching and doing and the way to inter-relate them is different from one school to another,

although with the exception of the A.A. and U.C.L. the schools use as a way to integrate block courses: and two of them, Cambridge and Bristol, give importance to team teaching.

9.5 CONCLUSION.

In architectural education it is important for the students to be able to use the knowledge they get, and for that there must be a process of fostering the mind and a basic knowledge given to them.

The knowledge must be relevant to project work that is the central activity of the courses and must be integrated with it, for which all kinds of teaching methods may be used, block courses and team teaching being important for that purpose, by the wide nature of architecture.

All this 'teaching' mentioned so far must tend to facilitate the 'doing' through project work that it is broadly considered, not only as architectural projects or design, but as a problem solving decision taking discipline.

The schools studied, with one exception, use within a wide range the same educational philosophy: teaching-doing.

chapter 10

CONCLUSIONS

10. CONCLUSIONS

Objectives.

10.1 Introduction

10.2 Chapter's conclusions.

10.2.1 Chapter 1.

10.2.2 Chapter 2.

10.2.3 Chapter 3

10.2.4 Chapter 4

10.2.5 Chapter 5

10.2.6 Chapter 6

10.2.7 Chapter 7

10.2.8 Chapter 8

10.2.9 Chapter 9

10.3 General conclusions

10.3.1 The architects needed

10.3.1.1 The quality

10.3.1.2 The quantity

10.3.1.3 Present

10.3.1.4 Future.

10.3.2. Defining objectives

10.3.2.1 On general education

10.3.2.2 On higher education

10.3.2.3 On architectural education

10.3.2.3.1 How to learn

10.3.2.3.2 What to learn

10.3.2.3.3 A method for learning

10.3.2.3.4 A critical thinking

10.3.2.3.5 Continual learning

10.3.3 Factors influencing architectural education

10.3.3.1 Cultural and physical environment

10.3.3.2 Social, technological and scientific changes

10.3.3.3 Real needs of society

10.3.3.4 Educational objectives on architectural education

10.3.3.5 Pluri-disciplinary approach.

10.3.4 Orientation within architectural education.

10.4 Purposes and fulfilment

10.5 References.

10. CONCLUSIONS

Objectives: To present together all work conclusions.

10.1 Introduction.

This work does not pretend to present or defend a Thesis, as was clearly established in chapter one, consequently these conclusions of Part I are more or less a summary of all studies done.

The study of the schools, it must be remembered, has not been the end of the work but the means to achieve the purpose which is to learn about: teaching methods, theory of design and methodology for teaching history of architecture, all this within architectural education.

So this chapters contents will be: first the conclusions of all nine preceeding chapters; then considerations, regarded as important, about definition of objectives and orientation of studies on architectural education; and, finally, a short comment about the purpose and fulfilment of this first part of the work.

10.2 . Chapters conclusions.

Conclusions from chapter 1 to chapter 9 are presented below exactly as they appear at the end of the respective chapter.

10.2.1 Chapter 1.

The research work has been highly rewarding allowing the author to reach his objectives in more ways than was hoped, because the study of some of the more representative schools of architecture in Britain is a healthy experience for someone who has been teaching in similar institutions

for more than 10 years. This means that the way followed was a right way.

There is, as has been said under the heading of shortcomings, a permanent field of research to be developed, with profit for the future of architectural education, specially now that according to so many opinions the profession and the education, as well, are at a 'critical or turning point' as has been described, that some institution must assume as a task.

A methodology is extremely useful to analyse and synthetise the information produced by each school of architecture and to compare it. The very simple method used in this work has many possibilities, not only for the schools considered but for others in the country as well, and even from other countries, as was proved when used for Venezuelan schools of architecture. In fact it would be extremely interesting to be able to do the same research in other countries so as to compare possible excelencies and defficiencies with their respective backgrounds, and between schools.

The use of some typical forms is a good way to clarify and made comparable the information presented in completely different ways.

The enumeration of shortcomings presented allows for a completion of other works, or stages, that could be done in the future, because it represents in some way conclusions of two years looking into the problem with the purpose of discovering about the subject and about the method itself at the same time.

10.2.2 Chapter 2.

There is a big freedom in architectural education that

is clearly reflected in differences from one school to another, more than in the kind of freedom students have within one school, with the probable exception of the A.A.

This freedom is healthy because it provides for several possibilities of how to form architects to be explored, or even to form a professional - environmentalist for example - that may be a different kind of architect, or whatever he is called, to be formed. Unfortunately this wide range of possibilities is known well enough only for the RIBA's Board of Education members, and some heads of schools are very keen to trace what is going on in architectural education, a tiring task, because there does not seem to be a centre or a system to collect and communicate information from all schools. In fact, communications between schools depends more on individuals, and some special projects linking two of them, or only one course of two of them, than of any school interest.

I have had opportunity to listen, on several occasions, at the IAAS short courses at York, that teachers of the same discipline meet only occasionally and only on that kind of course, some of them complain that even within the same school it is difficult to discuss architectural education, as a whole, with other staff members, and as far as I know there is no organised meeting for all people working on one subject throughout the country.

There is a general pattern on courses that is followed by most schools, and organised around the need to satisfy the RIBA three part examination requirements for professional qualifications, better explained by Macleod saying...

"... Historically, education followed examination, which may be at the root of some of the problems that have dogged us ever since."

The relation profession - education is clearly established through three different channels, the RIBA's Board of Education being the official one, discussed by being too loose and also for being too tight a link, what is positive by both reasons, because the link exists and because it is discussed.

A positive fact is that many searches and discussions are going on, within and around architectural education, that has been continually changing over the last years, and presumably will continue to do so.

10.2.3 Chapter 3.

It is important to define objectives in architectural education, and this must be done considering all aspects of life and not only what architecture currently is.

Objectives should be defined more clearly than they are now, and this need for definition must not be considered as a limiting factor, but as a framework to judge the results achieved by the schools.

There seems to be difficulties in defining objectives because the profession itself is confronting problems of re-definition that affect architectural education.

The schools are free to set objectives for their courses, and they are using this freedom.

10.2.4 Chapter 4.

There is in all schools studied a clear concept of all social implications of architecture, but not all of them have formal studies of sociology, and the acceptance of sociologists is rather limited as opposed to the behavioural psychologist who

is welcomed in several of them.

The problem is 'how' to consider the sociological problems in designing the built environment, making them a positive factor to get a kind of architecture generally accepted by the public, and contributing to the human welfare in society.

The solutions proposed seem to coincide with the need for more communication with the public and participation, and more pluridisciplinary education with other professions involved, that presumably would include not only the traditional building professions but some others as well, like sociologists, psychologists, behaviourists, economists and educationalists.

The recognition of certain measurable and non-measurable factors of social life and behaviour indicates the need for some sort of research that must be undertaken in a multidisciplinary approach.

10.2.5 Chapter 5.

There is a great development of new teaching methods that are too new to judge the results of its application so far. In the schools studied only some of the new methods are actually being used.

Most of the new methods try more to develop the mind and enhance the learning process than to provide information.

The use of new methods must not necessarily exclude the use of traditional methods, they are normally complementary and the use of them depends on educational objectives and not on the methods themselves. In fact, there seems to be very useful combinations according to some authors.

New teaching methods require of teachers new preparation, that so far must be done on a personal level appearing as a consequence here and there 'specialists' in one or other method.

Project work is a basic method of architectural education within which several methods are being used to improve its values as an educational tool and the end-product - the project - as well.

Small groups, individual learning, team teaching, and personal inter-relations seem to be the preferred methods in architectural education.

10.2.6 Chapter 6.

Systematic design methods have developed enormously in the last 15 years specially in theory and industrial design.

Architecture needs to develop or to adapt methods to architectural problems that must consider in a very special way the human-individual and group - behaviour as much as the environment.

Very few of the methods developed so far cover all stages of the design process in architecture, and therefore they are not used.

Methods tend to be far more complicated and time consuming than what is normally expected to be a tool for design.

The lack of application, with success, of design methods in architecture has greatly influenced its respectability.

To apply design methods in architecture it is necessary to use more than one, in the different stages and the need to consider at the same time: creativity, participation, quantitative - mathematical or not - qualitative - human - analysis and requirements, consideration of different alternatives or models - by computer or not - seems to call for a design team specially organised to cope with the task of designing in co-operation.

The principle to study and clarify the process is valid,

and the need to find ways to apply it to some stages or to the whole process of design undoubtedly exist. The important thing is to keep in mind that the end is to design architecture and not the process and that as well as those who must suffer our design, architects are ordinary human beings unable to use esoteric methods.

10.2.7 Chapter 7.

The courses of architectural history in the schools of architecture in Britain are mainly concerned with European architecture and the emphasis is in British architecture of the XIX and XX centuries, although some interest is devoted to other periods, like the middle ages or renaissance.

The general purpose being not so much specific knowledge but a general awareness of history, which, nevertheless, if we judge by the RIBA requirements and examination papers of the schools, requires a good degree of knowledge of the periods involved.

Currently there is a great deal of interpretation, perhaps too much, going on in the courses.

The courses are very seldom related to design work.

In most of the schools studied research in architectural history is being done at post-graduate level, and by the staff.

The importance of the courses seems to be coming back due to new orientations. Architectural history is studied very much related to social, economic and political context in a more holistic way than before, trying to embrace not only masterpieces but 'good and bad' buildings within the total environment.

One of the basic concepts to teach architectural history in the schools is that the architect needs to be able to analyse

and interpret the reasons - why, for what, for whom, and how - the built environment was produced or altered by man to be able to place himself in perspective when designing.

10.2.8 Chapter 8.

The very considerable development of research has not had influence so far in a better architecture, and the findings have not been applied because they are not relevant to the designers or because they are the result of analytical research difficult to apply in such an integrative practice as architecture.

There is no agreement concerning the orientation of architectural research in the schools, some believe that it must be orientated towards application and practice and others believe that it must be orientated towards theory, although all believe that it must be useful.

Some of the Schools doing more research are based on newly created sections or centres of: building sciences, environmental sciences, computing services or units.

There is comparatively little research on social aspects, although some is being done in psycho-social and behavioural aspects.

There is a need, as well, for more research on architecture as an integrative discipline concerned with the total environment - built, natural, social.

The need for co-ordination and information about the research work going on in the schools is evident. Works on building and environmental sciences are being unnecessarily duplicated in almost identical conditions.

The contributions of higher degree students to research is considerable and a good way to find out new researchers.

The small size of the schools makes it difficult to get the facilities, staff and fundings for more research.

The schools should find a way to apply the research in practice to test the results and use the feedback, at least in those programmes in which this is possible, this could provide for more fundings and give to teaching the real sense proposed and accepted in Oxford.

10.2.9 Chapter 9.

In architectural education it is important for the students to be able to use the knowledge they get, and for that there must be a process of fostering the mind and a basic knowledge given to them.

The knowledge must be relevant to project work that is the central activity of the courses and must be integrated with it, for which all kinds of teaching methods may be used, block courses and team teaching being important for that purpose by the wide nature of architecture.

All this 'teaching' mentioned so far must tend to facilitate the 'doing' through project work that it is broadly considered, not only as architectural projects or design but as a problem solving decision taking discipline.

The schools studied, with one exception, use within a wide range the same educational philosophy: teaching-doing.

10.3 General Conclusions.

Besides the conclusions of the chapter presented above, that correspond to the evidences found in the schools or directly related within the respective subject, during the course of the work many important opinions and considerations have been found that are now studied in this general conclusion.

The purpose of architectural education being to form architects, the discussion of what an architect is or should be become an important point to be studied.

As we saw in chapter 3 a clear definition of objectives is lacking in some cases and, therefore, we shall go into the subject considering the architects needed and the aspects involved in defining these objectives and considering both architecture as education and as architecture.

The factors influencing architectural education will be very briefly presented before going into the orientation that studies may, or should, have on architectural education, according to actual trends of the profession.

10.3.1 The architects needed.

Some of the objectives stated by the schools started by trying to state what an architect is, his roles, responsibilities, or what architecture is; and this, it seems to me, is an important starting point in the long way to define objectives on architectural education.

This is not to say that this will lead necessarily or easily to define those objectives, nor that once defined - if this is possible - all schools must follow the objectives, but to know what kind of architects are needed, now and in the future, would allow each school to state more precisely what architects pretend to form, to use a not compromising expression.

The idea of defining the architects needed as basic to develop a course is coincident with those examined in chapter 3 from David Warren Piper and the author, when we considered the importance of objectives.

These needs are essentially of two different natures, quality and quantity. When we say quality we mean the kind of architect, or kinds, needed and when we say quantity we mean how many of the different kinds are needed now and in the future.

" In general, however the forum believed it is important to discuss what architecture is about and then define an educational strategy to suit the situation..."(1)

" The architect G.P. may sometimes appear to be an incompetent, arrogant, or pathetic figure, and a figure of fun to some specialists, but he is not necessarily so. In practice he remains, and will probably continue to be a necessity. As the variety of his roles and the technical complexities of building increase, the co-ordinating job for which the generalist architect is often well fitted becomes more, not less, important.

It is because 'practice without theory is blind' and theory without practice is sterile' that we should base our conclusions for education on the needs of practice."(2)

The first of these quotations, the result of a students forum, points to the need for discussing what architecture is about, to set a strategy, being the only weak point, probably, because strategy is only a way of doing things and what is needed is a policy. The second makes some points, equally important, to assure the need of a generalist as for the need of several specialists, but ends by saying that 'conclusions for education (should be based) on the needs of practice'

that is in a way the same basic principle used by John Morris in his work about learning objectives (3).

10.3.1.1 The quality.

Some interesting studies have been made about the quality of the architect needed nowadays. On the next page, figure 37, a nicely composed graphic of architect Panoz Tzonos (4) shows the evolution from 1875 to 1972 of the emphasis placed on design coming from: aesthetical, 1875; through technological 1920; scientific, 1955; to social, 1972; considering both dates (1875 and 1972) as turning points on the process. Not having enough elements to judge the rightfulness of this interesting theory I would like to use as a comparison some dates stated by Geoffrey Broadbent in a paper about Design (5) speaking about the 'last fifty years or so'.

- " 1. Beaux Arts (c.1900)... All of this basically was an exercise in architectural geometry.
2. Bauhaus; (Gropius:c.1920)... Design pre-fabricated components for buildings which can be put together in various permutations.
3. International Style (Le Corbusier: c.1923)... preconceptions about structure... emphasis on planning...
4. Bauhaus; (Meyer; c.1927) Take the structural basis of international Style architecture but use, wherever possible, the precepts of Gestalt psychology and sociology to help determine the form.

5. Neo-Picturesque; (c.1945) Take pictures of buildings by some admired master (e.g. Aalto) and derive the form of buildings...

6. Environmental Science: (early 1960's)... design the building as a "filter" which modifies the external climate to...

7. Design methods; (mid 1960's) Describe a programmed sequence of events for all designers in all circumstances, assuming that if they do their designs automatically will be "better" because of the process they have gone through.

So now, in the early 1970's, most schools still retain vestiges of (2) (basic design exercises); neo-picturesque has given way to (4) (psychology and sociology); the lecture timetable is dominated by (6) (environmental science), and (7) (design method) seems not to have worked..."

There seems to be some coincidence on both studies: the artistic phase and Beaux Arts tendency are, in fact, in many respects similar, the two periods 2 and 3 - 1920 and 1923 - of Broadbent may be said to correspond with Tzonos' technological period, the scientific periods show differences of some years, 1955 to the early 60's, and finally the social period in some ways correspond with the description offered by Broadbent for the early 70's. Broadbent stresses the importance of what he calls Neo-picturesque and design methods - numbers 5 and 7 of his periods.

John Musgrove in his paper 'Educating

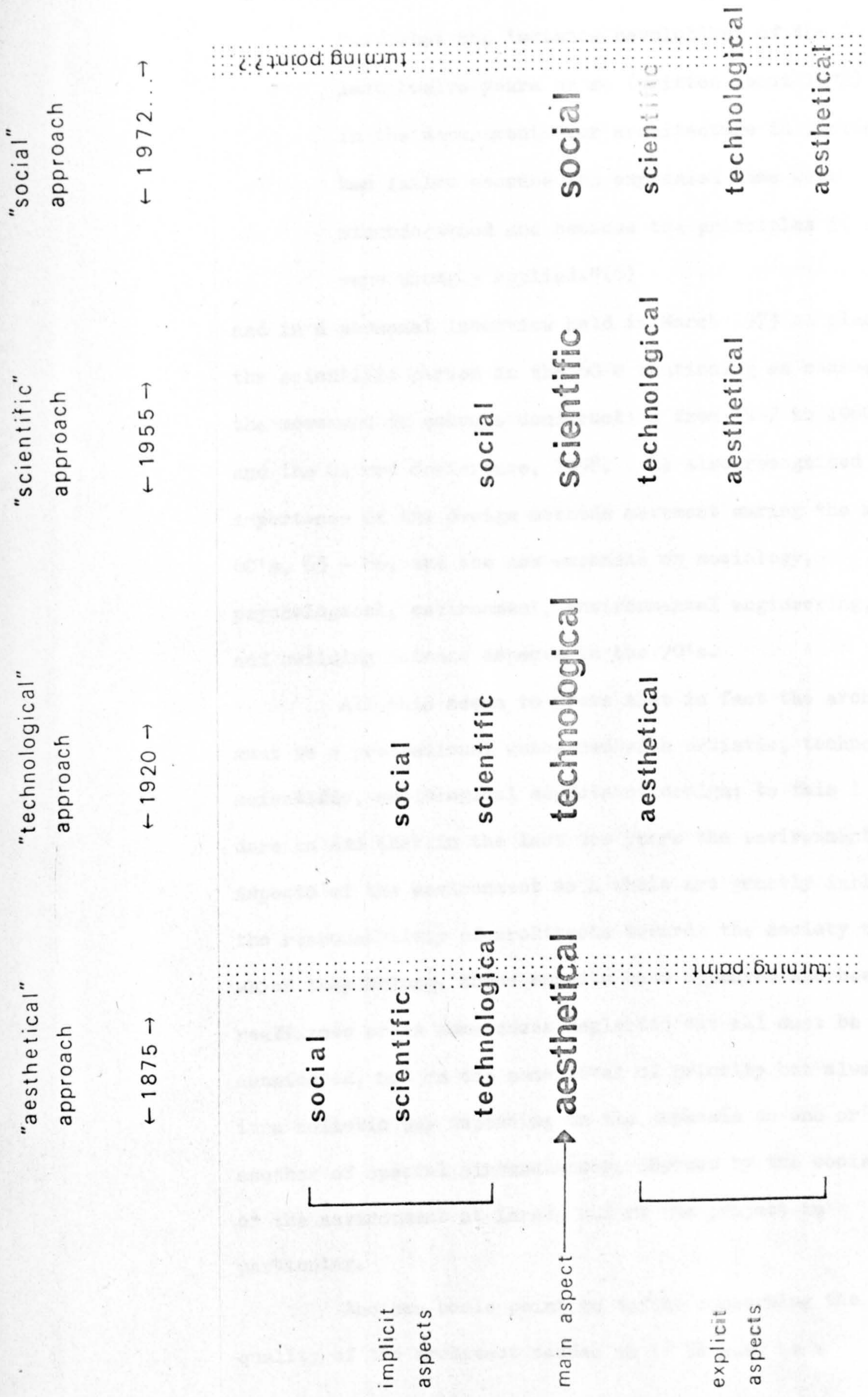


Figure 37
 predominance

environmentalists' coincides with these periods...

"... that the 'science revolution' of the last twelve years or so (written about 1972) in the departments (or architecture in particular) has failed because its expressed aims were misunderstood and because the principles it embodied were wrongly applied."(6)

and in a personal interview held in March 1973 he placed the scientific period in the 60's mentioning as causes the movement in schools construction from 1947 to 1960 and the Oxford Conference, 1958. He also recognised the importance of the design methods movement during the mid 60's, 65 - 66, and the new emphasis on sociology, psychological, environment, environmental engineering, and building science aspects in the 70's.

All this seems to prove that in fact the architect must be a professional concerned with artistic, technological, scientific, sociological aspects of design; to this I should dare to add that in the last few years the environmental aspects of the environment as a whole are greatly influencing the responsibility of architects towards the society to which they belong, these aspects have appeared and been reaffirmed or in some cases neglected but all must be considered, not on the same level of priority but always in a holistic way depending on the emphasis on one or another of special circumstances, imposed by the society or the environment at large, and of the project in particular.

Another basic point to define concerning the quality of the architect needed is if he must be a

specialist or a generalist: a specialist with well defined, and probably limited skills or a good realiser or a generalist with sound general knowledge, broad open critical mind and organiser, the co-ordinator asked by Hugh Morris (2). The enormous growth of knowledge, difficult to assimilate by one man, seems to call for a specialist as well as the complexities of different tasks involved in one single building, but this complexity and the existence of other specialists covering some of the possible fields for architectural specialists, as well as the need for an organiser to improve the design of a team ask for a generalist.

Even with the rather high level of entrance requirements at schools and the excellence, apparently achieved, in forming architects with a well grounded scientific mind, with creative capabilities, and good knowledge of management on buildings, it seems difficult that a new graduate will have the capacity to be immediately the generalist co-ordinator of a project team in which no doubt, with some exceptions, there will be experienced specialists, or having the capacity will be given the opportunity, considering the financial and organisational responsibilities involved in any project of a certain importance. This would probably mean that the co-ordination stage for a good generalist architect could be the consequence of some years of experience, rather than a first job possibility provided that he keeps pace with progresses and developments of the profession.

Architecture being a rather open subject, at

least as we know it now, in which different professionals take part, among which the architect is the more 'generalist', the architect specialist must or should be conceived as a specialist with a very broad, and not too superficial, understanding of all aspects involved in planning and building and its relation with the environment as a whole, able to perform one of the roles at any specialist level; this does not mean that other architects could perform another specialist task or a generalist one.

Later on, in this chapter when we speak about: what to learn? and how to learn? on architectural education we shall come back, briefly, to this point.

The other point I want to consider about the architect needed is the quantity, considering its present standards and the future, that is really the point about which we are talking when speaking of architectural education today.

10.3.1.2 The quantity.

The quantity of architects needed depends not only on plans and programmes about higher education, that allow the Universities or Polytechnics to take in more students following the expansion trend, but it should depend mainly on national building programmes, economy, social factors, changes in the building industry, new materials and techniques and how much all these things may be forecasted.

First some considerations about higher education facts and policies...

"In public services, like education and medicine, it is easier to assess needs than in private sector, since the state as the sole employer can, if it wants, decide in advance how many people it is going to employ. As a result the best forecasting work in Britain has been on teacher needs; needs for doctors have also been studied less successfully."(7)

" In the 1950's the study of natural sciences grew faster, in schools and universities, than any other branch of learning. This role has now been taken by the social sciences. At a level, for example, output grew much faster in science than arts until 1959, but then the arts backlash began. This was first noticed in the ROBBINS Report, but, perhaps unfortunately, no forecast was made of its future course. Since then the swing back has continued, with economics in the lead." (8)

Both quotations seem to agree in the importance of forecasting, although recognising the difficulties involved. In fact the former places a great deal of importance on the employer stating that being the government 'if it wants' may decide how many people it is going to employ, when in fact the wanting depends on policy upon economic factors, and in the case of teachers, as in architecture in my view, at least that must depend on population, its growth and building needs estimated in consequence comparing with what exists today, leaving all other variables to the necessary level of variations

that all forecasting must have.

" In the Soviet Union system of planning much reliance is applied upon projections of manpower requirements, and these are made on a most ambitious scale. When we indicated our difficulties in understanding how, with all the uncertainties as regards invention and the advancement of knowledge generally, reliance could be placed in statistics of requirements for more than a few years ahead, we were met with the reply that in the Soviet Union there would always be use for people who had been trained to the limit of their potential ability. We do not believe that the Soviet Union is the only country that can make full use of the brains of its people."(9)

This example taken from the Robbins Report emphasises further the importance of forecasting about professional needs, and although the excellent reason given could be usefully used to argue that there is no need of forecast at all if the final idea is that all well educated people 'could' be used. The case is somewhat similar to the English on secondary education, compulsory until sixteen years of age, after which only a few go on studying and most of the others lose the knowledge that is not directly used on their work, where they must be, generally, trained.

10.3.1.3 Present

Let us now revise some opinions about numbers in the profession and the education...

" From 1959 to 1968, the total number of architects on the ARCUK register increased from 19,183 to 21,300, and the number of RIBA members from 15,359 to 18,189. This represents a growth of approximately $12\frac{1}{2}$ per cent in nine years. The number is calculated to increase by a further 25 per cent over the next nine years - double the present rate of growth: the total registered with ARCUK is expected to rise to 25,853 by 1978, and RIBA membership to 22,233. The figures which are official RIBA statistics, are not based on any forward assessment of likely requirements for architects, but are merely a projection of the output of the architectural schools set against the normal reduction in numbers through death and retirement."(10)

"... there seems little doubt that the U.K. has one of the highest proportions of architects to population, and it seems more than likely that it is increasing faster than in any comparable country..."(11)

In this article Owen Luder is making some very important points, especially when he mentions the fact that the figures issued about the future numbers of architects 'are not based on any forward assessment of likely requirements for architects', that is how it should be. Then he goes on to qualify some factors...

"... In the not too distant future it is possible that the architect's work, in a growing proportion of the output of the building

industry, may consist of the basic design and planning process, after which his involvement will be drastically reduced and a large part of what now represents a third of his work - the preparation of working drawings, contract management and site supervision - may be replaced by a computerised schedule of components, assembly instructions and very little else..."(12)

insinuating that the profession will change drastically in the future affecting the building industry but particularly the architects.

" The facts are clear, and they indicate that there could be a serious surplus of qualified architects in the future."(13)

"... the indications are that, rather than increasing substantially, the size of the profession should be held at its present level, with surplus teaching capacity diverted to providing more post-qualification training of existing architects to equip them for a rapidly changing technological world."(14)

So, Mr Luder's article concludes that there will be a surplus of architects in the near future - about 1978 - and proposes 'training' for the existing architects, that is a sort of continuing education but focused on training more than education.

This article produced almost immediate answer of the RIBA Secretariat, discussing some of the figures, growth and interpretations of them, and stating...

" To study further the precise interaction of these variables and to relate them to the future pattern of demand requires that we should also have a more accurate picture of the types of work now being undertaken and the different kinds of responsibility exercised by architects. A pilot study on these lines, which also sets the results against a set of predictions about likely changes in building and the effects they could have on the present pattern of work, is being carried out by a working group under the direction of the chairman of the Board of Education.

Detailed follow-up to this pilot study should be a continuing and regularly updated process if there is to be effective monitoring of changes in the profession, a guide to educational policy, and sound advice to members and practices on trends in workload and the steps they can take to become resilient and responsive to changes in the pattern of demand."(15)

10.3.1.4 Future.

This means that there seems to be ways of trying to forecast the future needs on architecture - profession and education - and the pilot study underlined as a continuous process will certainly bring direct consequences to the Schools population and even to the number of schools.

As well as Owen Luder's article some others have been enquiring into the problem with doubts about the

need for more architects at the present moment, when apparently the growth of production will continue...

" A further problem is that architects cannot look forward to enough jobs. There are already more architects per head of population in Britain than in any country in western Europe. The numbers of those on the ARCUK register have risen $12\frac{1}{2}$ per cent in the last nine years to 21,000 and are expected to rise 25 per cent in the next nine..."(16)

This is Anne Corbett's opinion coinciding with the former cited that there are too many architects, but...

" We need more people in the schools and the profession who are recognisable experts, and also a system to produce them which is intelligible to others as well as to ourselves.

How many specialists? This is impossible to say, but if we extend the pattern of new post-graduate diploma in urban design, we could have similar postgraduate courses in, say, conservation, acoustics, and other aspects of environmental sciences, computer design, systems analysis, building economics and management. Advanced courses in design are equally suitable. The prospect is very wide and exciting. It would put architects on a much more secure footing and enable them to offer a better service..."(17)

Mrs Layton in these words seems to ask for

more architects, 'we need more people in the schools and the profession', then call for specialists saying that 'it would put architects on a much more secure footing and enable them to offer a better service', following this remark she sees expansionism of the profession as an advantageous possibility, but asking for 'say, a dozen schools' for this country. Apparently she firmly believes that more architects are needed - quantity - but that the kind of architect should be different - quality.

"... The need for architects will continue to be great, given a reasonable financial stability in the nation as a whole, but it could well be that the role may not always be a designing one, but the designers we do produce must be better than they have ever been before...."(18)

This opinion, the official one, of the Newcastle School of Architecture, coincides with Mrs. Layton almost entirely, believing that more architects are needed and that some change will come concerning the kind of architect to be prepared.

"... It has become increasingly clear that it would have been better to have had fewer, larger and stronger schools, and to have encouraged the grouping of the courses related to the built environment much earlier. No other country of comparable area and population has so many schools of architecture; the dispersal of resources over 32 recognised and five listed schools now seems absurd."(19)

This opinion, so strongly expressed, on 'a discussion paper' mentioned as 'an attempt to put together a number of RIBA policies', although it does not touch the problem of quantity of architects, properly, poses an interesting possibility to orient the production, if something could be done towards the end of reducing the number of schools which does not look easy at this moment, in fact when writing this work, well in 1974, four years later than the article quoted nothing noteworthy has happened in that direction.

There is no doubt at all that quantity and quality of architects produced must be carefully scrutinised, and that quality affects quantity from several points of view. For example at present the changing roles of architects and changes in the building industry as well as the different knowledges and skills of architects being formed in different schools. As a permanent factor the productivity of the architect in his job, and of other professionals concerned as well.

In the paper mentioned above 'The future pattern of demand' some pertinent observations are made about this relation quality - quantity that must be considered.

" The figures showing the ratio of architects to population in different countries present several difficulties. As they stand, they conceal the fact that different definitions of 'architect' are used; that architects handle a widely differing proportion of total building workload in these countries; that the employment

pattern of architects in the industrial and social structure varies just as widely; and that the distribution of responsibility among building professions also varies. While there is no doubt that the UK does have a high proportion of architects per head of population, these figures cannot be taken in themselves as proving that the numbers are exceptionally high in terms of the workload handled..."(19)

In fact if we take Venezuela as a comparison where the ratio population architect is 10,000 to 1 - almost four times higher than the U.K. - we find that the building professions are quite different, responsibilities are different, and the social conditions quite another thing. So that even being certain that the ratios are too far apart to be compared we cannot really draw conclusions about the real needs of one country or another by comparing these ratios.

As far as I could see after the visits paid to the schools - 1973 - between 1970 and that moment many changes have been going on and will continue, many of them towards finding the 'right' kind of architect, if there is any, but none concerned with the quantity - quality problem as a whole which requires a national policy at school level. Is this a problem for the Council or the RIBA, or the Grants Committee or all of them together?

10.3.2 Defining objectives.

In this chapter so far we have stressed the importance of objectives in education, studied the objectives offered by

the schools which lead us to considerations about the architects needed - quantity and quality - detecting a search for a different kind of architect which means that objectives must be redefined, now we shall study opinions about which the objectives must be starting from education in general to end up in architectural education.

10.3.2.1 On general education.

The purpose of looking into the objectives of education in general first, instead of going directly into objectives on architectural education is not to discuss the professional implications of the objectives, but only to find out if architectural education is fulfilling its part of the education of architectural students as better human beings, and therefore providing for possibly better architects.

" This essay has defined education as the organised deliberate attempt to help people to become intelligent. It has insisted that the object of education is not manpower but manhood. It has suggested that education in this sense and with this object may come into its own in the twenty first century."(20)

In this sense education tends to the furtherance of the individual, and assumes that in this moment this is not being done when hopes for the next century, which is a very very long term view.

" Education is not the name of an entity but a complex organic structure of interacting processes varying with the situations to which it refers."(21)

Important point about the influence of relations and 'situations' that belong to a society and direct education that has no isolated meaning.

" But perhaps the most important contribution that education can make is simply the opportunity that it gives for each man to develop his own special skill and to work on something that he knows to be worthwhile."(22)

" What is needed is the abandonment of the idea that education is a means to a better job and a higher status. In the developing countries, as in the developed, this is a distorted and misleading aim."(23)

Two different views and apparently contradictory opinions that in fact are not necessarily so because being true that education must not be seen as a means to a better job but to develop the individual, it is also true that education for education is a rare phenomenon, and at the end the development of the individual through education will allow him to do a better job of some kind, unless there is some sort of vocational mis-orientation, which unfortunately happens too often, but that is another problem not depending on objectives but on organisational and structural facts of society and education.

In fact even the individual enhancement through education needs to be related to the society to which it belongs.

"... education is most concerned with moral

qualities... an emphasis on the individual
has obscured the qualities to work in group...
education is concerned with the individual
but never with the individual in isolation..."(24)

The author of these quotations is claiming as
long ago as 1963 an emphasis on group working within
the emphasis of the individual which 'has obscured' the
work in group. Even believing that this claim was
exaggerated at that moment, both points are valuable
as educational objectives.

"... Thus the primary educational objective
is the 'heuristic one, the 'learning how to
learn' (84) which shifts the main educational
activity from 'teaching to learning' (85) and
makes possible greater adaptability to future
changes."(25)

Learning instead of teaching has been a change
commonly promoted as a 'modern' approach to education,
by fashion, by fear to be considered outmoded or to be
rejected by students, but as stated above it has the
value of 'adaptability to future changes' although
as Mrs Abercrombie says "... deep problems of learning
and teaching are the same"... (26). This brings us
to the problem of using the knowledge...

"... education is not merely attainment of
knowledge... but the ability to profit it..."(27)

That being a correct assumption education
must not only provide the way to learn, the knowledge
needed, but also the way how to use that knowledge
profitably, for which there are exceptions, if it

pretends to be a complete education and here we come to the concept of training which must, or need, not be opposed to that of education but rather a concurrent objective...

"... education ... acquisition of skills that is procedure orientated...

... training ... acquisition of skills that is product orientated...

... achieve the right balance is the problem."(28)

" We do not believe of training of any sort in schools of architecture. Training is the task of teaching people how to do well what is already done, and eventually this is the job for the profession. In contradistinction, education is the job of teaching people to do new things, or old things in a new way, and this is a job for the Universities."(29)

Without pretending to discuss the definitions implicit in the latter quotation there is clearly a concern about training and education, and the how and where they must be provided, but there is agreement that both must be provided to someone willing to become a professional.

10.3.2.2 On higher education.

When speaking of objectives on higher education a look at the Robbins Report provides a good start ...

" On our submission there are at least four objectives essential to any properly balanced system...

25. We begin with instruction in skills suitable

to play a part in the general division of labour...

26. But, secondly, while emphasising that there is no betrayal of values when institutions of higher education teach what will be of some practical use, we must postulate that what is taught should be taught in such a way as to promote the general powers of the mind...

27. Thirdly, we must name the advancement of learning. There are controversial issues here concerning the balance between teaching and research in the various institutions of higher education and the distribution of research between these institutions and other bodies.

28. Finally there is a function that is more difficult to describe concisely, but that is none the less fundamental: the transmission of a common culture and common standards of citizenship..."(30)

Training as such, and as a means to educate the mind, education, research and social responsibility with 'general cultural life of the communities' are the four main objectives of higher education according to this influential Report, that later on expresses confidence for an orderly future...

" 732. We began this chapter by asking whether it is possible for higher education to enjoy in the future at once the advantages of freedom and of orderly progress. Our analysis shows that the answer to this question is 'yes'. There is no reason why the needs of the future should infringe the fundamental freedoms. Where co-

ordination is necessary, there are means to achieve it that do not involve compulsion and that provide an effective insulation from inappropriate pressures."(31)

In fact, ten years after that Report that freedom is still there, if not the same probably more than when the study was made.

Professor John Musgrove suggests that higher education should get closer with continuing education...

"... a gradual blurring of the boundaries between 'higher' and the so-called 'continuing' education. There seems to be no operational reason why universities and polytechnics should remain exclusively geared to degree getting, nor indeed to the education of one particular age group."(32)

The RIBA have established the objectives for continuing education as:

"Filling gaps in knowledge...

Keeping up to date with developing technology...

Specialisation...

Sensitivity and flexibility..."(33)

These objectives in many ways are the same as those prevailing in higher education and the real need for education after getting the degree is so obvious that something must be done as Sir Eric Ashby puts it...

" Sir Eric Ashby once suggested that all degrees should be cancelled after a number of

years on grounds of their technological obsolescence. One can imagine one or two people objecting to this; but it seems likely that among the biggest of all impending changes in university life, will be the growing number of older students coming back to recharge their batteries."(34)

certainly this would be a change for universities that could find not only a balance between the all too young new entrants and the 'new' middle aged students but also an excellent feedback to reshape not only the teaching - methods and content - but also the learning - research. With all the administrative and financial problems involved it will be exciting to see a binary system of continuing education functioning - the actual educational centres such as Universities and Polytechnics, and new ad-hoc centres.

The relation with profession would undoubtedly have a greater influence on education than it has now, even considering that, as suggested by the Swann Report, manpower must influence educational objectives...

" In the same vein the SWANN Report has recently recommended that at University level... ' to meet current and future needs of employment, and to give students of science and technology some understanding of the society in which they will work, universities should consider making the first degree course in science, engineering and technology, broad in character, through

multi-disciplinary approaches to these subjects and by reproducing relevant study in other fields such as economics, sociology, law etc.'" (35)

One of the common factors found in several definitions about education, and educational objectives, is the need to develop a critical mind or attitude as a possible way to overcome the continuous flow of new information and knowledge, it is therefore interesting to quote the following observation about examinations...

"... Examinations are in fact 'a key problem in higher education. They define objectives, they determine the whole educational procedure'(91).

Thus they constitute one of the main obstacles to co-operation between staff and students in their common objective, and they are one of the most important factors which militate against the development of a critical attitude in the students: ..."(36)

Difficult as it is to agree entirely with the last paragraph of this observation it is, nevertheless, interesting to note that in fact many times examinations have become one of the most usable ways to assess if objectives are attained or not, and this is in itself a dangerous situation.

10.3.2.3 On architectural education.

Speaking about architectural education it is perhaps useful to begin with a reference to the Oxford Conference, one of the limiting dates of our work.

" The Oxford Conference (1958) is generally

regarded as one of the most important turning points in architectural education in the post-war period. The future needs of the profession and, important in the context of this paper, the means by which technical skills should be integrated with design have been actively debated and written about. These and other influences have resulted in significant changes in education. However the pattern of development has been rather chequered and the rate of growth exponential. The results of innovation have only manifested themselves in the more recent past. Differences of interpretation, the freedom to experiment, available knowledge and resources have all been instrumental in producing the wide diversity of aims, content, techniques and, as important 'end-products' that exist at present."(37)

There is in fact in architectural education the kind of freedom that objectives for general education are asking for, and architectural education seems to be, according to some authorised opinions, a good education in itself...

" The purpose of education is to develop the range of talents and to stretch the mind. That is my starting point. And architecture is a subject around which to build an educational system is not only interesting: it is unique because it starts with people's needs and choices and because its problems can be seen

all around us. There can be a realism about the subject in which both students and teachers can feel equally involved. Further, I know of no other university subject in which students need not start by acquiring a body of knowledge...

... Architecture is potentially a very complete educational process because it requires that students learn by recognising problems, by identifying them, by analysing them and evaluating their various parts, and then bringing everything in final solutions."(38)

This opinion of Sir Leslie Martin is shared by many educationalists on architecture, personally I had the opportunity to listen to similar concepts from Mr Broadbent in a personal interview. Peter Stringer has a very well known article developing this idea. (*)

Another point of view of the problems in architectural education emphasises the need for more relation with the real life situation...

" One of the main problems in architectural education is the fact that over a period of five years work the architectural students never see any of their buildings erected, and therefore never receives any 'feed-back' on his design decisions, as he would in reality, especially if any of his buildings failed in environmental terms..."(39)

(*) See reference 96.

It seems difficult to overcome this real fact since it is unthinkable to make it possible that each student of a school of architecture, being supposedly able to develop a project to the building stage in the school, could build it. The paliative to that is the practice in offices that already exists with varied luck or efficiency from one case to another, depending on schools, student and office.

This practice in offices, that is more training than education, is well recognised by Sir Leslie Martin who points out the difference with education...

"... I do not for one moment underestimate the need for the kind of training that can be obtained in both small and large offices. No school is a substitute for that, although some, notably Birmingham, have made considerable efforts to concentrate on this training aspect.

What I have been talking about is not training but education. It is the effort to extend its range, to build up, if we can, something which can be described as a school of thought around the subject. And if we do that successfully, we extend the capacity of the future profession."(40)

Some of these efforts to develop the mind and stress the need of individuality which are, as we have seen, recognised educational objectives found in architectural education, produce completely opposed results, if we are to believe the contrasting opinions that we bring forward immediately:

" The average student is equipped to do little

and suffers from a galloping inability to communicate meaningfully with his contemporaries. He is his own ideal designer's dream - a self-contained isolated ego-tight package. He is the anti-product of a series of disastrous affairs with his mentors, having strumbled for five long years over half-wit, half-backed philosophies while nurtured on a competitiveness that makes the Marat-Sade look like a tea party."(41)

" Whilst many of us worry about the current state of architecture as practised in this country, there is no doubt that certain of our architects - and certain forms of architecture - are held in very high esteem internationally by other architects. But that is also true of our architectural education. It is generally recognised that the best of our schools offer more progressive, better balanced courses than are available elsewhere, as a constant stream of visitors testified. They come to examine our courses, our teaching methods, and to export them to various parts of the world: continental Europe, the Commonwealth countries, North and South America, the middle and far East, and so on. Clearly the best of our schools, like the best of our offices, are doing a thoroughly competent job. They are both exercising their professional skills at a very high level."(42)

This poses two different kinds of problem: one is the sort of attitude the students may develop as a

consequence of tutors and school influence, and the other the problem of communication that may have two causes: lack of content to communicate, or lack of means of communication; this last probably being easier to solve through some kind of training not being given currently in some schools that believe that students are able to cope with this deficiency by themselves.

The attitude problem may be solved if objectives are so clearly stated that in each school there is a common purpose about the kind of education that must be provided and that education in itself is based on a critical thinking serious enough to produce self-criticism and humility. As well as in other fields of architectural education the attitudes are so often criticised as welcomed...

" I believe that the problems of architectural education today lie less in the students educational standards than in the attitudes they acquire in their student career."(43)

" We need young people in our profession, if for no other reason than to remind us constantly and often painfully when our conventional wisdom no longer measures up to solving contemporary problems."(44)

" If a graduate architect adopts the role of a quasi-sociologist (for which he has had no real training) in deference to his architecture, then there is something wrong with the basic objective of education."(45)

There is no doubt that the lack of humility in young architects is not a new attitude in the sense that it has a rather long history, and that it is not concomitant with present complexities of building and planning.

" The nearest thing to advocacy of architectural bossism came from the RIBA President, Peter Shephard, who adhered to his view of the architect as the universal man and wanted him to recover his earlier role as the overall environmental designer. Barrie Wilson, Professor of Architectural Science at Edinburgh, considered that, in the context of present day problems and knowledge, this was unrealistic."(46)

"... A reunification of education and practice would help to prevent architecture from becoming an irrelevant academic discipline and restore confidence in the profession's ability to provide leadership during a period of social change."(47)

It is probably this search for 'leadership' and 'bossism' instead of co-operation that has influenced the attitudes of new architects as much as a belief that the new kind of scientifically based architectural studies gives them enough knowledge as to go out to practice and tell, from the very first day, what they must do to experienced practitioners.

There are, nevertheless, voices asking for an education based on co-operation with other related disciplines.

" Can we look now forward to the day when RTPI students may take the RIBA urban design course as part of their training and, even further, to RIBA urban design students using that diploma as an integral part of the later RTPI qualification? Not only would this be progress academically, but the professional reblending could be vitally influential in moulding our future urban environments."(46)

This broadening of architectural education, exciting as it is being full of new possibilities for the education as well as for the profession, it must have, no doubt, a limit or like architecture itself could be asked to reach just about everybody...

" The key problem is how to provide not only for both extremes (i.e. an educated public and fully competent professionals), but also for a middle group of specialists or technicians, within a unified system of education for the building industry shared by all three. The answer is almost certain that it cannot be done, except by a variety of courses within a much broader framework than the Board of architectural education has seen fit to encourage in recent years. Detailed solutions depend on such a context. First, the future structure and size of the profession should be reconsidered in the light of current trends and new kinds of practice, and the student intake adjusted accordingly.

Second, the diverse but interrelated nature of educational objectives should be recognised and re-stated. Third, the schools should be encouraged to provide a variety of courses and qualifications within an agreed range of educational options for the whole building industry."(49)

Reasonable as it is to look for a new kind of education and changes in the profession to adapt early enough to the rapidly evolving reality of our times, it must at the same time be important to find out which are the roles to be played by architects that other professionals are not well prepared to do. The first thought is always for the aesthetic aspect of architecture in which no other profession, with some exceptions, is really prepared to solve, admitting as we all do that the constraints for the somewhat restricted - but important - aesthetic decisions have and are changing, and must be revised. But, there are other aspects that must be studied and stressed so that the profession may win in strength as a result of the co-operation instead of becoming an unidentifiable part of the design and building processes.

" It is thought that architects are trained to think as much in terms of people as things, whereas the human dimension is relatively absent from engineering education. Certainly, on the one most obviously relevant item, on 'social responsibility' the architects show a much greater concern (item of the questionnaire) for

people. The possibility that it may be rather abstract or formalised concept is suggested by their smaller concern than the engineers for human relationships within the work context. But it is possible that architectural education would benefit from a clearer demonstration of the architect's relation to people, and that engineering students have considerable untapped motivation for a more humanistic approach to their subject."(50)

The concern for human beings, social responsibility, are the aspects of the built environment in which architects, more than other professionals related to it, may offer a unique contribution and as Peter Stringer very justly points out "architectural education would benefit from a clearer demonstration of the architect's relation to people". That could be one of the strengths of the profession in future developments, but that again calls for a tight co-operation with other specialists: sociologists, psychologists, behaviourists, environmentalists, economists, etc.

To be able to understand human beings, work for them, satisfy their needs and give them delight through architecture it takes an ordinary human being or a very special one?

" In its management role, architecture involves the knitting together of a number of different professions. It also requires the kind of judgement that cannot easily be taught unless natural gifts are present to start with. It

is at least arguable that the whole profession might in the next generation come to be seen as a postgraduate rather than a graduate discipline, of which management would form a significant part."(51)

"... no selection... every normal person may be an architect if we teach and train him..."(52)

Certainly there is a coincidence of criteria in saying that to be an architect 'natural gifts' are required and that architects must be leaders or bosses that also requires some 'gifts', but need all architects be leaders and bosses or 'gifted' managers, in that case who is going to do the work.. other professionals? I don't know if 'every normal person' may be an architect, in fact I don't even know what 'a normal person' is, but my experience has shown that many times 'the gifted' students or architects are excellent facadists and produce if not nice at least complex forms, impossible to live or to work in, and the hard working intelligent ones are abler to come to solutions that, we believe, are closer to architecture.

Difficult as it is to fix objectives for architectural education for normal people I cannot imagine how one could do it for specially 'gifted' people now that the profession tends at the same time to diversify and specialise around the needs of human beings, and not the buildings themselves.

A short mention about the future...

"The one thing that's clear from going around schools of architecture is that the people in

them will commit themselves to what architecture is now, and certainly not to what it will be."

Architecture, as almost everything else, has been changing and will continue to do so at a continuously increasing pace, which explains the reluctance of schools to commit themselves to what architecture will be in the future, but at the same time gives particular importance to the responsibility to prepare for that future. Objectives like those discussed when we looked into the objectives for general education become more valuable because, instead of information that might become obsolete, they provide means used to learn. This stresses the need of a broad general approach to architectural education, as well as for specialisation, but a kind of specialisation that might be taught as a way to stress the mind and that might be disposed, changed or actualised.

" Specialisation should be postponed as long as possible. There should be a choice in length of course and qualification..."(54)

10.3.2.3.1 How to learn.

It becomes more and more clear that the stress in architectural education must be in developing the mind, individuality within society, special concern for human relations and needs, teach how to learn, and this is a very interesting point that I want to study now, being in fact a change from the usual 'what to teach' position of many schools for many years.

With the continuous growth of the amount of intellectual knowledge and the more efficient ways of communicating it, the selection of information to be provided and demanded of the students has become more difficult, the new orientation of objectives towards learning does not solve the problem entirely but shifts direction and in some schools, like U.C.L. and Portsmouth for example, there has been during the last few years an emphasis, through several courses, on teaching or at least making known the processes of learning to the level in which students get consciousness of them when learning.

The idea of learning instead of teaching in architectural education is not a new one:

"... But the germ of the course (and I dramatise it for the sake of emphasis) would be the principle that nothing should be available; that the school should not be conceived as a system of static ideas gravitating from Senior Masters through Unit Masters to the students, but as a unity of masters and students working together for the same end - an end not of victory and the establishment of a style, but of the refinement of a method of attack. That should be our object at the moment; try to do any more would be to run before we can walk..."(55)

The method described as attack seems to have evolved towards intellectual preparation...

" The aim I shall talk about is that of teaching people to continue to learn, to be able to solve new problems, to react effectively to change, to be flexible, original, creative. The method I shall suggest is that of making people more sophisticated about their mental processes of helping them to become aware of some of the factors that affect their perceptions judgement in matters related to their work so that they can have better control over them and can choose between alternative modes of behaviour that are not otherwise open to them. I am not suggesting the insertion of another subject, perception and cognition, or social psychology, or human relations, into syllabus, but rather that facilities should be provided for a certain amount of self-exploration."(56)

At the same time that Mrs Abercrombie made so pertinent remarks, 1963, some other opinions tended to place the reality of the educational environment...

"... education demands considerable changes... a heavy heritage... new subjects new methods... England is late in this.."(57)

".. fundamental knowledge... he must

above all acquire the type of
technological humility... accept
advice..."(58)

reality that, we are sure, has changed considerably
for the better, although some critics may be found
about the position of the universities.

" The universities have always been
able to avoid trouble by two means: first
by being highly selective in taking
students (you want to come here but do
we want to teach you?); second, by
insisting that students must above all
'learn to learn', that they must be self-
motivated and competent learners, and
that bad learners must be failed, not
helped..."(58)

Again 'learn to learn', seems to be a real need
that after all any respectable professional will
be grateful to learn considering that, in most
cases, the architect must be learning all his life
about new situations in order to be useful.

The learning process requires of the
learner, and of the one who provides for learning,
some conditions...

"... For instance the student cannot be
expected to educate himself, that is
to accumulate knowledge and skills on
his own, if, of course, the proper
spirit is lacking, and, equally important,

if he has not at his disposal the
appropriate laboratory or library..."(60)

that are easily found on both sides in many schools of architecture, with results that in many cases are found satisfactory for some offices offering practice, even insisting on the lack of skills for handling the day to day work that seems to be the neglected side of education and training, perhaps because there is a lack of definition of responsibilities and/or objectives. The next is a good example of what is in fact happening with many new graduates or students on their year out...

"... of course students in their first job and with no experience at all will not be very useful for two or three months. But they are more intelligent than students a long ago, quick to learn and eager to do so, and many also draw well.

Of course students expect to be given reasoned answers to questions which often require answering in terms of first principles and this is both intellectually demanding and time consuming. But it is also very stimulating - it is the inevitable result of having intelligent recruits coming into the profession. This is what we all want, isn't it?"(61)

This opinion coming from an office that takes 15 to 20 students per year is a good reference, and it seems useful to compare it with

some others that point to other aspects of the practice which is a good way to test the student, at least against what architecture is today.

"One excellent student whom we employed had not produced a working drawing during the first three years of his course, but he had a good analytical mind, sensitive feeling for design and was altogether a person of quality."(62)

" I have become in the last few years more and more concerned at the dilemma occasioned to students themselves by the emphasis placed in school training on the identification of problems rather than their solution, whether these problems be sociological, technological or aesthetic."(63)

No doubt the case mentioned in the former of those two quotations is rather exceptional, there must not be many schools nor many students that after three years in architecture have not drawn something, at least in this case working drawing is used strictly and in that case instead of the exception this case is the generality, not many schools ask for 'working drawings'. The latter observation is also important and that could be a deficiency of objectives not asking for architectural studies as a problem solving discipline at the same time as developing individuality of the mind.

There seems to be little doubt, if any, of the importance of how to learn for architectural education, being the purposes of stretching the mind, consciousness of intellectual processes, and the use of a problem solving activity, like design, with the proper transference good ways to get to know it, but there must as well be some kind of basic background of knowledge for architectural education, that is the 'what to learn' that must be explored.

10.3.2.3.2 What to learn.

Trying to find out the answer to 'what to learn' I have found many opinions that, even being somewhat different, reflect the possibility to deduce some fields of agreement. First we shall see those that speak in a more general way and later those that go into detail.

In 1938, Le Corbusier expressed the following ideas:

"I would strive to inculcate in my pupils a keen sense of control, of unbiased judgement, and of the 'how' and 'why'... I would encourage them to cultivate this sense till their dying day. But I would want them to base it on an objective series of facts."(64)

the old master speaks of 'sense', 'control' 'facts' and the 'how and why' but not about what, and that is what makes that phrase valuable today, probably more than in 1937 or 1938. But we must

try to find a way to say what without using
precisions that make the 'what' obsolete the
moment we say it, if we want to be able to define
objectives at all.

"... You cannot teach a student in
five years to do singlehanded all the
kind of things that are expected nowadays
from the architectural profession. I
doubt if you could do it in fifty. You
can teach enough about all those things
for him to know whether the advisers he
will always have to seek are competent or
incompetent, you can teach him to be the
wise general of a specialist army. You
MUST teach him to be a good designer,
because the man who can design can lead;
he has a fitter and more potent brain
than has the man who can merely study
or tabulate or propagate ready-made
theory."(65)

Not necessarily agreeing with all these
concepts, there are two facts that seem important
in the last mention: one, the student 'must' be
taught to design; second, we cannot teach him
all the things he needs...

"... what is required is to broaden
the mind of students with a comparative
broad course of environmental studies,
parallel with trying to design for the
environment..."(66)

again design is clearly mentioned as being substantial together with the need for a broad course.

" If the learner expect to pay attention only to that which he feels instinctively at home with, and refuses any task which feels like work, or whose relevance is not immediately apparent, or of which does not politically or religiously approve, he will lose important opportunities of extending and exercising his own skills and will fail to develop his own potential."(67)

"... it is important give the students: ideas, skills and facilities to communicate... both extremes are bad... Let students free to do as they like and give them everything..."(68)

The learning must be orientated, the freedom should not allow for a complete looseness. The development of the mind requires to work, probably more on those areas in which we are weaker and, consequently according to our very human nature, we should be only too pleased to avoid. Architecture is the kind of profession where the difficulties cannot be avoided but must be solved.

Important points are made by Cedric Green concerning the approach to learning, independent that the attack on the RIBA is not fully justified

and in many senses weakens the validity
of his concepts...

" The RIBA syllabus reveals an approach to education that is probably at the basis of most of the dissatisfaction with the RIBA system, and which is based on what I shall call an 'inductivist fallacy'. It assumes that an education consists of the accumulation of isolated elements of knowledge and skill, each developed separately and pursued arbitrarily to whatever depth time will allow."(69)

this is, in fact, what happens in many schools, but I have found a search toward integration of some kind around projects, difficult to reach but necessary. Green goes on saying...

"... the hypothetico-deductive approach.. After identifying and structuring his design problem, the designer, from his experience in similar situations, selects a plausible tentative general solution, and then checks against the information available.

Learning to design... is not easy and it is important to develop it right from the beginning, bringing technology into the educational process in a different way - into every design project, with an emphasis on understanding

and application. Relevant factual knowledge is assimilated automatically and, because its relevance seen, remembered for longer. The same argument applies to the integration of social, economic and planning studies. Every aspect, human or technical, of designing buildings (or any other artifact within an architect's competence) should be present from the beginning of an education, and continue all the way through, developing in depth as required by an individual student for the specific design problems undertaken. In this way the education will not seem to come to an end, but will continue in practice."(70)

The need for integration at the right moment 'the beginning' and the use of relevant information for design are emphasised, as well as the need for a kind of education that instead of ending before the practice goes into it. Once again design is commonplace although the educational aspects are specially mentioned making it more a means than an end...

The scientific approach to architectural education has been welcomed by many as a way to find new viewpoints to design is criticised as being negative:

"... Garratt claimed that this pseudo-science was squeezing the life out of

the 'project' which offered an education which was practical, unpredictable and frequently live..."(71)

"... or they strive to transform architecture into a science, to give it the respectability of a scientific discipline widening the curriculum to include research which uses status augmenting, computerised data processing techniques."(72)

The scientific approach, widely recognised as we have seen at the beginning of this chapter as a reality should be used or put to the service of education of profession without becoming an end in itself, as likely happened with design methods during the mid-sixties as we saw in chapter seven.

Commonly discussed is the relation education-profession that exists in different forms as we saw earlier in chapter three. These discussions, that in my view are very healthy, comprehend not only the relations between schools and offices but as well training and education, and the need for more integration.

"... schools of architecture don't educate... are closed to society... is needed to rapprochement - education and profession..."(73)

"... But practice without theory is blind, and the reason for much of the present confusion in architecture and

architectural education is that its practitioners are groping in theoretical darkness."(74)

From two different points of view - BASA and RIBA - criticising schools and practice, each in his own field, the same rapprochement is asked.

" The Cambridge Conference was notable for a return to the old plea from the professionals present for an education which would fit graduates for 'jobs in the office'. It should be said that similar pleas can be found in criticisms of educational patterns in almost every subject area and in every period of history. Certainly I remember precisely similar criticisms of the course I myself took twenty years ago, and well before the kind of subject dilution the present proponents of this view are worried about."(75)

" On the other point of complaint - the over academic nature of schools - the Conference found itself strangely in agreement with the voices from the profession which call for schools of architecture to be brought down to earth."(76)

The former quotation of Professor Musgrove reaffirms both previous and the

latter referring to a Conference held by students in December 1973 at the A.A. Nevertheless, the permanent discussion goes on, and the schools seem to be considering the needs of practices to some extent, even too much...

"... What everybody overlooked was that though much of the talking was done by research orientated academics, even the most advanced schools are engaging only a fraction of their time and resources on research or post-graduate studies while the great majority of students (possibly far too many) are being educated for practice in the traditional way."(77)

Not being the purpose of this chapter to try to sort out what is the real situation, it is interesting to note that both mentions, that of Professor Musgrove and this one of Malcolm MacEwen are referring to the same Conference, Cambridge in 1970;

The need for some basic theoretical knowledge and for more 'appropriate' relations between education and practice seems clear, and the point where this knowledge and this relation come to be proved is design, the question I would like to study now within the context of objectives.

"... There must be a balance between creative practice and conceptual education..."(78)

"... most students understand - in principle - the essential bases of environmental control, building structures, the role of the architect in society, the nature of communication, the process of designing, and most other things we ask them to write about. But that understanding is by no means reflected in the designs they actually produce.."(79)

The first quotation is asking for balance and the second denouncing a lack of it in architectural education, that cannot be attached to the kind of education itself but rather to the actual way in which it is provided, if we are to accept this RIBA statement that I have found is widely and deeply believed by architects and educationalists:

"... The design process can be looked at in educational terms as a most rigorous intellectual discipline capable of achieving educational goals of a high order. In the intellectual field, skills and abilities such as synthesis, application of knowledge, analysis, evaluation and judgement are the essence of the process. In the affective domain, that whole other world of qualities such as perception, emotion and personal development - educational objectives of a different

order - is also served by design."(80)

Very useful clarification and recognition of other educational objectives we have considered above. The RIBA article goes on to suggest the need of supporting disciplines for design:

"... The high standards set in design make it essential to deal with these supporting disciplines equally thoroughly and at a level to ensure a fluent design ability. These disciplines tend to fall into three very broad categories: those in which the student must have a sound and detailed knowledge and in which he is able to apply methods and principles; those in which the student must have an understanding as essential background to enable him to draw on basic principles and theories; and those of which the student must be aware so that their process is appreciated and can be used by appropriate external reference or collaboration."(81)

These categories suggested, and very clearly defined in relation with design and its role within it, raises again an old problem, that of the second hand subjects that students consider unnecessary and subsequently negligible which deepens the difficulties of integration, but it is, nevertheless, a reality that takes very intelligent students and able staff to overcome.

admit and make the best use of them.

A concurrent opinion about different categories of knowledges and - in this case - skills is recognised here:

" I believe, as do numerous others in the field of environmental education that the integration of a wide range of categories of knowledge and skills is essential to effective action. I would like to see education moving towards such effective action and not away from it as I believe it is now doing."(82)

The concept skill for which we tried to bring a useful definition earlier on in this work, in chapter three, is used in very different ways and sometimes becomes education when attached to design...

"... that a design skill is paramount and must be developed, but at the same time design must be based upon a very real understanding of the problem involved. Purely subjective design is generally of little real value, but, nevertheless, even in situations needing deep analysis the creative process must start at an early stage..."(83)

In fact the School of Architecture of the University of Newcastle uses the live project as much as possible during the last years to try

to get this 'very real understanding of the problem', and emphasises the use of methodic design as integration and educational tool.

BASA during the 1962 conference produced some aims for architectural education that it is worthwhile quoting now, because they summarise several valid objectives...

"... the architect must be

- educated to understand the needs, problems and behaviour of society and its progress (broad education)...
- trained to be able to evolve in the various complicated fields of building (specialised)...
- as a part of a team in the design process...
- educated to do research..."(84)

Before we go on into the more special aspects of 'what to learn' it seems useful to bring in some words of Sir Leslie Martin about the levels of architectural education actually existing and their different roles.

"... If the emphasis at the undergraduate level is on innovation and questioning, in a real world situation then the emphasis at the research level is on the extension of that process into theory. And if that is true, then the post-graduate work might be regarded as the testing out of theory by application to a number of diverse

problems."(85)

The implication of setting clear different objectives for the levels of current architectural education clearly deserves consideration, what is not so clear is how a design project could be tested out 'by application' or any other kind of theory that could not be forced into the educational framework - time or resources.

Let us start this study of more special facts of 'what to learn' by the relation theory and project...

"... in England - as opposed to Germany - theoretical subjects start when they are needed as a meaningful knowledge for a project...

... most schools are tending to organise studies around the project work..."(86)

"... One speaker expressed what seemed to be an educational truth: that intellectual development is hastened by firsthand experiences and not just by acquisition of facts. These experiences need to begin in year one and run right through to year five and beyond as a continuous and not an intermittent process..."(87)

The knowledge given must have relevance to some work 'experience', in many cases project work, to be really acquired by the learner, seems to be the conclusion of those remarks.

" The Schools also have been taking stock; some of them have developed integrated courses in which the input of the various specialists is related much more successfully to the overall context of architecture and its design. They have also taken steps to ensure that when their students emerge into practice, they will have at least the minimum of technical competence necessary to do an effective job in the office..."(88)

Broadbent reaffirms the importance of integrating around project and brings us to the problem of training, recognised widely as a necessity in, or with, architectural education, although the forms, length and operational aspects are discussed. First let us look into the training in the very wide perspective of education and the foreseeable future.

" Training and informing are doubtless important social activities, but it seems unlikely that they can play a dominant role in the education systems of the future. The rapidity of change, the superiority of training on the job, and the prospect of increasing free time, to which training can have no relevance, all tend to move it away from the centre of educational interest..."(89)

Training in architectural education, so far, is mainly 'on the job' thanks to the years out, and that should be, according to this, a sensible solution, being as they are the observation used as basis very real not only for the future but already for the present. This should throw some doubts over the project office if it becomes in some way too academic, but as far as I could see during the visits I did they are intended to stay as much 'offices' as any other.

"... Another way might be to place much greater emphasis on the appraisal by students of buildings in use. They would then be able to test their theoretical knowledge against real life, and vice-versa."(90)

The application of theoretical knowledge in many specialised subjects is not easy to obtain, and this idea of appraisal of buildings, being used in several schools, even in architectural history, is in the same line of thought with our quotation (87) asking for experiences, although this is not a kind of 'first hand' experience it helps to see by failure specially the importance of detailing, that Professor Howell of Cambridge told me should be used in all experiences when teaching structures.

The need for training at schools, and touch with reality, are well dramatised by the

following quotations of the .A.J. Enquiry about architectural education published as 'Educating the Architect' in June 1973.

" A school which turns out students who, whether at the second stage or the first, cannot quickly play a useful part in an office is not doing his job and should have its course examined. One which produces men who are only technicians, however useful, should be closed down."(91)

This opinion coming from a school reveals a lot of self-confidence and a clear acceptance of the idea not always shared by other schools that they must provide, as well, training of some kind as education, but not training alone.

"Three abilities will be needed :

1. Ability to design, detail and specify buildings which are structurally sound, weather-proof and comfortable.
2. Realistic attitudes to costs.
3. An understanding of professional liabilities."(92)

" In my opinion the schools have an obligation to teach the students by the time they are to have their year out, a basic vocabulary of building as practised in Britain now, so that they can do something useful to earn their living in the office. We are very

unwilling to take students who
not have this basic knowledge."(93)

" So many students appear to spend a lot
of time studying and working out high-
faulting schemes way beyond their level
of competence when surely they should
spend quite a proportion of their
schooling in learning how to prepare
details and working drawings and later
the requirements of contract documentation
and management."(94)

" Inability to draw equals inability
to communicate - a form of professional
illiteracy which offices cannot afford
teach."(95)

There are many other complaints coming
from offices, some of them too bitter, but these
cover the main points of the problem existing.
Regardless of the time factor, it should seem
tactically convenient and practical as well for
the schools to pay some attention to the more
reasoned of these complaints, because a student
able to satisfy the office requirements to a
certain degree should win enough confidence to
be given some responsibilities, instead of becoming
an office boy, and would win more experience with
the year out with the time devoted to get the
necessary skills. This would be a good business
for the student, for the school would get back
a better trained student, and for the office as well.

The position of some schools, of mere despise for drawing ability or any kind of training seems to be an unjustifiable academic pride, based more on some kind of resentment than on any logical goodwill for co-operation.

Now, a few examples of the subjects that could be included in this 'what to learn' in architectural education.

" This type of basic course, which incorporates as mixture of physical sciences, technology, social sciences, arts and design, could be a good preparation not only for specialisation in architecture, planning or the construction industry, but for any field which required a broadly based intellectual education, with a particular emphasis on complex, value informed problem solving."(96)

Again a plea for a broad course, basis for specialisation, 'mixture' of physical sciences, technology, social sciences, arts and design... a very good summing up.

The need for communication that in architects has for a long time been the drawing skill, now apparently lost in most cases, calls for a variety that Broadbent examines, here:

" It is suggested, therefore, that the student be equipped as quickly as possible with a simple technique for

drawing buildings...

At the same time the student's skill in written communication should be encouraged...

Verbal communication is more difficult to teach..."(97)

In brief, all kinds of communication should be developed in the architect to be, according to Broadbent, but as far as I know this is not being done systematically in many schools.

Considering the broadness of knowledges required and the necessary depth to be able to solve problems of individuals with due respect to society and environment as a whole, the possibilities to decide exactly what must be learnt at schools of architecture or what must be done in practices is out of the question. The diversification and specialisation in the profession requires for schools orientated studies towards some defined objectives, within the general objectives of architectural education, even if the aim is to form generalist architects. It seems clear to me that there might be some agreement to accept that it is necessary to find a method for learning, develop a critical thinking and that learning must be continual if we really want to develop all potentialities of human beings to get architects able to fulfil their roles.

All means and methods to develop any aspect of the human mind or personality should be

considered, there is, of course, a question of doses and priorities but that should be applied to the personal level.

10.3.2.3.3 A method for learning.

According to John Morris, there are two ways of learning, by duplication and discovery (98) and six levels. Architecture needs some duplication of knowledge, as a basis, but undoubtedly tends to be more a way of learning by discovery, in the measure in which problem solving is considered basic for architectural education. All levels of learning established by Professor Morris have logic application in our case, for the acquisition of knowledge, which must be used as a way to reinforce it because of its relevance.

Other ways to look into the methods for learning are to consider: learning by doing, learning through research, and the so called 'genetic' learning (99). Learning by doing, a method commonly used, puts the responsibility in the learners needs, as we said somewhere before, a provision of the necessary means, and the teacher is there only to help in what the learner consider his problems. Learning through research places the learner in a research team and he learns by experience how new knowledges are found it is difficult to accommodate due to the academic requirements of dates and assessments. Genetic learning is the experiencing of a research whose

results are known, not necessarily to the learner himself. With advantages and disadvantages these methods have to be tested against the reality of universities and polytechnics with the actual numbers of learners and a way of assessment, shorter than waiting for results in the profession 10 years later or more.

10.3.2. 3.4 A critical thinking.

One of the reasons for the need of a critical thinking, other than the continuous role of analysis-synthesis that an architect must play is found in the changes that we must confront permanently...

" But perhaps the most important contribution was a third idea that was bound to change the code itself: the idea that the situation is always changing, and that the assumptions of each generation will be challenged, elaborated or developed by the next."(100)

That thought of Sir Leslie Martin is further taken by Stuart Sutcliffe...

"... human being is capable of thinking for itself and of changing the rules... whereas scientist assume that the stuff they are studying is incapable of thinking..."(101)

This critical thinking should be developed as to make architects able to keep a critical attitude of their own ways of thinking

if they are to work for the betterment of society and not for their own satisfaction, and that is a real different thing considering the weakness of human nature, which is where the concepts of the limitations of our perception and judgement are important.

10.3.2.3.5 Continual learning.

There is no real need for stressing the importance of continual learning, being a fully accepted concept, there are of course organisational and financial problems to be solved and decisions have to be made as to where the continuing education centres should be placed in existing schools, in new centres, or both? The use of existing facilities, specially research units, must be considered as convenient places although the continuing of education must not have the same kind of academic bias as architectural education but to be a golden middle point, where education and profession meet to give and get the better mutually.

10.3.3 Factors influencing architectural education.

The task to define objectives in architectural education has shown us that there are many factors influencing architectural education, which takes us, in some way, back to figure 31 when we tried to emphasise the importance of having well defined objectives. In fact, the factors we have found influence architectural education are:

- cultural and physical environment
- social, technological and scientific changes
- real needs of society

- educational objectives in architectural education
- pluri-disciplinary approach

10.3.3.1 Cultural and physical environment.

Cultural and physical environment are the basic foundations of a society because they cover all day to day life of people in relation to a place, be this a global or a local place, and architecture being a question of human beings as Ove Arup puts it...

" The architect's domain is the human aspect. He must soften the edges of 'technocratic space' to make it bearable, or preferably enjoyable, for human beings."(102)

To make that 'space' enjoyable we must know what is our environment, and that means to know it physically and then what man has done to it, and the reasons why he has done it if we are able to do something about it.

"Before students set out to change the world, and I for one am certainly all for this, they ought at least to attempt to understand the world as it is. They must know something of the terms of reference within which any architect does his job."(103)

"Undoubtedly the RIBA should encourage schools to aim towards resource conservation and ecological education. But more difficult - and probably more important - the institute should encourage research into developing common measurement units to describe and compare resource use in building. Then, once architects have the technique to do so, they could persuade

their clients to realise that the real cost of building includes the resource cost and energy cost over its first 20 years. The RIBA must press once again for the capital and maintenance costs of public building to come from the same purse."(104)

Without necessarily agreeing with the whole idea and the responsabilisation involved in these latter remarks, the importance of the environment as a natural resource and as human settlement must influence architectural education very strongly indeed, more and more.

10.3.3.2 Social technological and scientific changes.

Changes, and the attitudes to be taken to confront them is an important factor of modern life, and although the following quotation is limited to technology I believe it to be valid as well for social and scientific changes...

" What is the nature of an architect's competence in technology to be? Should he be able to compete with other professional specialists on their own ground, or should he have a broad understanding of the different aspects and skill of application in design of technology? Second, if an architect chooses to specialise, say, in building environment, how soon in his education should this begin and, until that point, how is that subject treated in relation to all other areas of study, and third, how much technical expertise is any architect going to need in practice?" (105)

As said before, the same question is valid for

social changes: how much social expertise?; and for scientific knowledge: How much scientific expertise? Not many if he needs all three, and besides that the capacity or expertise for design and aesthetic considerations, but in any case a perfect awareness of them and of their changing condition are needed.

10.3.3.3 Real needs of the society.

Speaking of environment and social changes one of the points is if we really know which are the real needs of society, because there is no doubt that...

"... it should be obvious that the concern and the responsibility of the educationalist should extend beyond the educational issues to society as a whole."(106)

and to find out those needs is a task for the schools so as to place the educational issues in its true context, whether this can be done or to what extent is another matter.

"... If contemporary architecture, all over the world, is unpopular with the public and is failing to achieve acceptable goals, may this also not be the result of an inadequate theoretical base for practice?"(107)

Some of the needs of society are even difficult to categorise, and have not, so far, measurement units. This is the present situation and we believe as we have said before that architectural education as any other activity has to cater for the future if it is to be useful.

"... Pat Hamill replied that the future is

important and that architectural education should relate to and allow for it."

" The educationalists have a responsibility to try to foresee the kind of world for which they are preparing their students..."(109)

"... Conversely, some students - again quite a small number - ought to be 'educated' in the broadest sense, to understand man's relationship with his environment such a level that they can make political decisions about it. Neither of these new products of the schools will look much like the architect as we know him today."(110)

The real needs of society with all the complexities that involves to know about them is constantly influencing architectural education and the increasing demand for participation of the users of any building must be orientated so as to be the way, or at least one of the ways, to discover those needs to satisfy them.

10.3.3.4 Educational objectives in architectural education.

Educational objectives of the kind we have been trying to find out when speaking about education in general or of higher education must influence architectural education, architecture being a discipline and a profession that has to do with humans, and the architect being one of the professionals that needs more than many others a well developed mind to deal with a mixture of problems and their changing reality. So that we must not fix objectives for architectural education in the narrow field of precise knowledge or well defined skills only, but in the widest sense to develop the 'powers of the mind'.

10.3.3.5 Pluri-disciplinary approach.

The pluri-disciplinary approach becomes more and more important with the recognition of the difficulties that one man could find to be able to confront all problems of briefing, designing, building and managing a part, no matter how small, of the built environment. This means, again, that architectural education objectives must be set for some kind of pluri-disciplinary education allowing for group working and team working to be learnt.

" How in universities and polytechnics can we hasten the slow process of integrating architecture with other disciplines which contribute to the solution of environmental problems?" (111)

This is a clear indication of the need for the multi-disciplinary approach and the difficulties to be encountered within the institutions, but fortunately enough...

" The Conference... was emphatically in favour of the multi-disciplinary approach to education: the feeling that the built environment was a team job, whose practitioners could work together if they acquired a common language and a common set of values in the course of a common education."(112)

... and that Conference was the Cambridge Conference held in 1970, organised by the Board of Education with the presence of schools and practitioners.

10.3.4 Orientation within architectural education.

The revision of curricula of the schools of architecture studied has shown that, in most of them, subjects are grouped so as to avoid atomisation of the studies in many small subjects very difficult to relate between them and with the project work, having found that there is a search for the more holistic concept of curriculum.

According to Bernstein, as cited by Musgrove (113) there are two kinds of curricula: The Collection type code, and the Integrated type code with possible strong or weak frames. The integrated type code being the type that architecture needs for the very nature of its end-product, the built environment. Professor Musgrove thinks that the weak frame course, that is one in which there are contacts with other subjects and there are several lecturers contributing instead of the dogmatic old master, is the more appropriate, at the same time pointing out one of the difficulties...

"... and the number of teachers able to sustain weakly framed integrated courses with highly intelligent students may be small at present.. However, such a course structure could reduce the load of work for the student and increase richness and variety in 'end-products' without reducing the comprehensiveness of experience which the professional institutions seem to demand at present."(113)

How integrated can a curricula be is not easy to say, and there must be some kind of subject groupings unless one can imagine a course with project work as the only matter. Broadbent at Portsmouth has in fact established a very clear pattern of

studies around three groups of subjects...

" In practice it will be convenient to divide the theoretical work into three streams:

Architectural Design

Architectural Technology

Contextual Studies (both physical and

philosophical) ". (114)

Earlier in this chapter we quoted Peter Stringer defining a course with four different groups of subjects: physical sciences, technology, social sciences, arts and design (96) a kind of grouping that does not differ so much to that proposed by Broadbent.

"... But because of technical developments, there is a real danger that the technical aspects of the curriculum may expand at the expense of design teaching, even though no technology is taught at a level sufficient to give real competence."

This observation may well be done in relation to social sciences, a concern growing strongly in the schools currently, specially in psycho-sociological aspects.

" Horizontal and vertical integration in the course are needed... horizontal... between lectures and projects... vertical... progression.."(116

The vertical integration, mentioned here by Sutcliffe, is supposedly established by the detailed programme and subjects content, but is rarely monitored so as to be sure that in fact exists. The horizontal integration is more difficult the more the different subjects are. Both aims should be seriously considered

if we accept the idea of an integrated curriculum, with weak frame, so as to provide a holistic concept of design for the built environment considering all inter-relations with the global, natural and cultural environment of society.

So, there seems to be in architectural education three kinds of subject susceptible to grouping with some advantages for a better integrated curriculum: those more related to design and aesthetics; technological and scientific; and, social and cultural. This in the understanding that the groups will not be segregated but co-ordinated, being the concepts involved as wide as possible and allowing for the necessary variety and comprehensiveness of subjects within the group. This kind of grouping, depending on the emphasis placed on one or the other would allow for a certain orientation of studies.

Concerning the different levels, they could probably be more, if not integrated at least co-ordinated, than what they are now, from the first three years to the years after the first year out. The first level - year one to year three - could be a broad course with a certain balance of the three groups of subjects and some development of skills needed for the practice year. The second level should be that of diversification in some of the subjects within some of the groups. The third level - post-graduate studies - could provide for research - as it does now - and for specialisation, and in some schools for continuing education. Continuing education that needs to be planned at a national scale could be intended

to actualise and to specialise professionals.

Whichever the orientation of studies is it must consider the new trends in architectural education resulting of the many development started with the very important Oxford Conference.

Building Science has developed considerably in the last 15 years becoming a basic aspect of architectural education, being considered in some schools as an integrative subject covering several of the subjects that used to exist in a more atomised curricula, years ago.

The exact scope of building science is difficult to define because it varies very much from one school to another covering in some cases: building construction, materials, structures and some services; and in others all or some of those, and internal environmental conditioning.

Environmental Science has developed as well to become an important subject, with varying content as building science, and with different names, in some cases like: environmental design engineering.

Environmental science is, at present, being considered in a wider context than some years ago, when it was mainly the internal built environment to become the total environment, considering outdoor spaces and natural environment in its relation with man-made or modified environment.

The relation profession-education is very important and must be carefully studied and perfected if we want theory and practice to contribute, side by side, for a future better human habitat. This relation must

be based more in mutual respect and co-operation than in critiques and/or 'laissez faire', leaving responsibilities to the other part, there must be no parts.

10.4 Purposes and fulfilment.

To fulfil the purpose of my studies, after exploring the subjects of my interest, a research on some schools of architecture, as the main part of the work, was decided and this has proved extremely useful.

The study of the schools, and specially the visits, has been the main source of information about precedents, the current situation, convenient bibliography and documentary sources as well as personal interviews.

There have been other aspects of the work that have proved very valuable, and I would like to mention them now.

The study of the historical background to the development of the profession and architectural education, besides being of interest, has proved basic for the understanding of those developments, considering the extremely different situations of Great Britain and Venezuela, that I tried to make clear in the Introduction.

The Short Courses of the Institute of Advanced Architectural Studies of the University of York enabled me not only to learn about the subjects of interest, but about the profession and architectural education in general, allowing for a wide variety of rich contacts with highly qualified people.

The Board of Education of the RIBA and its publications have been extremely useful to start the research and follow the developments of architectural education and its relations with the profession.

Looking back to all the work done for Part I, I believe that the purposes established have been fulfilled at a very high degree,

and although I do not dare to consider myself a specialist in any of the subjects studied, I now feel able to start studying some of them in depth and experiment with them, which I intend to do in Part II, to be ready to make the whole experience useful in the future, if I ever get an opportunity.

10.5 References.

- 1) Bullimore, Mike. Second architectural student forum. RIBA Journal, May 1970. p.228
- 2) Morris Hugh. Learning by doing. RIBA Journal. September 1970 p.407
- 3) Morris, John. Learning Objectives - Teaching Methods. Paper for Teaching Methods Seminar. IAAS York, January 1974.
- 4) Tzonos, Panos. The development of the theory of design since the beginnings of the modern movement, from the point of view of our days. (paper) p.2.
- 5) Broadbent, Geoffrey. Teaching Design (paper) p.1/2/3/4
- 6) Musgrove, John. Educating Environmentalists. Architectural Research and Teaching. vol. 2 No. 3 June 1973. p.144-52.
- 7) Layar, Richard; King, John; Moser, Claus. The impact of Robbins. 1969. p.28
- 8) *ibid.* p.45
- 9) Higher Education. Committee on Higher Education. (ROBBINS report) 1963. p.74
- 10) Luder, Owen. How many architects. RIBA Journal, January 1970 p.23

- 11) *ibid.* p.23
- 12) *ibid.* p.24
- 13) *ibid.* p.24
- 14) *ibid.* p.24
- 15) The future pattern of demand. RIBA Secretariat. RIBA Journal, January 1970. p.24
- 16) Corbett, Anne. Building architects. RIBA Journal, April 1970 p. 165
- 17) Layton, Elizabeth. The lessons of Cambridge. RIBA Journal, September 1970. p.404
- 18) Wise, Douglas. The B.Arch. Course, Newcastle Papers in Architecture and Building Science. No. 1 p.23
- 19) RIBA. Concentration of courses. RIBA Journal, May 1970. p.206
- 20) Hutchins, Robert. The learning society. 1968. p.56
- 21) Michael, Ian. BASA, Aims and Methods. Third Report on Architectural Education, 1963.
- 22) Martin, Leslie. Education around architecture. RIBA Journal, September 1970. p.402
- 23) Hutchins, Robert. *op.cit.*, p.55
- 24) Michael, Ian. *op.cit.*,
- 25) Tzonos, Panos, *op.cit.*, His references belong to:
 - (84) Green, C.W.B. Learning to design. Architectural Research and Teaching. vol. 2 No. 1, Nov. 1971 p.40
 - (85) Lloyd, M. Educating the architect, for what? Faculty of Building Review, Spring 1971 p.6
- 26) Abercrombie, M.J.L. Anatomy of Judgement. BASA, Aims and Methods. Third Report on Architectural Education. 1963.
- 27) Musson, Chris. Aims, Attitudes and Responsibilities. BASA, An interim report on architectural education. 1961.

- 28) Sutcliffe, Stuart. op.cit.,
- 29) A.J.Enquiry. Educating the architect. The Architect's Journal. vol. 157 No. 24,13 June 1973 p.1421-29 (SCHOOL opinion)
- 30) Higher Education. op.cit., p.6/7
- 31) ibid. p.237
- 32) Musgrove, John. op.cit.,
- 33) RIBA. Continuing Education. Joint body needed. RIBA Journal September 1970.
- 34) Layar, Richard and others. op.cit., p.56
- 35) ibid. p.51/2 (quotation of: SWANN Report of the working group on Manpower for scientific growth. 1968. p.69, parag.137)
- 36) Tzonos, Panos, op.cit., p.34 His reference:
(91) Bundesassistent konferenz. Ausschuss für Hochschuldidaktik, Forschendes Lerner-Wissenschaftliches Prüfen. Schiften der Bak No. 5 Bonn, 1970)
- 37) Adleson, Lyall. Lighting in architectural education. Architectural Research and Teaching. vol. 2 No. 2 Nov. 1972 p.88-95.
- 38) Martin, Leslie. Leslie Martin on the bridges between the cultures. RIBA Journal. vol.80 No. 8 August 1973. p.381-88
- 39) Newcastle Paper in Architecture and Building Science. No. 1. 1970
- 40) Martin, Leslie. Education around architecture. RIBA Journal, September 1970 p.402
- 41) Manning, E.E. Inability to communicate. The Architects' Journal. vol. 158 No. 31, 1 August 1973, p.232
- 42) Broadbent, Geoffrey. Architectural Education. (paper) p.1-2
- 43) A.J. Enquiry. op.cit., (OFFICE opinion)
- 44) ibid. op.cit., (OFFICE opinion)
- 45) ibid. op.cit., (SCHOOL opinion)
- 46) MacEwen. The Cambridge Conference. RIBA Journal, May 1970 p.205
- 47) Meikle, Alan. Education and practice. RIBA Journal, May.1970 p.210

- 48) The Editors. The death of the generalist planner. The Architect's Journal. vol. 158 No. 35, 29 August 1973. p.469
- 49) The Editors. The proof of the pudding. The Architect's Journal. vol. 157 No. 24, 13 June 1973 p.1407
- 50) Stringer, Peter. op.cit.,
- 51) Cary, Michael. A post-graduate discipline? RIBA Journal September 1970 p.408
- 52) Campbell, K. Resolutions, BASA, Aims and Methods. Third report on architectural education. 1963.
- 53) Corbett, Anne. op.cit., p.164
- 54) ibid. p.165
- 55) Furneaux, Robert. Address to A.A. General Meeting 1949 in: Gowan, James. Ed. Projects Architectural Association 1946-1971. 1973.
- 56) Abercrombie, MJ.L. BASA, Aims and Methods. op.cit.,
- 57) Kaye, B. Discussion Group C. BASA, Aims and Methods. op.cit.,
- 58) Page, J.K. Teaching environmental physics. BASA, Aims and Methods. op.cit.,
- 59) Tzonos, Panos. op.cit.,
- 60) Price, John. M.P. Educating the architect. Letters. The Architect's Journal, vol. 158 No. 28, 11 July 1973, p.64
- 61) A.J. Enquiry, op.cit., (OFFICE opinion)
- 62) ibid. (OFFICE opinion)
- 63) ibid. (OFFICE opinion)
- 64) Le Corbusier. If I had to teach architecture. Focus I, 1938 in: Gowan, James. ED. Projects Architectural Association 1946-1971. 1973 p.111
- 65) Goodhart-Rendell, H.S. Address to the A.A. School 1937 in: Gosan, James. op.cit., p.108
- 66) Musgrove, John. Personal interview. March 1973.

- 67) Maxwell, Robert. op.cit., p.466
- 68) Matoff, Teo. Personal interview. June 1973.
- 69) Green, Cedric. Conflicts in architectural education. The Architect's Journal, vol. 158, No. 38, 19 September 1973. p.654-55
- 70) Green, C. op.cit.,
- 71) Merchant, Mike. Students coming together. The Architect's Journal, vol. 159, No. 2, 9 January 1974. p.55
- 72) Ove Arup. On the architect's human role. RIBA Journal, November 1970. p.525
- 73) Musson, Chris. op.cit.,
- 74) RIBA, New directions in architectural education. RIBA Journal, February 1970 p.56
- 75) Musgrove, John. Educating Environmentalists. op.cit.,
- 76) Merchant, Mike. op.cit.,
- 77) MacEwen, Malcolm. op.cit.,
- 78) Matoff, Teo. op.cit.,
- 79) Broadbent, Geoffrey. Teaching design (paper) p.5
- 80) RIBA. Course framework. RIBA Journal, March 1970 p.109
- 81) ibid. p.110
- 82) Musgrove, John. op.cit.,
- 83) Newcastle paper. op.cit.,
- 84) Introduction. Aims for architectural education. BASA, Building for people, Second report on architectural education, 1962.
- 85) Martin, Leslie. op.cit.,
- 86) Tzonos, Panos. op.cit.,
- 87) Parkes, David. Education and practice. RIBA Journal, September 1970. p.395
- 88) Broadbent, Geoffrey. Architectural Education (paper) p.3
- 89) Hutchins, Robert. op.cit.,

- 90) Broadbent, Geoffrey. Professional Responsibility. RIBA Journal, August 1972. p.341
- 91) A.J. Enquiry. op.cit., (SCHOOL opinion)
- 92) ibid. (OFFICE opinion)
- 93) ibid. (OFFICE opinion)
- 94) ibid. (OFFICE opinion)
- 95) ibid. (OFFICE OPINION)
- 96) Stringer, Peter. Architecture as education. RIBA Journal, January 1970 p.20
- 97) Broadbent, Geoffrey. Notes on the education of an architect. (paper) p.7
- 98) Morris, John. op.cit.,
- 99) Tzonos, Panos, op.cit.,
- 100) Martin, Leslie. op.cit.,
- 101) Sutcliffe, Stuart. op.cit.,
- 102) Arup, Ove. op.cit.,
- 103) A.J. Enquiry. op.cit.,
- 104) The Editors. Professionalism through responsible performance for the future. The Architect's Journal. vol. 158, No. 49, 5 December. p.1350 -51.
- 105) Green, C. op.cit.,
- 106) Tzonos, Panos, op.cit.,
- 107) MacEwen, Malcolm. op.cit.,
- 108) Bullimore, Mike. op.cit.,
- 109) Gordon, Alex. The Schools and the profession. RIBA Journal, April 1970. p.167
- 110) Broadbent, Geoffrey. Architecture in the future. RIBA Journal, October 1970. p.462.
- 111) Morris, Hugh. op.cit.,
- 112) MacEwen, Malcolm. op.cit.,

- 113) Musgrove, John. op.cit.,
- 114) Broadbent, Geoffrey. The education of an architect.(paper) p.2
- 115) Lloyd, John. op.cit.,
- 116) Sutcliffe, Stuart. op.cit.,

1. Great Britain. Architectural profession and education.
2. Venezuela. Architectural profession and education.
3. Example of FORM 1. Studies Y.1 to Y.7
4. Example of FORM 2. Postgraduate studies
5. Example of FORM 3. Teaching and assessment
6. Example of FORM 4. Timetable.
7. Example of FORM 5. Workload.
8. Example of FORM 6. Co-ordination.
9. Example of FORM 7. Co-ordination Y.1 to Y.3
10. Example of FORM 8. Calendar time
11. Example of FORM 9. Y.1, Y.2, Y.3, Y.5, Y.6
12. Example of FORM 10. Population
13. Example of FORM 11. Studies, general pattern.
14. Example of FORM 12. Teaching and assessment.
15. Example of FORM 13. Workload
16. Example of FORM 14. Project work.
17. Example of FORM 15. History, D M. Social Studies, T.M.
18. Example of FORM 16. Population. Students.
19. Example of FORM 17. Population. Staff. Staff/student ratio.
20. Studies. General pattern.
21. Teaching and assessment.
22. Workload - week - session.
23. Project work
24. Social studies
25. Social psychology
26. Design Methods
27. History of Architecture
28. Population. Students

29. Population. Staff. Staff/students ratio
30. Adapted diagram of proposed model for systematisation of education
31. Teaching methods comparative list
32. Teaching methods list
35. Nigel Cross. Classification chart of design methods
36. R.M.Crofton. Scope of application of design methods in terms of stages of the RIBA Plan of Works.
37. Panos Tzonos. See reference 4 in chapter 10.

Note: Figures 33 and 34 do not exist.

Introduction.

A short explanation seems necessary to fix the boundaries of the bibliographic sources used during this work.

- References are placed at the end of the respective chapter
- Name Index given below correspond to all references in alphabetical order.
- Other sources, not detailed by items, and found very useful by the author are:

- Documents of the RIBA Board of Education, studied with authorisation of the Schools of Architecture, see Appendix 3.
- Documents published by the Schools of Architecture, see Appendix 3.
- Bibliography about Architectural Education published by the Architectural Association Library.
- Documents published by the Society for Research into Higher Education.
- Library Guide No. 11, and Supplement 1, October 1973 published by University of York under the title 'University Teaching Methods'.
- Bibliography of the Design & Planning Education Course Guide of University College London, Development Planning Unit.
- RIBA Journal 1965 to 1973.
- The Architect's Journal. 1965 to 1973.

NAME INDEX

A.

A.A. Architectural Association

- Writing Handbook. RIBA Publications Ltd. 1969.
- Educational Policy. 1972.
- The A.A. Now. 1973.

Abercrombie M.L.J.

- The Anatomy of Judgement. Hutchinson London 1960.
- BASA Aims and Methods. Third Report on Architectural Education 1963.
- Aims and Techniques of group teaching. S.H.R.E. Publication 2, 1970.
- Selection and Performance. S.R.H.E. London 1969.

Adleson L. Lighting in Architectural Education. Architectural Research and Teaching. November 1972.

A.J. The Architect's Journal

- A.J. Enquiry. 13 June 1973.
- The Death of the Generalist Planner. 29 August 1973.
- The Proof of the Pudding. 13 June 1973
- Professionalism through responsible performance for the future.
5 December 1973.
- Programming the professional future. 1 October 1973.

Alexander C.

- Notes on the synthesis of form. Harvard University Press, 1970;
- The State of the Art in Design Methods. DMG, DRS Journal : Design Research and Methods. April - June 1973.

Allsopp, B.

- A sense of responsibility. RIBA Journal, August 1972.
- The Study of Architectural History. Studio Vista, 1970.
- Personal Interview. Newcastle, March 1973.

Anstis, D.

- A synoptic Methodology of architectural history study. M.Phil Thesis
University of Bath, 1970.
- Personal Interview, Portsmouth, March 1973.

Archer, L.B.

- Systematic method for designers. H.M.S.O. London.
- Computer Use. Conference. York 1972.

Arcila Farias E.

- Historia de la Ingenieria en Venezuela (History of Engineering in
Venezuela)

Arup O.

- On the architect human role. RIBA Journal. November 1970.

Ashby W R. An introduction to cybernetics.

- An introduction to cybernetics. Chapman and Hall Ltd. and University
paperbacks, London 1971.

Asimov M.

- Introduction to Design. Prentice Hall, 1962.

B.

Banham R.

- Only an academic flywheel. RIBA Journal. August 1972.
- The architecture of the well tempered environment. Architectural Press
London 1969.
- Theory and design in the first machine age. Architectural Press
London 1960.
- The New Brutalism. Architectural Press. 1966
- Alternative networks for the alternative culture ? In Design Participation.
Ed. Cross N. Academy Editions 1972.

B.A.S.A. (British Architectural Students Association)

- An Interim report on architectural education, 1961.
- Building for People. Second report on architectural education. 1962.
- Aims and Methods. Third report on architectural education, 1963.

Beard R M and others.

- Objectives on higher education. Society for research into higher education. London 1968.
- Research into teaching methods in higher education. S.R.H.E. 1971.

Bligh D.

- What's the use of lectures. Penguin 1972

Blishen E. (Editor)

- Education today. The existing opportunities. B.B.C. 1963.

Bloom B. and others.

- A taxonomy of educational objectives. Book 1, Cognitive domain.
Book 2, Affective domain. Longman 1956

Bono de E.

- The use of Lateral Thinking. Penguin, 1967

Borger R.

- The psychology of learning. Penguin, 1966

Boyd E.

- Teaching. RIBA Journal. September 1970.

Bracken I.

- Lecture in Teaching Methods Seminar. I.A.A.S. (Institute of Advanced Architectural Studies, University of York) York 1974

Broadbank D.

- Ulm Reporting back. A report, 1967

Broadbent D.E.

- Perception and communication. Pergamon Press, 1958.

Broadbent G.

- Design Methods in architecture. Portsmouth Symposium 1967. Lund Humphries, 1969.
- Choosing tomorrow's architect. RIBA Journal. March 1970.
- The liberating computer. RIBA Journal. October 1970
- Professional responsibility. RIBA Journal. August 1972.
- Architecture in the future. RIBA Journal. May 1970.
- Resources for a School of Architecture. Report for the Schools Council. March, 1973.
- Teaching Design. Paper.
- Architectural Education. Paper.
- Notes on the education of an architect. Paper.
- Architecture in the future. RIBA Journal. October 1970.
- Design in Architecture. John Willey & Sons. 1973.
- Teaching Methods. Paper, 1970.
- A design process. Paper.
- Notes on design methods. Paper.
- Book Review: The geometry of the environment: An introduction to spatial organisation in design, by March, L. and Steadman P. Architectural Research and Teaching. November 1972.
- Methodology in the service of delight. Paper, 1973.

Broady M.

- Three loud cheers for psychology. RIBA Journal. September 1970.
- Sociology in the education of architects. Architectural Association Quarterly. Pergamon Press Ltd. 1973.

Bullimore M.

- Second architectural student forum. RIBA Journal. May 1970.

Burgess T.

- A guide to English Schools. Penguin, 1972.

Burroughs T.

- Personal Interview. Bristol, March 1973.

Butcher H.J.

- Evaluation. Teaching Methods Course. I.A.A.S. York 1972.

C.

Campbell K.

- Resolutions. B.A.S.A. Aims and methods. Third report on architectural education, 1963.
- B.A.S.A. An interim report on architectural education, 1961.

Canter D.

- On appraising building appraisal's. The Architect's Journal. 21 December 1966.
- Architectural Psychology. (Editor) Proceedings of the Conference held at Dalandhui, University of Strathclyde. Heffer Sons Ltd. 1969.

Carmichael W.F.

- Programmed Instructions. Teaching Methods Course. I.A.A.S. York, 1972.

Cary M.

- A post-graduate discipline. RIBA Journal. September, 1970.

Cave C.

- Design Methods in architecture discussed. The Architect's Journal. 21 December 1966.

Cheltenham

- Discussion on research in architectural education. 1966.

Christophersen D.G.

- Discovering designers. Opening Address. Conference on Design Methods, by Jones C. and Thornley D.G. 1963.

C.I.V.

- Colegio de Ingenieros de Venezuela. (Engineering College of Venezuela).

Collins P.

- Changing ideals in modern architecture. Faber and Faber. London, 1965.

Commoner B.

- Alternative approaches to the environmental crisis. RIBA Journal.
November 1972.

Corbett A.

- Building architects. RIBA Journal. April, 1970.

Crickmay C.

- Software Design Workshop. Stimulus Statement. The Design Activity International Conference. 1973.

Crofton R.M.

- A design methods study. For the Design Methods Group. RIBA. 1971.

Cross N.

- The relevance of Design Methods. Building. 20 March, 1970.
- Here comes everyman. Design Participation. Editor Cross N. Academy Editions, 1972.

D.

Department of Architecture Bristol.

- Booklet. Degree Courses.

Department of Education and Science.

- Scientific Research in British Universities and Colleges. Volumes I, II, III, 1971-72.

Design Activity International Conference.

- Conference themes. Progress Report. April, 1973.
- Stimulus Statements.

Dewey J.

- Experience and education. Collier Macmillan, 1963.

Donnelly D.

- What's it all about? Research and Conference and then what? The Architect's Journal. 5 September 1973

Duncan C.J.

- Educational Technology. Teaching Methods Course. I.A.A.S. York, 1972.

Dunster D.

- Crit on crits. The Architect's Journal. 1 June, 1966.

E.

Echenique M.

- Personal Interview. Cambridge, March 1973.

Edinburgh

- Seminar on architectural research in U.K. and Commonwealth Universities, 1972.

Elvin K.

- Design Methods in architecture discussed. The Architect's Journal. 21 December 1966.

F.

Flinn M.W.

- Origins of the Industrial Revolution. Longmans, 1966.

Furneaux R.

- Address to A.A. general meeting 1949. Projects Architectural Association 1946 - 1971. Editor Gowan J. The White Friars Press Ltd., 1973.

G.

Garratt R.

- Personal Interview. London, March 1973.

- Project based education. Teaching Methods Course. I.A.A.S. York, 1972.

Gawronsky.

- History meaning and methods. (As quoted by Anstis D.)

Gibberd F.

- Architecture of England. Architectural Press. 1965.

Glass R.

- B.A.S.A. An interim report on architectural education, 1961.

Goodhart - Rendell H S.

- Address to the A.A. School, 1937. Projects Architectural Association 1946-1971.

Editor Gowan J. The Whitefriars Press Ltd. 1973.

Gordon A.

- The Schools and the profession. RIBA Journal. April 1970.

Grant D P.

- The DMG and the Design Activity Conference. DMG, DRS. Journal. Design Research and Methods. April-June 1973.

- The second generation and beyond. Stimulus Statement. The Design Activity International Conference. 1973.

Gray F.

- The Zone, a project of 1952. Projects Architectural Association 1946-1971.

Editor Gowan J. The Whitefriars Press Ltd. 1973.

Green C.

- Learning to design. Architectural Research and Teaching. October 1971.

- Conflicts in architectural education. The Architect's Journal.

19 September 1973.

Gregory S A.

- The Design Methods. Butterworth, 1966.

- Design Science. The Design Methods. Butterworth, 1966.

- A need for understanding and cross-fertilisation. Stimulus Statement.

The Design Activity International Conference, 1973.

- The state of the art in design methods. DMG, DRS Journal, Design Research and Methods. April - June 1973.

Gropius W.

- The new architecture and the Bauhaus. Faber and Faber. 1935.

H.

Hammill P.

- Form and Control. RIBA Journal. September 1970.

Hardy A.

- Personal Interview. Newcastle, March 1973.

Harrison P.

- Role of the architect. RIBA Journal. September 1970.

Hawkes R.

- The professionals versus the people, Research and Conference and then what? The Architect's Journal. 5 September, 1973.

Hillier B.

- A new approach to architectural research. RIBA Journal. November 1972.
- Psychology and the subject matter of architectural research. Architectural Psychology. Editor Canter D. RIBA Publications Ltd. 1969.
- Knowledge and Design. Paper. 1971.
- Architecture and Engineering in environmental education. Architectural Research and Teaching. November 1971.

Hinton D.

- The lessons of Oxford. RIBA Journal. April 1970.

Honikman B.

- Proceedings of the architectural psychology conference at Kingston Polytechnic. Kingston Polytechnic - RIBA Publications Ltd. 1971.

Howell W.

- Personal Interview. Cambridge. March 1973.

Hudson L.

- Contrary Imaginations. Penguin 1966.

Hunt S.

- Selection and Performance. Society for Research into Higher Education. London 1969.

Hutchins R.

- The learning society. Penguin 1968.

Hutchinson M.

- Educating the intelligent. Penguin 1962.

I.

I.A.A.S. Institute of Advanced Architectural Studies. University of York.

- Teaching Methods Course. 1972.
- Teaching Methods Seminar. 1974.

J.

Jenkins F.

- Architect and patron. University of Durham Publications - Oxford University Press. 1961.

Jenkins M.

- Personal Interview. Leeds, June 1973.

J.H.N.

- A theory of architectural framework. Newcastle Papers in Architecture and Building Science. No. 1. 1970.

Jones J C.

- A method of systematic design. Conference on Design Methods. Editors Jones J C, and Thornley D G. Pergamon Oxford, 1963.
- Design Methods. Seeds of human futures. John Wiley and Sons Ltd. 1970.
- Software Design Workshop. Stimulus Statement. The Design Activity International Conference, 1973.

Jungk R.

- Closing comments. Design Participation. Editor Cross N. Academy Editions 1972.

K.

Kalton G.

- Survey methods in social investigation. Heinemann Educational Books Limited, London 1971.

Karp M.

- Personal Interview. Leeds, March 1973.

Kay H.

- Machines for teaching. B.A.S.A. Aims and Methods. Third Report on architectural education, 1963.

Kay J.

- Research and practice. RIBA Journal. September 1970.

Kaye B.

- The development of the architectural profession. 1960.
- Discussion Group C. B.A.S.A. Aims and Methods. Third Report on architectural education, 1963.

King J.

- The impact of Robbins. Penguin, 1969.

L.

Landsown J.

- Book Review : Design Participation. DMG, DRS Journal. Design Research and methods. April - June 1973.

Layar R.

- The impact of Robbins. Penguin, 1969.

Layton E.

- The lessons of Cambridge. RIBA Journal. September 1970.

Leaman A.

- A new approach to architectural research. RIBA Journal. November 1972.

Le Corbusier.

- If I had to teach architecture. Focus 1, 1938. Projects Architectural Association. 1946 - 1971. Editor Gowan J. The Whitefriars Press Ltd. 1973.

Leeds Polytechnic. Department of Architectural Studies.

- Courses in architecture and Landscape. Leaflet.

Lipman A.

- Professional ideology: 'community' and 'total architecture'.
Architectural Research and Teaching. April 1971.
- Strategies for architectural research: a comment. Architectural Research and Teaching. November 1970.

Llewelyn Davies R.

- Educating for building. The Architect's Journal. 13 September 1961.
- Introduction. Research Bulletin. University College London. School of Environmental Studies. No. 1, May 1971.

Lloyd J.

- The dynamics of design. RIBA Journal. September 1970.
- Educating for choice and change. Arena. June-July, 1968.

Lowe J.

- The appraisal of buildings. RIBA Journal. September 1969.
- Project assessment. Teaching Methods Course. I.A.A.S. York 1972.
- The assessment of student's architectural design drawings. Architectural Research and Teaching. May, 1970.

Luder O.

- How many architects? RIBA Journal. 1969.

M.

Mace C A.

- The psychology of study. Penguin, 1968.

MacEwen M.

- New directions in architectural education. RIBA Journal. February, 1970.
- The Cambridge Conference. RIBA Journal. May, 1970.
- Educating the architect. RIBA JOURNAL. May, 1970.

Macleod R.

- Style and Society. RIBA Publications Ltd. 1971.
- The life and death of the profession. RIBA Journal. April 1971.
- Personal Interview. York, November 1972.

Macrae M.

- Projects Architectural Association 1946-1971. Editor Gowan J. The Whitefriars Press Ltd. 1973.

Madge J.

- The tools of social science. Longman 1953.

Manning E E.

- Inability to communicate. The Architect's Journal. 1 August 1973.

Markus T A.

- Design for revolution or reaction. DMG, DRS Journal. Design Research and Methods. April-June 1973.

Martin L.

- Education around architecture. RIBA Journal. September 1970.
- Leslie Martin on the bridges between the cultures. RIBA Journal, August 1973.

Matoff T.

- Personal Interview. Leeds, March 1973.

Maver T W.

- A theory of architectural design in which the role of the computer is identified. Building Science. 1970.

Maxwell R.

- Teaching and Learning. RIBA Journal. October 1970.
- Projects Architectural Association. 1946-1971. Editor Gowan J. The Whitefriars Press Ltd. 1973.

Meikle A.

- Education and practice. RIBA Journal. May, 1970.

Mercer N.

- Personal Interview. Leeds, March, 1973.

Merchant M.

- Students coming together. The Architect's Journal. 9 January, 1974.

Michael I.

- B.A.S.A. Aims and Methods. Third Report on architectural education, 1963.

Miller G A.

- The psychology of communication. Penguin, 1967.

Mordaunt Crook J.

- Opening people's eyes. RIBA Journal. August 1972.

Morris H.

- Learning by doing. RIBA Journal. September 1970.

Morris J.

- Learning objectives - teaching methods. Paper. Teaching Methods Seminar I.A.A.S. York, 1974.

Morris R N.

- Urban Sociology. George Allen and Unwin Ltd. 1968.

Moser C.

- The impact of Robbins. Penguin, 1969.

Moser C A.

- Survey methods in social investigation. Heinemann Educational Books Ltd. 1971.

Musgrove J.

- Scan : education and practice. RIBA Journal. September 1970.
- Personal Interview. London. March, 1973.
- Educating environmentalists. Architectural Research and Teaching. June 1973.
- Knowledge and Design. Paper. 1971.
- Scan: More about R & D. RIBA Journal. November 1972.

Musson C.

- Aims, attitudes and responsibilities. B.A.S.A. An interim report on architectural education. 1961.

N.

Newcastle

- Newcastle Papers in Architecture and Building Science No. 1, 1970.

O.

Oliver P.

- Personal Interview. London. March, 1973.

O'Sullivan P.

- Knowledge and design. Paper. 1971.

P.

Page J K.

- Teaching environmental physics. B.A.S.A. Aims and Methods. Third Report on architectural education, 1963.
- Planning and protest. Design Participation. Editor Cross, N. Academy Editions, 1972.

- Future models. Teaching Methods Course. I.A.A.S. York, 1972.

Parkes D.

- Education and people. RIBA Journal. September 1970.

Peccei A.

- Service to mankind. RIBA Journal. November 1972.

Penny A M.

- Sociology and Design. The Design Methods. Editor Gregory S. 1966

Pevsner N.

- Pioneers of modern design. Penguin 1960.

Portsmouth Polytecnic

- Portsmouth Polytechnic. Folder.

- Undergraduate handbook 1972-73.

Price J.

- Educating the architect. Letters. The Architect's Journal. 11 July 1973.

R.

Rae J.

- Games in operation. The Architect's Journal. 15 December 1971.

- Linked models in the academic project. Paper 4. Teaching Methods Seminar. I.A.A.S. York 1974.

Rapoport A.

- Some observations regarding men-environment studies. Architectural Research and Teaching. November 1971.

R.I.B.A. Royal Institute of British Architects.

- The future pattern of demand. RIBA Journal. 1969.

- Cambridge Conference Papers, Course framework. RIBA Journal. March, 1970.

- Concentration of courses. RIBA Journal. May 1970.

- Continuing education. RIBA Journal. September 1970.

- Board of Education Conference. Riba Journal. November 1970.

- P.C.U.E. gets into stride continuing education. RIBA Journal. November 1972.
- Writing Handbook. RIBA Publications Ltd. 1969.
- Continuing education, Joint body needed. RIBA Journal. September 1970.
- New directions in architectural education. RIBA Journal. February, 1970.
- Course framework. RIBA Journal. September 1970.
- Where the buck stops. RIBA Journal. May 1973.
- Action programme: responding to a crisis. 2 What the RIBA should be doing?
RIBA Journal. May 1970.

Rittel H W J.

- The DMG 5th Anniversary report. DMG occasional paper No. 1 January 1972.

Robbins Report.

- Higher Education. Committee on higher education. H.M.S.O. 1963.

Russell B.

- Personal Interview. Portsmouth. March, 1973.

S.

Salim R.

- Personal Interview. Portsmouth. March, 1973.

Silverman R.

- Personal Interview. Bristol. March, 1973.

Slann P A.

- Foreword. Conference on Design Methods. Editors Jones C.C. and Thornley
D.G. 1963.

Society of Research into Higher Education.

- Register of Research into Higher Education. 1970-73.

Sprott W J H.

- Human Groups. Penguin 1958.

Starling J.

- Personal Interview. London. March, 1973.

- Ulm Conference Course on the teaching of design - design method.
Report Editor School of Architecture. Waltham Forest Technical College,
London 1966.

- Reporting back on the Conference Course, Ulm. Report. Waltham Forest
Technical College. London 1967.

Steadman P.

- An evolutionary approach. Stimulus Statement. The Design Activity
International Conference. 1973.

Stringer P.

- Selection and performance. Society of research into higher education
London 1969.

- Architecture as education. RIBA Journal. January, 1970.

- Responsible to whom? RIBA Journal. November 1970.

- The role of spatial ability in a first year architecture course.

Architectural Research and Teaching. November 1971.

- A rationale for participation. Design Participation. Editor Cross N.
Academy editions. 1972.

Sutcliffe S.

- Towards an architect. Paper

- Studio work or whatever. The Architect's Journal. 16 September 1964.

S.V.A. Societed Venezolana de Arquitectos (Venezuelan Society of Architects)

- Statistics and information. 1973.

Swain H.

- B.A.S.A. Building for people. Second report on architectural education, 1962.

Swift D F.

- The sociology of education. Routledge and Kegan Paul Ltd. 1969.

T.

Taylor J.

- The processing and communication of research data. The Architect
November 1972

Thomson T L.

- The DMG and the Design Activity Conference. DMG, DRS Journal. Design Research and Methods. April-June 1973.

Thornley D G.

- Conference on Design Methods. Editor. Pergamon Oxford 1963.

Tzonos P.

- The Development of the theory of design since the beginning of the modern movements from the point of view of our days. Paper 1972.
- Personal Interview. London. March, 1973.

U.

University College London. School of Environmental Studies.

- Information for applicants M.A. M.Sc. Degree in Architecture. Field Experience Year. Diploma in Architecture. Booklet. 1972.
- Information for applicants B.Sc. Degree in Architecture, Planning, Building and Environmental Studies. Booklet, 1972.
- Information for applicants for research M.Phil, and Ph.D. Degrees. Booklet 1972.

University of Bristol. Department of Architecture.

- Department of Architecture. Booklet. 1972.

University of Cambridge. School of Architecture.

- Handbook of the School of Architecture. 1972.
- Information for the Visiting Board. 1971.

University of Newcastle. School of Architecture.

- The Art and the profession of architecture. 1972.

V.

Vera Guardia C.

- Comparison between differences on architectural education in the United

Kingdom and Venezuela. Notes for research group meeting. I.A.A.S. York
1973.

- Universidad del Zulia, Universidad Latinoamericana (University of Zulia,
Latin American University) with Basil, Exposito, Goyoaga, Jacobsen,
Parodi, Perez. Volume II, III.
- A model for systematisation of physical education in Latin America
(adapted) 1973.

W.

Ward A.

- Design Methods in Architecture. Portsmouth Symposium 1967.
Editor, Lund Humphries, 1969.
- Design Method in architecture discussed. The Architect's Journal.
21 December, 1966.

Warren Piper D.

- Educational objectives. Paper. Teaching Methods Course. I.A.A.S. York 1972.

Watson N.

- A method of assessing studio work of architectural students. RIBA Journal.
August 1964.

Weeks J.

- Educating for Building. The Architect's Journal. 13 September 1961.

Willis P.

- Personal Interview. Newcastle. March, 1973.

Wise D.

- The B.Arch. Course. Newcastle Papers in Architecture and Building
Science. No. 1. 1970.

Wolfenden J.

- The architect's role in society. RIBA Journal. 1958.

Working Party.

- Research in action : an integrated design study applied to schools development. Architectural Research and Teaching. November 1970.

Wooster C E D.

- Continuing education. RIBA Journal. September 1970.

Y.

Young C.

- Educating the intelligent. Penguin, 1962.