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Börje Holmberg

The Evolution, Principles and Practices of Distance Education

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Series Editors' Foreword

In 1953, Börje Holmberg stepped into the world of distance education as an author of an English language course for Hermods in Sweden. In 1956 he became the educational director of Hermods, and from 1966 to 1975 director general of the Hermods Foundation. Hermods was then the largest correspondence school in Europe, enrolling up to 100,000 students annually.

After more than 20 years of comprehensive experiences in the correspondence mode of distance education Börje Holmberg became a professor of distance education methodology and director of the Institute for Distance-Education Research (ZIFF) at the FernUniversität in Hagen/Germany.

During his period at the FernUniversität from 1975 to 1990 university-level distance education across the world flourished. Börje Holmberg was in the very centre of this development. He became a distinguished researcher on the theory and practice of distance education and published several books and made many contributions to learned journals. Among these are the seminal: "Growth and Structure of Distance Education" (1986), "Mediated Communication as a Component of Distance Education" (1989), "Theory and Practice of Distance Education" (1990, 1995/ 2nd) as well as numerous research articles and reports.

As Professor emeritus Börje Holmberg took up the challenges of the electronic age in distance education. With full engagement he became in 1995 the founding rector of a private distance-teaching university in Germany (FernFachhochschule Darmstadt). At the same time he took part in the development and teaching of the *Virtual Seminar for Professional Development in Distance Education*, which later has been transformed into the *Foundations of Distance Education* course and became the entry course of the online *Master of Distance Education (MDE)* program offered since 2000 in partnership by the University of Maryland University College and Carl von Ossietzky University of Oldenburg. Since the launch of the program over 700 students have had the unique privilege to interact personally with Börje Holmberg as their tutor in the online learning environment of the first module of the course, the subject of which is *History and Principles of Distance Education*.

Together with Otto Peters, Börje Holmberg received in 1999 the Prize of Excellence for life-long contributions in the field of distance education from the International Council for Open and Distance Education (ICDE). Börje Holmberg's great merit is his knowledge about the roots, the principles, the practices and the evolution of distance education. According to the American Journal of Distance Education (18(4), pp. 225 – 241) Börje Holmberg's works in general and his *Theory and Practice of Distance Education* in particular, were in the years 1997 to 2002 amongst the most cited sources in four prominent distance learning journals.

Börje Holmberg's latest work, *The Evolution, Principles and Practices of Distance Education* provides a unique and eloquent expression of a successful progress of the theory and practice of distance education. The book amalgamates parts of his *Growth and Structure in Distance Education* (1986), his *Theory and Practice in Distance Education* (1989, 1995/2nd) and his *Distance Education in Essence* (2001, 2003/2nd).

The editors of the ASF Series are excited about Börje Holmberg's continued scholarly efforts on behalf of his MDE students as well as his continued contribution to the distance education community, and happily include *The Evolution, Principles and Practices of Distance Education* as volume 11 of the ASF Series, which replaces volume 4 - his *Distance Education in Essence*.

Franziska Vondrlik's tremendous contributions as the editorial assistant made this publication possible.

The Editors
March 2005

Preface

This book is a fairly comprehensive presentation of distance education, how it has developed and what it is like in the first decade of the twenty-first century. It illuminates its practice and the thinking and theoretical approaches on which it is based and does so against the background of its historical development, here studied as an evolutionary process, but does not attempt to describe all technologies applied. In references to scholarly studies from the middle of the twentieth century up to the year 2004 also the evolution of distance-education research is elucidated.

Distance education is a theme of great interest as it plays a very important part in many societies. Some forty specialised distance-teaching universities are active in various parts of the world, ten of which have, and as early as 1995 had, 'over 100,000 active students each year in tertiary education courses' (Daniel, 1996, p. 15). There are several million other distance-education students in the world (cf. Chapter 3.3).

When in 1960 I published my first monograph on the subject there was little research I could base my study on. Serious study of distance education was rare until the 1970s and 1980s. By the turn of the century the situation had changed radically and now there are hundreds of reports on the theory and practice of distance education, some of them representing educational empirical research, others theoretical considerations of rationale, methods and media and/or sociological study. There is a body of research encompassing and clearly defining distance education as a separate field of academic inquiry; it has its own conceptual structure and there is 'a complex set of interrelationships between its fundamental ideas' (Sparkes, 1983, p. 181).

I believe it is important to realise that quite a few concerns engaging us in the twenty-first century are more or less identical with those of earlier periods. For that reason I refer to several early sources which remain relevant. In this way I try to counteract the common misconception that distance education wholly relies on modern technology. I agree with Beaudoin's statement: 'Certainly, there are key concepts in the literature of distance education, as with other area of investigation, that easily survive the test of time, and continue to be viewed as truly seminal contributions to our understanding.' (Beaudoin, 2004, p. 9).

The present book, new in approach and up to date in content, is meant to replace my books of 1995 and 2003, *Theory and Practice of Distance Education* and *Distance Education in Essence*, the former now largely outdated, the latter published as a stopgap to update the book of 1995. I include several still relevant parts of these and also draw on an early work of mine, *Growth and Structure of Distance Education* (1986).

My presentation is based on factual information and research, that of others and my own. The book also reflects my practical experience of distance-education work during the last fifty years and attempts to bridge the gap between traditional correspondence education and more sophisticated distance education applying modern information and communication technology.

Börje Holmberg

January 2005

1. Concepts and Terminology – Student Bodies

Distance education is characterised by teaching and learning being brought about by media: in principle students and their teachers do not meet face to face. One or more media are used for their interaction and for communicating subject matter, for example the printed and written word, audio and video recordings, telephone conversations, computer communication. In this sense we talk about mediated teaching and learning.

Distance education is based on non-contiguous communication between a supporting organisation (Delling's name for the helpful distance-education school or university and its students; Delling, 1987). This communication is at least of two kinds, namely on the one hand one-way traffic in the form of pre-produced learning materials being sent from the supporting organisation to students, on the other hand two-way traffic, i.e. interaction between students and the supporting organisation; nowadays also student-student interaction is possible and widely practised. The one-way traffic is included under the concept of communication as it can simulate dialogue (see 4.1) and because in online distance education subject matter presentation can merge with interaction in one process (6.1). Subject-matter presentation and interaction are nevertheless the two constituent elements of distance education.

The demarcation lines of distance education have caused much discussion. The most lucid and analytic definition has been provided by Keegan (1990 and 1998), who identifies five characteristics and differences between distance education and traditional teaching and learning, namely

- the quasi-permanent separation of teacher and learner throughout the length of the learning process (this distinguishes it from conventional face-to-face education);
- the influence of an educational organisation both in the planning and preparation of learning materials and in the provision of student-support services (this distinguishes it from private study and teach-yourself programmes);
- the use of technical media – print, audio, video or computer – to unite teacher and learner and carry the content of the course;
- the provision of two-way communication so that the student may benefit from or even initiate dialogue (this distinguishes it from other uses of technology in education); and
- the quasi-permanent absence of the learning group throughout the length of the learning process so that people are usually taught as individuals and not in groups, with the possibility of occasional meetings for both didactic and socialization purposes. (Keegan, 1990, p. 44)

To the last-mentioned characteristic should be added the possibility of non-contiguous group work by means of modern technology. Keegan in a later contribution explicitly characterises distance education 'as either individual-based provision or group-based provision' (Keegan, 1998, p. 43), the latter making collaborative learning possible.

Typically distance students study course material specially prepared for them. This material is divided into units deemed to be of suitable size and containing self-checking exercises. After completing the study of a course unit the distance student is given a task, an assignment to be submitted to the supporting organisation, where it is corrected, commented on and returned to the student. Other types of student-tutor interaction also occur (as shown in Chapter 6).

What is remarkable is that distance education can bring about one-to-one relations, each student interacting personally with his/her tutor[1]. This one-to-one relation between learner and tutor is exceptional in education, probably elsewhere known mainly in traditional Oxford and Cambridge tutorials.

Distance education is often, erroneously, identified with open learning. While the former represents a method, the latter implies evading avoidable restrictions, for instance entry without prescribed entrance requirements. The two go well together, however. Distance education is an eminent method in open learning. However, in British usage the distinction is blurred. (Cf. Thorpe, 1988, p. XIII.) There was a lively discussion about the use of the two concepts in the 1980s (Dewal, 1986, p. 8; Foks, 1987, p. 76; Cunningham, 1987; Holmberg, 1989a; Thorpe & Grugeon, 1987, e.g.).

The term *distance education* began to be used in the 1970s and was officially adopted when, in 1982, the International Council for Correspondence Education changed its name to the International Council for Distance Education (now the International Council for Open and Distance Education). The background of this change was the growing use of various media, whereas print and the written word, i.e. correspondence, had entirely dominated at least until the middle of the twentieth century. In North America the designation 'independent study' was long widely used for university correspondence education. As, in Wedemeyer's words, it has 'significance respecting learning theory' and this significance is not universally adopted by distance educators (although promoted by Wedemeyer, 1981, and many others like the present writer), this term is neither suitable nor frequently used at the beginning of the twenty-first century although it 'has historic continuity, at least in the United States' (Wedemeyer, 1981, p. 50). Wedemeyer was one of the great thinkers in distance education paying much attention to far-reaching student autonomy, a theme which will be discussed in Chapter 10.3. of this book.

[1] The term 'tutor' is used in this book to denote a qualified academic who teaches, not, as in most American usage, an adviser who supports the students. A tutor in my terminology equals what is in the USA usually called an instructor, a word I avoid as it seems to exaggerate the role of teaching in the learning process.

At the beginning of the twenty-first century developments in technologies for communication and the presentation of subject matter have caused scholars to introduce terms like *e-learning* and *m-learning* to describe distance education applying electronic communication between stationary computers and communication from and to mobile wireless equipment. Both these forms of communication should be seen as modern applications of distance education, not as separate concepts, as they are concerned with media for teaching and learning without students and tutors meeting face to face and may include the two basic constituent elements of distance education as identified above. (Cf. Paulsen (2003), however, as quoted under 6.2.) Other communication methods and media may well be introduced to serve distance education.

There are different types of students making use of distance education. They are in most cases adults. Among these the traditionally typical student is a man or woman who beside work and family life studies on his/her own with little or no contact with fellow students, as a rule in order either to acquire competence for university entrance, for a degree examination or for a job, or to learn specific skills, accountancy, a foreign language, for example. There are also some students who learn for the sake of personal development and education *per se* without any practical purpose. Further, many individual students at traditional universities take distance-study courses in one or more subjects so that their degrees include elements of distance learning.

Another category of students are those who – now that computer interaction makes group work at a distance practicable – study in groups or classes, interact with one another and a tutor online. This is still something of a novelty, distance education usually being a mode of learning for individual students applying their own time tables to the study, but is of quite common occurrence particularly in North America. Asynchronous computer interaction makes it possible to combine peer-group interaction with individual pacing. The application of individual and group-based distance education, on which see Keegan (1998), will be discussed in their contexts in other parts of this book (Chapters 3.3. and 6.).

A further category are students who learn under supervision. Here belong children and youngsters who are supported by adults tutors, who may not be academically competent to teach, but function as organisers and advisors in schools or classes in which each boy and girl takes distance-education courses. It is a type of schooling that above all occurs in sparsely inhabited areas or in locations where there are not a sufficient number of duly trained teachers in the subjects being studied, thus, for evident reasons more commonly occurring in Australia, for instance, than in Europe. Some modern American home schooling may function as a type of supervised distance education. Also this type of distance education will be briefly discussed below (Chapter 8.). Supervised distance education for adults occurs in personnel training and various kinds of group learning.

2. The Evolution of Distance Education

2.1. The Beginnings – the Pioneers

The theoretical background of pioneering distance education was meagre. It was based on the simple hypothesis that teaching and learning without learner and teacher meeting face to face could be possible and effective.

Organised distance education in the form of correspondence instruction can, as will be shown below, be dated back to the eighteenth and nineteenth centuries, but letter writing for the purpose of teaching is probably as old as the art of writing itself. It has been suggested that the epistles in the New Testament testify to the very early existence of distance education, but this is questionable as here we seem to have clear evidence only of one-way traffic, i.e. of a presentation of something meant to be learnt. Nevertheless in St. Paul's letters there are some references to occasional feed-back through messengers from the congregations he was writing to (Titus in II. Corinthians 7, Timothy in I. Thessalonians 3 etc.). Something similar applies also to other educational letter writing, for instance the religious instruction given in the letters written by Gerhard Tersteegen in the Netherlands and Germany in the first half of the eighteenth century (Delling, 1964 and 2003) and Madame de Sévigné's letters to her daughter on which, incidentally, Jacob Burckhart and Marcel Proust have commented. The last-mentioned letters have actually been discussed in connection with distance education (Graff, 1964).

2.1.1. Practice

The first explicit mention of organised distance education so far known is an advertisement in the *Boston Gazette* of 20th March 1728, in which 'Caleb Phillips, Teacher of the new method of Short Hand' claims that 'Persons in the Country desirous to Learn this Art, may by having the several Lessons sent Weekly to them, be as perfectly instructed as those that live in Boston.' (Battenberg, 1971, p. 44). Presumably the reference to weekly consignments indicates two-way traffic, but admittedly this is by no means certain. (Cf. Bååth, 1980, p. 13 and 1985, p. 61.)

A hundred years later we find more conclusive evidence of distance education. In *Lunds Weckoblad* No. 30 of 1833, a weekly published in the old Swedish university city of Lund, an advertiser offers 'Ladies and Gentlemen' opportunities to study 'Composition through the medium of the Post' (Bratt, 1977, p. 161). Another early attempt to provide distance education was made in England by Isaac Pitman, who taught shorthand on postcards. He sent these to students who were invited to transcribe into shorthand passages of the Bible and send the transcriptions to him for correction. This combined study of shorthand and the Scriptures began in the year 1840 and was from 1843 managed by the Phonographic Correspondence Society. It was the beginning of what was to become Sir Isaac Pitman

Correspondence College (Dinsdale, 1953, p. 573; Light, 1956; *The Times* of 24th December, 1952) Organised correspondence teaching of foreign languages is assumed to have been introduced in Germany in the year 1856 by Charles Toussaint and Gustaf Langenscheidt (Noffsinger, 1926, p. 4). What scope the correspondence actually had is uncertain. Students were not required or given the option of submitting assignments for correction and comment, but were offered opportunities to ask questions. Bååth comments, translating from the Toussaint-Langenscheidt prospectus, 'they were by no means encouraged to do so'. Asking questions 'would hardly be necessary', the prospectus said, 'since everything is fully explained in the course' (Bååth, 1985, p. 62; Methode Toussaint-Langenscheidt, probably 1901, p. 10; cf. Delling, 1966, and Sommer, 1965).

A most important early distance-teaching activity originally based on the development and distribution of self-instructional material was the German so-called Methode Rustin, known from 1899 (Delling, 1966). The Rustin approach is interesting as it consistently follows a plan developed as a general guideline for correspondence courses. (See 2.2.2. below.)

A pioneer of some interest is mentioned by Mathieson as a representative of the 'proto-correspondence study programs' that existed in the United States between 1865 and 1890:

> The 'mother' of American correspondence study was Anna Eliot Tickner, daughter of a Harvard University professor, who founded and ran the Boston-based Society to Encourage Study at Home from 1873 until her death in 1897. The idea of exchanging letters between teacher and student originated with her and monthly correspondence with guided readings and frequent tests formed a vital part of the organization's personalized instruction. Although the curriculum reflected the "classical orientation", it is interesting that most of her students were women, a clientele then only beginning to demand access to higher education. (Mathiesson, 1971, p. 1)

Since 1836 the University of London has functioned as an examining institute which does not require that their examinees are students of the university but is open also to others as an examining body (Tight, 1987). This has proved very important for the development of distance education as it made and makes it possible for learners taught by organisations without examination powers, correspondence schools for example, to acquire academic degrees. Similar examination possibilities for the Civil Service in the UK later favoured private and individual study further. The existence of official examining bodies like these opened a market for correspondence schools and colleges in the UK. (On the University of London see further 3.2.)

Among British pioneering organisations were Skerry's College, Edinburgh, founded in 1878 and preparing candidates for Civil Service examinations, Foulks Lynch Correspondence Tuition Service, London, 1884, specialising in

accountancy, University Correspondence College, Cambridge, founded in 1887 and preparing students for University of London external degrees (in 1965 this college was taken over by the National Extension College (Perraton, 1978, p. 11), and the Diploma Correspondence College, later called Wolsey Hall, Oxford, founded in 1894, preparing students for university qualifications but also offering a wide range of other courses (Dinsdale, 1953).

The first American educator to introduce a system of structured correspondence study at the university level was William Harper, the founding president of the University of Chicago, often called the father of American distance education. A testimony from 1900 mentions his first correspondence course:

> Correspondence between leaders of thought and their followers has always played an important part in the development of knowledge. The constant allusion to correspondence in Darwin's Autobiography affords an illustration in point. The formal and systematic methods of correspondence teaching have, however, been developed only within the past two decades. In 1880 work of this sort was being carried on by a society in Edinburgh. At the same time Dr. William Harper in this country was offering instruction in Hebrew by mail. …
>
> In 1892 the University of Chicago began its work, and at the outset correspondence instruction was an organic part of the teaching methods of the institution. Since that time, the University of Wisconsin and the University of West Virginia have made provision for the same sort of teaching. (Vincent, 1900)

Similar initiatives were taken by Illinois Wesleyan College (1874), the Correspondence University, Ithaca, N.Y. (1883) and others (Mathieson, 1971, p. 3). The Chatauqua School of Theology, which had received its charter from the State of New York in 1881, seems to be of particular interest, however. Its 'School of Theology's program could fairly be called the first correspondence-based degree in the United States' (Pittman, 2001, p. 14). In 1883 a charter was issued for 'Chautauqua University, an institution authorized to grant both graduate and undergraduate degrees. While it enrolled more than 12,000 students, the Chautauqua University awarded only 21 degrees, including one Ph.D., before 1898, when it voluntarily surrendered its charter' (Pittman, ibidem).

A less academic American origin occurs in the teaching of mining and methods for preventing mine accidents which was introduced by a course in 1891 constituting a systematised continuation of an instructional activity begun earlier in a question column in the Mining Herald, a daily newspaper published in the coal mining district of eastern Pennsylvania. The initiator of the correspondence course in question was the editor of this newspaper, Thomas J. Forster. His initiative met with great success. The response to his course led to the development of first an extended course of the same type and then to the preparation of a number of

correspondence courses in various fields. This was the beginning of the International Correspondence Schools (ICS) in Scranton, Pennsylvania, and their subsidiaries and offshoots in and outside the United States (Correspondence Instruction, 1901). They now work under the name of Harcourt Learning Direct.

Later developments show that the provision of both academic and practical occupational study opportunities was to be typical of distance education in the 20th century. Other pioneers illustrating this is Hermods in Sweden, founded in 1898 and in the 1960s and 1970s to become one of the world's largest and most influential correspondence organisations (Gaddén, 1973) and the American School in Chicago, founded in 1897.

In Australia the University of Queensland entered the field of distance education in 1911 (Store & Chick, 1984, p. 57). Another Australian pioneering activity concerns supervised correspondence study for children and youngsters at the primary and secondary level which started in the second decade of the 20th century:

> Australia can claim to be the first country to have shown in a systematic way, and on a large scale, that it was possible to provide by correspondence education a complete primary and secondary education for children who had never been to school. (Rayner, 1949, p. 12)

On supervised distance education see Chapter 8. below.

2.1.2. Principles Discussed and Applied by the Pioneers

Some of the issues that are still under debate played important parts in the discussions and applications of distance education during the early period surveyed above. Here belong the questions of students' independence, prescribed or self-chosen pacing of the study, individual or group learning. It seems to be of interest to compare two of the great pioneers, William Harper of the USA (1856-1906) and H.S. Hermod of Sweden (1860-1920). While Harper insisted on highly structured courses and seemed to prescribe pacing, Hermod was much more liberal and, in fact, had as a guiding principle the freedom of the individual student to study when and where it suited him/her. The following two declarations are worth comparing:

William Harper, USA, 1886:

> A brief explanation of the plan of study by correspondence is first in order.
>
> 1. An *instruction sheet* is mailed to the student each week. This instruction sheet (a) assigns the tasks which are to be performed, e.g., the chapters of the text to be translated, the sections in the grammar to be learned; (b) indicates an order of work which the students is required to follow; (c) offers suggestions on points in the lesson which are liable to be misunderstood; (d) furnishes special assistance whereever such assistance is deemed

necessary: (e) marks out a specified amount of review work; (f) contains an examination paper which the student, after having prepared the lesson, is required to write out. The instruction sheet is intended, therefore, to guide and help the student just as an oral teacher would guide and help him.

2. The *examination paper* is so constructed that, in order to its preparation for criticism, one must have prepared beforehand most thoroughly the lesson on which it is based. An examination paper on Caesar, for example, requires of the student (a) the translation of certain chapters into English; (b) the translation into Latin of a list of English sentences based on the Latin which has just been translated; (c) the explanation of the more important constructions, with the grammatical reference for each construction; (d) the placing of forms; (e) the change to "direct discourse" of a corresponding passage in "indirect discourse"; (f) the explanation of geographical and historical allusions; (g) the statement of grammatical principles, etc.etc.

3. In the *recitation paper* submitted to the instructor, besides writing out the matter called for in the *examination paper*, the student asks such questions, and notes such difficulties, as may have presented themselves to him in his study of the lesson. This recitation paper is promptly returned with all errors corrected, and questions answered; and with special suggestions, suited to each individual case. In this manner each lesson of the course is assigned and studied; and the results of the study submitted to the instructor for correction, criticism, and suggestion. From this it will be seen that the correspondence teacher must be painstaking, patient, sympathetic, and *alive*; and that the correspondence pupil must be earnest, ambitious, appreciative and likewise *alive*. ... (William Harper, a paper included in Vincent (1886, pp. 183-193), reprinted in Mackenzie & Christensen (1971, p. 8)

H.S. Hermod, Sweden, 1901 (in his periodical *Korrespondens)*:

As soon as a student has enrolled he receives two teaching and question letters as well as detailed instructions on how to use the letters. After he has studied the first teaching letter he puts it aside and starts work on his question letter, answering each question in the order in which it occurs. Then he puts his work into an envelope provided with our address and sends it by mail. When these answers have arrived at the Institute they are scrutinised very carefully there and, when all mistakes have been corrected in red ink, the answers are returned together with such comments and explanations as will make it possible for the student fully to understand the subject. Every mistake is marked and everything is explained completely. Experience shows that these written comments are more easily remembered than oral comments. After the student has submitted his answers to the first question letter he starts studying teaching letter No. 2 following the

> same procedure as he applied when studying the first letter. When the corrected replies to question letter No. 1 are returned, they are accompanied by teaching letter No. 3 and question letter No. 3. When he receives letters No. 3 the student puts them aside until he has finished No.2; not until the replies to No. 2 have been sent (to the Institute) does he begin with No. 3 etc. In this way he has always a letter ready at hand to study while the earlier one is being corrected. If after careful study of some topic a student does not fully understand it he has only to send in a question about the difficulty. As soon as such a question has been received it is answered immediately.[2](*Korrespondens* 1, pp.13-14)
>
> In correspondence education each student constitutes a class of his own. One student may complete a course in three months and another the same course in two years, but both in any case attain their goal. This cannot be said about oral teaching as in this case the individual student must keep the same pace as his fellow students or be left behind.
>
> In correspondence education there are no vacation times. Nothing interferes with or interrupts the students' work. People can begin their studies on any day of the year they prefer and can be equally sure to be given careful teaching at whatever time they begin. Studies can be interrupted whenever the student wishes to do so and be taken up again when it suits him. (*Korrespondens* 2, p. 29)

As evident from these quotations the procedures described by Harper and Hermod agree very closely with one another. However, there is a difference in vocabulary which indicates a possible disagreement on one point, however. Harper calls the assignments to be submitted by the student *examinations*, whereas Hermod refers to them as *answers* which require corrections and explanations and thus regards them as part of the teaching-learning process.

Nevertheless also Harper mentions correction, criticism and suggestion. To judge from their ways of expressing themselves Hermod stresses the teaching element of the tutor's work more than Harper, who may have paid more attention to control and corrections. Both insist on high quality work on the part of tutors.

There are greater differences between the two in their attitudes to the freedom of decision left to students. Harper paces his students by sending what he calls an instruction sheet each week, whereas Hermod explicitly tells students that they can choose their own time for study and themselves adapt study to their personal conditions. Compare his statement that the same course can require very different periods of study, in his example three months to two years.

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[2] This and other Swedish and German texts occurring below have been translated by the author of this book.

Both Harper and Hermod cater for *individual* study. While Harper does not comment on this it is an important principle to Hermod, who stresses that each student is a class of his own, can study when and how long it suits him, interrupt the work when he feels like it etc.

These are issues that constantly crop up in distance education, even in the twenty-first century. Individual pacing was stressed by various organisations offering correspondence education at the beginning of the twentieth century, thus, e.g., by ICS in the USA (General Circular, 1900, p. 6) and Wolsey Hall in the UK (Wolsey Hall, 1914, pp. 6-7).

It is evident from the quotations above that distance education was from the beginning above all a kind of adult education. It is also in the education of adults that it has later on exerted its strongest influence even though supervised distance teaching of children plays an important part in some regions.

2.2. Correspondence Study as an Established Form of Education and Distance-teaching Universities in the Twentieth Century

2.2.1. Practice

Work along the lines indicated in the above discussion of the pioneers developed and grew in intensity during the greater part of the twentieth century. As people grew more and more aware of the need for education and training, correspondence education became something of a godsend to many who had had only very elementary schooling and wanted to improve their education and thus their chances for promotion in work and society. The following quotation from a Hermods prospectus of 1908 illuminates this situation:

> Our correspondence teaching meets an important need. It affords anyone an opportunity to educate himself/herself further; it gives to young men and women anxious to make progress an opportunity to reach an independent position and to poor people a possibility to work themselves free of their poverty. The student can learn without neglecting his daily work, make use of his leisure time and in this way acquire valuable, practical knowledge. Each student constitutes his own school class. He can choose what time suits him for his study and can at will use any hour available to learn. (The Hermods Prospectus of 1908, p. 10.)

A great number of correspondence schools, i.e. distance-education organisations wholly or mainly relying on the printed and written word as their medium, were founded in the first half of the twentieth century, to serve upward social mobility. Some – but far from all – of them were excellent. While most were commercial enterprises, there were a few run by foundations or popular organisations without any profit purpose. Reputable correspondence schools in different parts of the world joined into organisations to learn from one another and, in occasional

cases, for co-operation in course development, student support and marketing. Language problems limited this co-operation in Europe, where two such organisations worked side by side for many years. The present *European Association of Distance Learning* (EADL) was created as a merger of these two. In the USA, where hundreds of correspondence schools are active, the *National Home Study Council* (now *The Distance Education and Training Council*) exerted – and exerts – strong influence on the educational methods used and on business conditions following ethical principles. An accreditation scheme with tough conditions safeguards high standards.

Many correspondence schools made important contributions to general education and professional/occupational training – and quite a few still do – in all parts of the world, those in developing countries often branches or successors of European or American schools. Correspondence education was – and is – also provided by some universities through departments for external study.

In France a state correspondence school was created in 1939 to cater for the education of children whose schools because of the war could not stay open. This has developed into what is today the large Centre National d'Enseignement à Distance (CNED), now mainly teaching and training adults.

The leading correspondence schools started using more sophisticated media than print and writing almost as soon as such media became available. Their work soon developed in ways typical of modern distance education and discussed below in Chapters 4.-9. It was the refinement of correspondence education that paved the way for modern distance education as applied in the last decades of the twentieth century. In fact, the most important aspects of distance education were studied already during the period of the correspondence schools, up to say 1990; new approaches, among them some related to the possibilities opened by computer techniques, were developed, analysed and practised during this period. The beginnings of the work of the public distance-teaching universities belong here. In fact, the practice of the best correspondence schools provided the solid basis on which modern distance education has developed.

Whereas up to the 1960s the large-scale distance-teaching organisations had been private correspondence schools, a new era beginning in the sixties saw publicly supported and established universities and schools relying on correspondence-education methods becoming more and more important. An outstanding pioneer in this respect is the University of South Africa, which emerged as a development of the University of Good Hope, founded in 1873 as an examining body on the model of the University of London. It started teaching at a distance in 1946. The University of South Africa was definitely established as a distance-teaching university through a governmental decree of 1962 (Boucher, 1973).

The founding of the British Open University in 1971 was the final indication of the new era mentioned. Since then degree-giving distance-teaching universities with

full degree programmes, sophisticated courses, new media and systematic course and systems evaluation have cropped up in various parts of the world and have in many countries contributed to the prestige of distance education. Early followers of the British Open University were the FernUniversität in Germany, Open Universiteit in the Netherlands, Universidad Nacional de Educación a Distancia in Spain, the Open University of Israel, Athabasca University, Universidad Nacional Abierta de Venezuela, e.g. In a book of mine first published in 2001 I could identify forty distance-teaching universities in various parts of the world (Holmberg, 2001, pp. 17-19). Distance education is also the dominating task of some university organisations, like the World Campus of Penn State University and the University of Maryland University College. An interesting later one is Universitat Oberta de Catalunya, which teaches exclusively online

What above all gives us reason to regard the last three decades of the twentieth century as the beginnings of a new era in distance education is the public recognition since then usually given to this kind of education. With few exceptions, as in Scandinavia, governmental authorities had until then been sceptical in their attitudes to distance (correspondence) education. The image of distance education changed almost all over the world from one of possibly estimable but little respected or even pathetic endeavour to one of a publicly acknowledged promise of innovation.

2.2.2. Principles Discussed and Applied to Established Correspondence Education and in Distance-teaching Universities in the Twentieth Century

What were then the educational tendencies and achievements of established correspondence education? I believe it is true to say that a basic insight into the character and potentials of distance education, whether brought about merely by postal correspondence or in any other way, was attained by many academics and decision-makers in the twentieth century.

Thus one of the great American pioneers, William Lighty of the University of Wisconsin, in 1915 identified essential characteristics, requirements and potentials of distance education. The following extract from his (the first) paper on correspondence education to the US National Extension Conference testifies to this:

> In extramural teaching must be created the method, the technique, the atmosphere, which shall give the university a new meaning in democracy. For him (the extra-mural teacher) it is to solve the difficult problems connected with long distance instruction. Their solution has hardly begun. He must be able to do more than correct errors and communicate information. He must put into his instruction his personality, his inspiration, his interpretation, as the painter puts his on the canvas, or as the musician puts his into his composition. So far as his pupils bring to the instruction the capacity of appreciating what is communicated, so far will they benefit, just as in the case of the canvas or the musical composition. The supreme

> test of teaching is the capacity to do this, and in no field is there so fine an opportunity as exists in extramural teaching. .... Some extramural teachers go so far as to use two colors of ink on the recitation papers; one for correction of errors and the like, and another color for the comments of instruction and interpretation in which they communicate themselves. Thus, the teacher-pupil relation in correspondence study becomes very real, very personal, and indeed very intimate. ....
>
> The new type of teacher and the new type of text and instruction are required because we have a new type of student from that in the conventional school. He is generally an adult student. He has a fairly definite idea as to what he needs and wants, and often an almost equally definite idea as to what he does not want. He has to be convinced by logic and experience, and not by rule of order, of the position of the teacher, for none of the ordinary compulsions operating in the intramural instruction are effective here. The student makes up his mind quite promptly on an early, if not the first, examination of the lessons or course as to whether it is worth his while. ...
>
> With the type of student suggested, it follows that there must be changed standards of success and failure for extramural students. A man may go through half or a third of a course and get all he needs or wants to satisfy his original purpose. (From the *Proceedings of the first Conference* of the National University Extension, pp. 75-83, reprinted in Mackenzie & Christensen, 1971, pp. 14-22)

Lighty' statement as quoted seems to be the first description of distance education as something separate, a form of education *sui generis* as Peters later put it (Peters, 1996). It is worth noting that he underlines the teaching rather than correcting function of the tutor and insists on individualisation based on the adult student's maturity.

Methodological principles were discussed at an early stage also elsewhere. Rustinsches Fernlehrinstitut in Berlin (and later Düsseldorf), which was large and well known during the first four decades of the twentieth century, from 1903 developed its course units following this list:

1. Subject-matter presentation in a self-instructional form.
2. Conversation about the subject matter, in which the main points of the subject-matter presentation are repeated by questions and answers.
3. A summary.
4. Revising questions with references to the sections of the subject-matter presentation where the answers to the questions are to be found.
5. Exercises in the form of questions developed in such a way that the students must be able to answer them on the basis of what has been learnt through the preceding parts of the course unit. The correct answers to these questions are provided at the beginning of the following course unit.

6. Individual correspondence teaching aimed at developing autonomous thinking by means of a comprehensive assignment to be performed in writing. (Delling, 1966, pp. 19-20)

The quotations above illustrate how some pervasive themes were discussed and how important principles were applied in correspondence education long before any form of distance education had gained general recognition. Thus arguments in favour of distance education are the opportunities for adults to learn what they want to learn and to do so anywhere and at any time suitable to them beside their other commitments, to upgrade their competence and generally to educate themselves without having to adapt themselves to the conventions of schools and universities. Principles for distance teaching were discussed and applied and a sound basis for further methodological developments was laid.

Later twentieth-century contributions to the understanding of distance education are Peters' analysis of distance education as an industrialised mode of teaching and learning (Peters, 1973; Keegan, 1993) and the introduction of the present writer's empathy approach with its theory of conversation-like subject-matter presentation, at the beginning regrettably (by me) labelled *didactic conversation* (Holmberg, 1960 and 1999; Holmberg, Schuemer & Obermeier, 1982; see Chapters 4.1.1. and 10.). Peters' analysis provided a useful framework for the understanding of distance education and has engaged practically all educators concerned with its theoretical background (cf. Keegan 1993). My approach led to a testable theory guiding course development and student-tutor interaction, much discussed and sometimes more or less consistently applied after its first testing in 1982 (Holmberg, 2001, pp. 35-46; Keegan, 1993, Moore & Kearsley, 2005, pp. 224-226). (On these issues see further Chapter 4.)

Naturally also findings made in general educational research are of interest to distance educators. Not until the last few decades of the twentieth century were they systematically studied with a view to establishing their relevance and applicability to the special conditions of distance education, however. A careful analysis of Skinner's behaviour-control model, Rothkopf's principles for written instruction, Ausubel's advance organisers, Egan's structural communication, Bruner's discovery learning, Rogers' model for facilitation of learning and Gagné's general teaching model was carried out by Bååth and published in 1979. This is a study of lasting importance to any distance-education researcher. Bååth could show that all these 'models' are applicable to correspondence/distance education and that they generate demands on distance-education systems conducive to useful new developments.

While this was a seminal work on general aspects of distance education, there was from the 1960s a series of other attempts to relate general educational research to the concerns of distance education. Behaviourist thinking long dominated much distance education and is still quite influential, particularly in North America. The

study of Ausubel's cognitive approach of 1968 (see 4.3) led to new thinking and to modifications in practice. Gagné's demands of 1970 on written learning materials, based on both behaviourist and cognitive principles, proved productive in distance education. An early testimony to this is Ahlm's study of 1972 of telephone interaction in distance education. Following an adaptation of Gagné by Bååth the following functions of course materials are widely recognised as essential:

1. To arouse attention and motivate; the presentation of objectives that are within close reach appears to be of particularly great importance in this respect.
2. To make students aware of the expected outcomes of the study.
3. To link up with previous knowledge and interest.
4. To present the material to be learned.
5. To guide and structure, offering guidance for learning.
6. To activate.
7. To provide feedback.
8. To promote transfer.
9. To facilitate retention.

Towards the end of the twentieth century constructivist approaches started influencing thinking and practice in distance education. The main contribution of this thinking seems to be raising the awareness that each learner constructs his/her knowledge by individual interaction with subject matter and that thus individual students learn different things from the same course. In its extreme form constructivism represents rejection of all 'objectivism' (Jonassen, 1991) and a belief that all knowledge is constructed socially (which would imply that no facts are recognised as objectively existing, thus, for instance, knowledge of anatomy guiding surgery being seen as a result of social or individual construction; Holmberg, 1998).

Further, theoretical approaches to distance education were worded and some attempts were made to test theories during the latter half of the twentieth century. A presentation of theoretical principles developed are presented in Keegan (1993). (See further Chapter 10. below.)

Naturally considerations of what really constitutes education belong here. Educators can never accept a view of education as simple knowledge transfer 'from one vessel to another' (a metaphor worded by Fox, 1983, p. 151). Fox (ibidem) identifies three views ('theories') of teaching that are relevant to distance education:

> There is the shaping theory which treats teaching as a process of shaping or moulding students to a pre-determined pattern. ... There is the travelling theory which treats a subject as a terrain to be explored with hills to be climbed for better viewpoints with the teacher as the travelling companion or expert guide.

> Finally, there is the growing theory which focuses more attention on the intellectual and emotional development of the learner.

While the last-mentioned view represents the most acceptable guideline for action there is no denying that Fox's 'travelling theory' is not only widely applied but also often meets the requirements of educational programmes. However, the intellectual and emotional development of the learner necessarily includes 'the ability to find and analyse information and to identify relevant and reliable material amongst large amounts of data', which Mason and Rennie (2004) describe as 'more important than learning content'. This ability is extremely important, but it seems more than doubtful if it can always be more important than learning content as the two are unavoidably intertwined.

It was during the latter part of the twentieth century that the methodological principles and applications of distance education were first studied and explicitly worded. They ranged from tentative observations to analyses of target groups and learning objectives, then to explicit principles for structures and the use of media in subject-matter presentation and in student-tutor interaction, to organisation and administration as well as to assessment of outcomes and systems evaluation, themes which will all be looked into in the following chapters. Research and discussions in the distance-teaching universities, documented in their publications and internal documents, among them the Open-University journal *Teaching at a Distance* (a periodical started in 1974, which in 1990 changed its name into *Open Learning)* and the FernUniversität series *ZIFF Papiere,* the presentation of several monographs and articles in educational and other journals, the creation of specialised periodicals like *Distance Education* (Australia), the *Journal of Distance Education/*la *Revue de l'enseignement à Distance* (Canada), and the *American Journal of Distance Education* are steps on the way to making distance education a well-known concept. These are all initiatives of the 1970s and 1980s which are now recognised fora for the exchange of scholarly findings and views. A European (German) journal, *Epistolodidaktika*, was published in the years 1964-1998. Among the matters studied at an early stage can be mentioned the use of the computer in distance education (Bååth & Månsson, 1977; Holmberg, 1977; Wilmersdoerfer, 1978; Küffner, 1979, etc.).

The social backgrounds of distance education and the wish to extend the opportunities for study have naturally been important concerns for discussion and action. The reasons for founding the distance-teaching universities, which – as already shown – both brought distance education into the limelight and gave it prestige, seem in most cases to have been:

- the need felt in many countries to increase the offer of university education;
- a realisation that adult people with jobs, family and social commitments constitute a large group of prospective part-time university students;

- a wish to serve both individuals and society by offering study opportunities to adults, among them disadvantaged groups;
- the need found in many professions for further training at an advanced level;
- a wish to support educational innovation;
- a belief in the feasibility of an economical use of educational resources by mediated teaching, i.e. teaching brought about by media.

Inherent in these reasons is the wish to cater for permanent or recurrent education, for social equality, expressly and frequently mentioned in the early debate (cf. Burgess, 1982, and Woolfe, 1974) and sometimes expressed as a wish to attract 'working-class students' (Woolfe, 1974, p. 41; McIntosh, Calder & Swift, 1976, p. VIII, and elsewhere).

Sociologists paid much attention to distance education towards the end of the twentieth century. This reflects a tendency to widen the scholarly study of distance education from its own concerns to its roles in society. Thus, in 1991, two Australian scholars

> … challenge the theoretical underpinning of policies which ignore, and hence deliberately or inadvertently, hide the fundamental importance of the economical, technological, demographic, cultural, political and social contexts within which a system of higher education operates. In essence we are arguing that … an emphasis on endogenous factors will no longer do. (Campion & Guiton, 1991, p. 12)

In this spirit comparisons with what is called Fordism involving mass production and post-Fordist visions and applications have led to lively discussions. (Cf. Edwards, 1991; Renner; 1995; and Peters, 1998, pp. 109-119 for instance.) Paradoxically, distance education can unite mass production with individual teaching and support at the same time as it inspires independence, the full consequences of which are not always realised.

3. Distance Education in the Twenty-first Century - An Overview

3.1. New Practice and New Possibilities

Nothing of what has so far been discussed has lost its relevance. When later in this book we shall look into structures, methods and media, the concerns indicated above will constitute important elements of our subject. However, towards the end of the twentieth and at the beginning of the twenty-first century sophisticated technology changed both the view of distance education in society and its practice in a way to add a new dimension to its character. The background is computer technology with its digitalisation, i.e. information stored in the form of bits transmittable electronically. Computer technology makes texts, pictures and sound easily available.

Both subject-matter presentation and interaction can benefit from this. So-called electronic mail (e-mail) is above all used for interaction between students and their tutors. Computer conferences can be used as seminars and for other serious discussions between several participants. As pointed out in Chapter 1 in the discussion of Keegan's characterisation of distance education the last-mentioned application means that distance education needs no longer to be limited to individual study, but can also include group work. If students can co-ordinate their time-tables and join discussions at pre-determined times group work is also possible by means of tele-conferences.

Computer technology, on the other hand, makes a-synchronous discussions possible; within the limits of a defined period, a week or two, for instance, students and tutors can make their contributions to a seminar or any other discussion at any time that suits them. This and the possibility students have to contact one another spontaneously for so-called chats makes group work in distance education acceptable to adults with jobs, families and various other commitments. It strengthens the flexibility that from the beginning made distance education a useful tool in adult education and caters for collaborative learning, which is usually regarded as an advantage. (Cf. Hannah, 2004, p. 3, on the University of Maryland University College: 'All of our master's degree and certificate programs are available online, and many are also available in classroom or combined delivery format'.)

Another valuable characteristic of computer technology as applied to distance education is the possibility it offers for search on the World Wide Web (WWW). This means that practically unlimited quantities of information can be made available to students and also that presentation of learning matter need not be sequential but that possibilities are opened for students to find their own way

through learning material, a procedure that is often far from easy, however. Both the very search for information and the so-called hypertext approach indicated, on which more under 5.2., can be useful in promoting student independence.

Subject-matter presentation on the Internet is nowadays quite common. From the point of view of teaching organisations this is evidently a practical and economical procedure, much more so than printing and sending course materials by post. It is very doubtful, however, to what extent it is desirable from the points of view of students. Reading from printed texts is almost universally felt to be easier than reading from the computer screen, and there can be no doubt that texts on paper facilitates browsing. When subject matter is presented electronically, i.e. on the computer screen, students as a rule make their own printouts to facilitate reading. Nevertheless, it has been found useful to supplement printed texts online with explanations, references and additions, this usually as a result of experiences made of students' achievements as demonstrated in their assignments.

The technical developments indicated have inspired not only established distance-teaching schools and universities but also a great number of computer companies and even traditional universities to teach by computer. In North America some universities seem to regard distance-education courses relying on computer technology as a financial necessity to get enough tuition fees. The University of Phoenix, which is a stock exchange company, is a large-scale provider of internet courses.

The educational relevance of the online teaching leading to what is often called e-learning depends on the way it is applied. In some cases it seems to be limited to texts and tests on the screen without interaction with a tutor but only with a computer programme, which in the present writer's view does not deserve being called distance education. A large industry for the creation and sale of various learning and testing materials exists.

It is difficult for many educators to banish the thought that much of this activity has profit rather than education as its aim. Amateurish use of this so-called e-learning gave it a bad reputation at the very beginning of the twenty-first century, as explicitly expressed at the important German 'LEARNTEC' conference in 2002 and in other contexts. E-learning need not be identical with online learning. (See 6.2. below.)

The use of various databases and search on the Web are not uncomplicated. The advanced student finds it useful constantly to locate and compile information and discussions of value for his/her research and other study, but the ordinary distance student, who has a tough time learning what is required for an examination, cannot always allow himself/herself lengthy study excursions of this kind (although evidently a lot of planless zapping is common). He/she is governed by examination requirements and the time at disposal, the latter usually a great problem to adult students. This is something a distance educator must be constantly aware of.

Some university students go so far in their endeavour to keep to a reasonable time-table that they object even to questions inserted in texts as they slow them down by making them think. Thorpe (1986, p. 39) quotes one student expressly stating 'I don't want to think, I just want to get on'. Naturally educators do what they can to make students refrain from such an instrumental view of learning, but there is a limit to what can be expected.

Computer technology is, as evident from what has already been said, an excellent medium for interaction between students and their tutors as well as for exchanges of views and experiences between individual students and groups of students, for organised a-synchronous seminars, for simulation of work processes etc. and for all kinds of contact between those engaged in a distance-education programme. Further it opens earlier unknown possibilities for students to search for information and for tutors to supplement preproduced learning materials, explain and comment on unforeseen difficulties which crop up in individual students' work. To be really useful it has to be embedded in the distance-education process, which is to some extent an organisational/administrative concern. (See Chapter 9.)

Several writers metaphorically speak of a virtual learning space, among them Peters who states that in the digital learning environment it's as if students had an opposite number, not just the monitor screen but also the teaching software, which can react in different ways to their activities' and that behind this are 'the network with a tremendous depth of penetration' and its links 'with many virtual databases, institutions, libraries and individuals' (Peters, 2004, p. 61).

All this evidently paves the way both for collaborative learning and for highly individualised study and can promote students' independence. However, making full use of what modern technology offers is a privilege reserved mainly for advanced students and professional scholars who unlike the vast majority of distance students can give first priority to their study.

3.2. The Identity of Distance Education Today: Outcomes of Evolutionary Developments

As has been shown in the preceding discussion distance education has developed from an expedient created to serve those educationally underprivileged to a well-considered and academically studied and evaluated type of education practised all over the world not only in the interest of the original target groups but for a series of educational aims.

There are a great many highly successful distance-teaching organisations at the university level, in pre-university study and in professional/occupational training. Some of the providers of distance education give much attention to the scholarly study of their kind of education. Here belong, as expected, distance-teaching universities and also other academic bodies.

During the last hundred years many distance students have managed to learn and report on what is required for a degree or other advanced qualification, but before the creation of the distance teaching universities few distance-teaching institutions had the right to examine their students and award officially recognised examination documents (Hermods in Sweden was an exception from the 1960s). In the UK the function of the University of London as an examining body for external students, an activity which, as also mentioned under 2.1.1., started as early as 1836, solved this problem (Harte, 1986; Tight, 1987; Arnold, 2004). Private correspondence schools have prepared many London graduates for their degree examinations. A parallel institution (mentioned under 3.1.) was the University of Good Hope in South Africa, founded in 1873 as an examining body. This later (in 1962) under the name of the University of South Africa (UNISA) became the first distance-teaching university in the world (Boucher, 1973).

The above presentation will have shown that the present status of distance education is the outcome of an evolutionary development. The basic principles of teaching and learning taking place without students and teachers being present with one another on the same premises from the very beginning led to mediated presentation of learning matter and also to mediated interaction between students and tutors. Technology was used from the beginning (print and postal services). As more sophisticated technology developed and was applied in society the providers of distance education made use of it to widen the range and improve the quality of the teaching and learning they represented. This applies to the use of radio and television, to audio and video recordings, the telephone, telefax, the computer. This has been a gradual process. There is no reason to assume that this process has reached its end. Distance education will no doubt develop further and in this further development make use of new advances in technology. Maybe, for instance, there is something in Keegan's statement that 'Mobile learning is a harbinger of the future of learning.' (Keegan, 2002, p. 8).

While distance education has constantly undergone evolutionary change and in this process made use of novelties which can well be described as technically revolutionary, it has retained its original character of both presenting learning matter and catering for interaction by the use of media.

Distance education has usually been regarded as a type of study requiring a certain amount of maturity and independence on the part of the students. Many distance educators have, on the other hand, claimed that it promotes independence. This dichotomy is the theme of Bückmann, Holmberg, Lehner and Weingartz (1985). Most educators find it important that distance education should promote independence. This is an issue discussed below in Chapter 10.

3.3. Facts and Numbers

Distance education is no longer an exceptional mode of teaching and learning. While up to the 1990s the providers of this kind of education were almost exclusively either specialised distance-education institutions basically relying on correspondence teaching or universities defined as dual-mode institutions teaching some students face to face and others by distance-education methods, the possibilities opened by information technology have caused innumerable universities, schools and other organisations concerned with education and training to offer teaching at a distance, in some cases full-degree programmes, in other cases courses in specific subjects and for special target groups. Thus in the USA, for instance, practically every university offers some teaching at a distance; similar conditions occur in several European countries and elsewhere. Providing distance-education courses beside traditional teaching was originally a typically Australian form of distance education (Smith, 1979), but is now common in many countries and parts of the world.

The introduction of information technology triggered off many distance-education projects in the last decade of the twentieth century, most of them characterised by online communication of one kind or another. The U.S. Center for Education Statistics reported that about '78% of public 4-year institutions and 62% of public 2-year institutions offered DE courses in 1997-98, with more than 1.66 million enrolments in more than 54,000 distance education courses' (Tapsall, 2001, p. 39). It is a remarkable fact that the courses referred to made use of Internet–based and video technologies but did *not* include any learning wholly based on written correspondence. Many of the technology-driven courses represent what is called real-time teaching, i.e. all students in a course being taught simultaneously, which to many adults is inconvenient. Against this background it is interesting that The Distance Education and Training Council in the USA (DETC), whose members also provide traditional correspondence education, reports that 90% of all American distance-education courses in higher education are a-synchronous and make use of existing opportunities 'to free students from the lock-step togetherness that most fixed-facility instruction cannot escape' (Lambert & Luman, 2003, p. 2). DETC members in 2004 teach more than 2 million students. While online teaching serves a-synchronous study well it is also a fact that a-synchronous correspondence education remains an effective and popular method. However, modern practice usually includes elements of information technology; online interaction is usually appreciated highly. (Cf. DETC, 2004 Distance Education Survey.)

Before this late increase in numbers, i.e. when it was almost entirely the domain of specialist distance-teaching universities and schools, correspondence colleges and similar organisations, distance education was already widely spread. In the early nineties about four million students were enrolled at any given time in correspondence schools accredited by the U.S. National Home Study Council (now the Distance Education and Training Council) (Verduin & Clark, 1991, p. 199); in

the European Union there were 2.6 million distance students, 600,000 of whom enrolled in distance-education courses at university level (Keegan, 1997), and in 1996 the distance-teaching so-called mega universities in the world, each with over 100,000 active students each year in tertiary education courses together enrolled 3.337 million students (Daniel, 1996). These figures are now, as a result of widespread use of information technology in non-contiguous teaching and learning, outnumbered to an uncalculable extent. Since the 1970s the distance-teaching universities have been particularly influential, educationally, socially and politically.

However, the basic principles and methods of distance education had been developed long before these publicly recognised distance-teaching institutions were created. The pioneers in modern distance education were private organisations like the International Correspondence Schools, USA, founded in 1891, Wolsey Hall, England (1894), the American School, USA (1897) and Hermods, Sweden (1898).

3.4. The Social Context

Distance education was created and developed because there was a need for unconventional learning opportunities in many societies. People who had a poor educational background, perhaps only a few years of elementary schooling, but wanted to educate themselves either for practical purposes or for personal development needed – and still need – some kind of support of the their learning. This paved the way for the creation of distance-teaching schools. From the nineteenth century up to the last few decades of the twentieth century they were correspondence schools. Some of them developed highly sophisticated methods and could demonstrate excellent results. Thus Hermods of Sweden in 1958, though a private organisation owned and run by a non-profit making organisation, attained an official position in that it was given the same right to examine its students for university entrance and some other qualifications as parallel state schools. Many schools teaching more or less exclusively by written correspondence still function and do so in an effective and student-friendly way.

What students (and would-be students) expected and were (are) given by the responsible correspondence schools was teaching and counselling that enabled and enable them to pass examinations and/or acquire formal and real competence for positions of various kinds. This study led and leads to upward social mobility in many countries. A careful study has shown that in Sweden from 1898 until 1975 a great many people leading in university work, business and industry and in politics had acquired all or most of their schooling by correspondence (Gaddén, 1973). Gradually many with good basic education, such as doctors, engineers and economists, also made use of correspondence education to update their training and study novelties in their fields. As society and the labour market

have become more sophisticated modern distance-education organisations have started to provide education and training for a number of specific tasks.

Awareness of the success of distance education, both in its original form of pure correspondence teaching and learning and its modern form partly or wholly relying on more or less sophisticated technology, and also awareness of the adaptability of distance education to individual timetables and working conditions have made a great number of adult students prefer distance education to more conventional types of study.

What the thinking reported on and the developments described have led to in distance education is the theme of the rest of this book. This means that we shall look into its present rationale, role in society, student bodies, structure, methods and media, organisation and administration, various applications, theory and evaluation as well as its position as a field of academic inquiry, which inevitably implies re-examining some of the issues already discussed.

3.5. The Potential of Distance Education

Distance education serves students who are not situated or willing to benefit from comprehensive face-to-face instruction. Unless special measures are taken, it is thus an individual activity and mainly a means of study for adults mature enough to decide on their own ways of learning and to study on their own. Teleconferencing (and online conferencing) makes it possible to 'assemble a class of students who may interact not only with the teacher but with each other' (Garrison, 1990, p. 15). Educators, particularly in the USA, tend to regard class learning as a considerable advantage, whereas many students claim that they prefer individual study. Distance education above all attracts mature people with professional, social and family commitments and facilitates recurrent and permanent education. In a paper reflecting the position of distance education in the early 1990s Ljoså describes 'several roles which distance education should fill, i.e. balancing 'inequalities between age-groups', offering 'second-chance upgrading', providing 'information and education campaigns for large audiences', training 'key target groups', speedily and efficiently, catering for 'otherwise neglected target groups', offering education 'in new areas', extending 'geographical access to education', facilitating the combination of study 'with work and family life', developing 'multiple competencies' and offering 'trans-national programmes' (Ljoså, 1992, pp. 28-29).

The reference to the maturity of distance students is indicative of the relevance of student independence in our context. At the very least, students are independent in carrying through a programme of study, i.e. in deciding where and when to learn, how much of a course to undertake at a time, when and how much to rest, when and how often to revise texts and exercises, etc. The independence can go much further, via entirely free pacing, free choice of examination periods, if

any, to independent selection of learning objectives and course elements. How far student independence can and should go is a bone of contention which will be discussed further under 10.3. Distance education undoubtedly has special potentials for student independence.

This brings to the fore the possibility of catering by distance education for academic socialisation, which belongs to so-called affective learning. In the affective domain, which is concerned with values, emotions and attitudes, it is usually taken for granted that non-contiguous communication has less power to influence students than face-to-face meetings. However, experience shows that distance education can be effective in bringing about attitude change. This is borne out by studies of distance-education programmes in health and welfare work in, for example, Sweden and the United Kingdom. Sparkes rightly points to unforgettable television programmes as one of 'the most effective external influences in the affective domain' (Sparkes, 1982, p. 7).

Distance education is no doubt particularly suitable for cognitive learning. While, as Sparkes indicates, learning in the affective domain can be a distance-education objective, its usefulness in the psychomotor domain is often overlooked. Laboratory kits and computer programs facilitate this type of learning; so does, in language learning, for instance, the use of audio recordings for listening and exercises combined with phonetic transcriptions. Experiences made in official examinations in foreign languages show that distance learners of foreign languages can acquire excellent pronunciation capacity by these means. A general experience is that there is little need to exclude certain subjects from the possible application of distance education; even some aspects of medicine and surgery have proved to be subjects suitable for this form of education. The distance-education work done, by, for example, the Centre for Medical Education of the University of Dundee in Scotland testifies to this.

While it is thus in the nature of distance education to serve individual learners in the study they do on their own in the cognitive, affective and psychomotor domains, pre-produced courses can easily, and to great financial advantage, be used by great numbers of students. Distance education can be, and often is, a kind of mass communication in the sense that course materials presenting subject-matter are produced in large editions. There is thus a combination of individualisation, which characterises the interaction between students and tutors, and mass communication. Personal approaches and a conversational style are compatible with individualisation. In preparing a mass communication programme, on the other hand, it is practical to apply industrial methods including planning, rationalising procedures, division of labour, mechanising, automation, and controlling and checking. Peters, as already referred to, has made a systematic study of these methods. He describes distance education as an industrial form of teaching and learning (Peters, 1973, 1983, 1989, 1996). The implied technological

approaches do not prevent personal communication of a conversational character from being a basic characteristic of effective distance study.

Distance study is usually self-study, but the student is not alone; he or she benefits from a course and from interaction with tutors and the supporting organisation constituted by the distance-teaching institution. A kind of conversation in the form of two-way traffic occurs through the written or otherwise mediated interaction between the students and their tutors and others belonging to the supporting organisation. Indirectly, conversation is brought about by the presentation of study matter if this one-way traffic is characterised by a personal approach (as it were, conversing with the students) and causes the students to discuss the contents with themselves; see 4.1.1.). The conversation is thus both real and simulated, the former nowadays often including student-student interaction made possible by modern technology. The simulated conversation is not only what Lewis calls internalised conversation caused by the study of a text (Lewis, 1975, p. 69) but a relationship between the course developers and the students, created by an easily readable and reasonably colloquial style of presentation and the personal atmosphere of the course. This style of presentation stimulates activity and implies reasoning, discussing for and against, referring to the student's previous experiences and thus avoiding omissions in chains of thought.

Inherent in this constructivist, conversational approach is making students active participants in the teaching-learning process, not passive recipients of wisdom presented by a preproduced course or a tutor. Compare Cheng and Myles' reference to 'a different dynamic in a user-driven, multidimensional learning environment' facilitated by online activities and the long-established dichotomy between problem-solving approaches and presentation of knowledge for consumption as a finished product (Cheng & Myles, 2003, p. 37; Weingartz, 1980, 1981). (On the latter see 4.3.)

The present author regards the personal character of both real and simulated communication as a most important characteristic of good distance education and, indeed, sees organised distance education as a mediated form of teaching-learning conversation. (See further Chapters 4.1. and 10.)

The picture that emerges shows distance education to have vast application potentials for independent study attractive to adults and for mass education, through what has been described as industrial methods, and for highly individualised study and personal approaches with a great deal of rapport between the teaching and learning parties.

Distance education is often regarded as an innovation which gives students a high degree of independence. This has been expressed by, among others, Charles A. Wedemeyer, a leading representative of American independent study, in a list of desiderata:

1. Instruction should be available any place where there are students – or even only one student – whether or not there are teachers at the same place at the same time.
2. Instruction should place greater responsibility for learning on the student.
3. The instructional plan or system should free faculty members from custodial duties so that more of the teacher's and learner's time can be given to truly educational tasks.
4. The instructional system should offer learners wider choices (more opportunities) in subjects, formats, methodologies.
5. The instructional system should use, as appropriate, all the teaching media and methods that have been proven to be effective.
6. The instructional system should mix and combine media and methods so that each subject or unit within a subject is taught in the most effective way.
7. The media and technology employed should be 'articulated' in design and use; that is, the different media or technologies should reinforce each other and the structure of the subject matter and teaching plan.
8. The instructional system should preserve and enhance opportunities for adaptation to differences among individual learners as well as among teachers.
9. The instructional system should evaluate student achievement not by raising barriers concerning the place where the student studies, the rate at which he studies, the method by which he studies, or even the sequence in which he studies, but instead by evaluating as directly as possible the achievement of learning goals.
10. The system should permit students to start, stop, and learn at their own paces, consistent with learner short- and long-range goals, situations, and characteristics. (Wedemeyer, 1981, p. 36)

This quotation can be regarded as a summarising declaration of intent with which many distance educators and administrators can identify.

4. Principles, Practices and Problems

4.1. A Theoretical Approach Guiding Practice

The basic assumption behind distance education has always been that effective learning can be catered for without students and teachers meeting face to face. This implies that both presentation of learning matter and interaction between students and teachers are mediated, i.e. brought about by one or more media. Print for subject-matter presentation and postal communication for interaction were the original media used and they still largely dominate although, as shown above, a number of other media are used in developed areas of the world often replacing postal communication and online learning serving both subject-matter presentation and interaction.

The student bodies still include the categories served by distance education from the very beginning, primarily adults who study beside a job and various commitments typical of adult life, i.e. mainly part-time students who learn individually and at their own pace. However, as shown above, modern technology also makes class and group learning possible, which sometimes serves full-time study. This also applies to supervised distance learning, on which see Chapter 8.

This basic assumption about the applicability and effectiveness of non-contiguous, mediated teaching and learning, which may be described as an hypothesis, has proved realistic. Distance education works. As already shown many large organisations practise mediated teaching and learning with great success.

Attempts have been made to develop further hypotheses and such homogenous clusters of hypotheses as can be called theories relevant to distance education. On this theory building see below Chapter 10 and Keegan (1993). The author of this book has developed an operational theory which has generated a number of testable hypotheses. Their testing has been carried out by strict attempts to falsify them in Karl Popper's spirit (Popper, 1980). I have presented this theory, its background, testing and relevance in full in several contexts, the latest of which are Holmberg (2003) and what follows under 4.1.1. and in Chapter 10 of this book. It was first suggested in a very early monograph of mine (Holmberg, 1960). On its testing see Holmberg, Schuemer & Obermeier (1982).

4.1.1. The Empathy Approach

An essential part of this theory is presented already here as it constitutes the background and inspiration of my overarching view of distance-education methodology. The thinking behind it emerges from an understanding of empathy between on the one hand students, on the other hand tutors and others representing teaching and counselling. The conviction that empathy in this sense influences study favourably has, in fact, pervaded distance education since the very beginning

even though it was not stated *expressis verbis* until I articulated it in terms of theory and hypotheses. (Cf. the quotation from Lighty under 2.2.2. above.)

I regard empathy and personal relations between the parties involved in the teaching-learning process as central to distance education. These feelings are brought about by real and simulated dialogue, i.e. personal, friendly interaction between students and tutors and conversation-like presentations of subject matter. This thinking is based on the following postulates:

1. Feelings of a personal relation between the learning and teaching parties promote study pleasure and motivation.
2. Such feelings can be fostered by well-developed self-instructional material and communication at a distance.
3. Intellectual pleasure and study motivation are favourable to the attainment of study goals and the use of proper study processes and methods.
4. The atmosphere, language and conventions of friendly conversation favour feelings of personal relation according to postulate 1.
5. Messages given and received in conversational forms are comparatively easily understood and remembered.
6. The conversation concept can be successfully applied to distance education and the media available to it.

These six postulates attempt to describe a reality that gives rise to the idea of a kind of simulated conversation brought about by course texts being written not as neutral hand-book pieces but as personal communications to students including explicit advice and suggestions to the students as to what to do and what to avoid, clear statements about what is particularly important, relevant references to what the student has already learnt, reasons for stressing certain points etc. The course text may say, simulating a conversation: 'This is tricky. You may well draw the conclusion that…, but look out! In course unit x we discussed …. and then found that …. Consider this and ask yourself ….'.

This is what at elementary levels a self-contained course text may say. Similar comments are due in guides to complicated scholarly presentations, which cannot at university level be replaced by such discussions but may well supplement and help students to read and understand them. This personal, conversation-like way of writing may include attempts to involve the student emotionally, to make him/her develop a feeling of belonging, inviting personal comments, questions etc. The empathy-encouraging presentation, which simulates conversations, must then be followed up in the real interaction, i.e. in the tutor comments on assignments submitted and other contacts between students and tutors.

My theory implying that the approach described is attractive to students, supports study motivation and facilitates learning has been duly operationalised and rigorously tested by three empirical investigations. It has not been possible to

falsify it; the tendency apparent in all three studies favoured the theory. The students taking part in the investigations felt personally involved by the conversational presentations and they did marginally better in their assignments than a control group studying without them. I cannot claim, however, that a statistically significant corroboration emerged. The few objections to my approach from students taking part in the study were expressed by a couple of German students who seemed to feel that it lacked academic dignity, whereas the English and Swedish students taking part were unanimously in favour. While a great number of scholars have expressed their acceptance of my theory two have expressly criticised it, (cf. Peters 1998, pp. 20-23), whose objections may be based on a misunderstanding (see my uncontested comment of 1999), and Rumble, who is categorical in his rejection, stating that it is 'clearly unconvincing' (Rumble, 2004, p. 120). This theory will be discussed more in detail in Chapter 10.

Independently of my work similar approaches have been developed by other scholars, thus by Lewis (1975), who equals 'conversational activity with more solitary activities such as private reasoning and silent reading (Lewis, 1975, p. 69), by Nation and Elliott (1985, p. 12) and Swanepoel (1987, p. 185). Some more or less parallel approaches are of particular interest, thus, e.g. the following approaches.

4.1.2. Shin's Transactional Presence

A late example is the construct of 'Transactional Presence' presented by Shin (2002) and described as being 'concerned with the degree to which a distance student perceives the availability of, and connectedness with, teachers, peer students, and institution' (Shin, 2002, p. 132), i.e. feelings of social presence, 'the dynamics through which media users construct their own subjective perceptions of other people's presence' (ibidem, p. 126). The connection with learning achievement, on which Shin refers to Hackman and Walker (1990) only, a study of communication 'in the televised classroom', has been more clearly shown to exist by Rekkedal (1985) and Stein (1960).

4.1.3. Harri-Augstein's Learning Conversations

Learning conversation is a designation used by Harri-Augstein and her group of scholars to denote

> a form of dialogue about a learning experience in which the learner reflects on some event or activity in the past. Ultimately, it is intended that people will internalize such conversations so that they are able to review learning experiences systematically for themselves, but at the beginning, the learning conversation is carried out with the assistance of a teacher or tutor ...
>
> It must first of all be said that a learning conversation is not idle chatter, nor is it an exchange of prescriptions, instructions or injunctions. Instead,

> it is a dialogue on the process of learning: the learner reflects on his or her learning with the assistance of a teacher or tutor. (Candy, Harri-Augstein & Thomas, 1985, p. 102)

There can be little doubt that this approach is less directive and has more of a metacharacter in its relation to learning than mine. It is concerned with bringing 'to a level of conscious awareness the [learning] strategies and values which were previously implicit' with a view to putting students 'in a position to modify them' (ibid. p. 115). This, to quote from another paper,

> requires three parallel dialogues. Together these reflect the learner's cognitive process back to him, support him through painful periods of change and encourage him to develop stable referents which anchor his judgement of the quality of his assessment. The three dialogues can be described as:
>
> (a) commentary on the learning process;
>
> (b) personal support of the learner's reflection; and
>
> (c) referents for evaluating learning competence.
>
> Each of these three dialogues can become internalized, but people differ in the ease with which they can sustain each of them. Effective internalization of the complete learning conversation produces the self-organized learner and the fully functioning man or woman. Such people learn from experience and continue to learn through life. Frozen internal conversations disable us as learners, and it is only when the external conversation is re-established that the frozen process can be revived. Living then becomes an ongoing opportunity for learning. (Thomas & Harri-Augstein, 1977, pp.101-2)

4.1.4. The Tutorial-in-print

A more directive approach primarily relevant to subject-matter presentation strongly characterises what Derek Rowntree has called a tutorial-in-print. Like any tutorial it has a conversational character but it seems to be concerned more with knowledge acquisition than with discussing problems, more with down-to-earth suggestions and exhortations than with reflection on the learning.

Rowntree advises course developers to imagine that they are tutoring one individual learner, thus providing a substitute for individual face-to-face teaching:

> Everything you might want to say to this individual will need to be written down, forming what I have called a tutorial-in-print.
>
> This is what you will need to do in your tutorial-in-print if you are to teach your individual learners:
>
> - Help the learners find their way into and around your subject, by-passing or repeating sections where appropriate.
> - Tell them what they need to be able to do before tackling the material.

- Make clear what they should be able to do on completion of the material (e.g. in terms of objectives).
- Advise them on how to tackle the work (e.g. how much time to allow for different sections, how to plan for an assignment, etc.).
- Explain the subject matter in such a way that learners can relate it to what they know already.
- Encourage them sufficiently to make whatever effort is needed in coming to grips with the subject.
- Engage them in exercises and activities that cause them to work with the subject matter, rather than merely reading about it.
- Give the learners feedback on these exercises and activities enabling them to judge for themselves whether they are learning successfully.
- Help them to sum up their learning at the end of the lesson. (Rowntree, 1990, pp. 82-83)

The conversational character of the 'tutorial-in-print' is stressed more clearly in other contexts, for example by Donnachie in a discussion of history teaching at a distance, in which it is said not only to involve 'the teacher in a one-to-one relationship with the student' but allow to challenge 'the student in a dialogue with the tutor' (Donnachie, 1986, p. 55). This implies stressing the importance of simulated communication in a way closely resembling my teaching-learning conversation.

The same applies to a presentation by Cooper and Lockwood:

> The simulation of a 'tutorial in print' (Rowntree, 1975) is the procedure whereby an author regards the student time spent working on his material as time spent by the student in the author's company. In such a situation it is unlikely that an author would expect a student to simply read an exposition from start to finish without reacting to it in some way or producing anything themselves. They may, for example, be asked to recall items of information, define concepts, draw together arguments, justify particular statements, consult other sources, interpret data, compare different interpretations of the same data, work out examples, and so on. In short to exercise certain study skills by which they can construct their own picture of a subject and integrate what they have just been taught with what they had learnt before. (Cooper & Lockwood, 1979, p. 253)

4.1.5. Cybernetic Conversation Theory

A sophisticated conversation theory has been developed by Gordon Pask, who applies a cybernetic approach to networks of concepts and interaction with a computer; he describes his theory as 'an attempt to investigate the learning of

realistically complex subject matter under controlled conditions' (Pask, 1976, p. 12).

Pask's theory is complicated, indeed. Entwistle, who recognises its difficulties, provides the following presentation:

> Essentially this theory describes learning in terms of a conversation between two representations of knowledge. In the most familiar situation these representations reflect the cognitive structures of two people, the teacher (or subject-matter expert) and the student. Learning takes place through a dialogue between the two and, in conversation theory, understanding has to be demonstrated by applying that knowledge to an unfamiliar situation in a concrete non-verbal way (often using specially designed apparatus). Reproductive responses based on memory are not accepted as evidence of understanding.
>
> Learning need not, however, involve an interaction between the cognitive structures of two people. The student may converse silently with himself in trying to understand a topic, or he may interact with a formal representation of the knowledge structure and supplementary learning materials which have been specially designed to facilitate understanding of the chosen subject-matter area. Such a 'surrogate tutor' is described as a conversational domain in a standard experimental condition. (Entwistle, 1978, p. 255)

Pask's thinking has been very fruitfully applied and further developed by Kathleen Forsythe.

Forsythe considers instructional design primarily as design for learning interactions and has developed a 'learning system as a new paradigm for the information age' (Forsythe, 1985), in which the learner, the learning partner (the teacher) and 'the knowledge that may be the substance of their conversation' (Forsythe, 1985, p. 10) are the basic components. She elaborates this system to facilitate the understanding of the effectiveness of media.

Forsythe's identification of the evocative, provocative, and convocative functions characteristic of 'interactions for learning' can be seen as something of a guideline for a conversational approach to distance education:

> *Evocative.* The conversation with another, or the conversational agent, evokes or calls forth a reaction within the participant that is often based on a feeling of awakening or of experiencing. This often comes from experiencing one thing in terms of another – the isophor. In designing systems that evoke interactions for learning, use of isophor is particularly helpful.
>
> *Provocative.* The conversation with another, or the conversational agent, rouses forth a reaction from the participant that is often unsettling or disturbing, often because it represents a perspective or state significantly

different from our own. The feeling of provocation is experienced as we feel we must reassess our own point of view in light of the new perspective.

Convocative. The conversation or the conversational agent gathers participants together for a shared experience mediated by the conversational agent. (Forsythe, 1986, pp. 22-23)

4.1 6. Further Comments on Personal, Conversational Approaches as Guidelines

The personal, conversational approaches are not exclusively applied to distance education but also apply to the development of study materials for other purposes. Nevertheless they seem to have originated in distance education (see Holmberg, 1960). My studies of teaching-learning conversations, Nation's of the personal style in course development, and Forsythe's learning system are primarily intended to serve distance education. Further, Sparkes emphasises educational conversation as a teaching mode in distance education (Neil, 1981, p. 112; Sparkes, 1982, p. 4). An interesting near parallel is what Chang, Crombag, van der Drift and Moonen, in their plan for the Dutch distance-teaching university, called paradigmatic presentation (Chang et al., 1983, p. 21). On the character of dialogue in distance education see further Morgan (1985 and 1995) and his insistence that the dialogue 'should reflect a philosophical commitment to a form of discourse which informs all teaching and learning, rather than seeing it as merely a technical use' (Morgan, 1995, p. 59). To this should be added Grint's (1992) and Burge's caveat: 'we have to create the conditions for creative "volatility of conversation" without producing prattle' (Burge, 1995, p. 158). There can be no doubt that 'Personality and an atmosphere of open-minded friendly guidance *can* be mediated, and thus create the conditions for open-minded involvement by the learner.' (Thorpe, 1995, p. 180). See further Juler (1990) on discourse in distance education.

Empathy and personal approaches are thus considered guidelines for presentation of learning matter in distance education. They can do the same for tutor-student interaction in distance education, as will be shown in Chapter 6.

4.2. Planning Distance Education

Reasons for distance education are both public and private, social and individual. It is usually when a need is felt for adults to study beside ordinary work and/or family life that plans for distance education are made. A practical list of planning issues is provided in Bunn (2001). There are organisational/administrative decisions to be made before any activity can be brought about, and before a course can be developed its objectives have to be defined with some exactitude, and expectations, plans or decisions about its target group must be set forth. More than a hundred years of experience have shown that without a proper infrastructure catering for course development, undelayed tutorial work, counselling and administration any

distance-education activity is doomed to fail – as, to take a recent example, many more or less spontaneous e-learning projects of the latest turn of the century have demonstrated. And without reasonable notions of learning objectives and target groups the contents of a distance-education course may be too general and too vague to be really useful to students. On organisation and administration see below Chapter 9.

Distance educators have always tried to adapt their teaching to specific target groups, known or expected, and to their needs and wishes. Standard procedures for defining both target groups and detailed learning objectives have been developed over the years (de Cecco, 1964, and Holmberg, 1985a, pp. 41-47). From behaviourist thinking we have learnt that objectives must be expressed in such a way that they define what the students should be able to do after the learning rather than stating what they should know or understand, for what does it mean to say that the learner should *know* the theory of combustion or *understand* French grammar, for example? Experience has shown that there are some inherent deficiencies in the definition of behaviourable learning objectives, however. Nevertheless, they are often useful in the so called cognitive and psycho-motor domains (defined by Bloom, Masia and Krathwohl (1956 and 1964) as the areas of intellectual study and manipulative skills respectively as different from the affective domain, which concerns attitudes and emotions). On the possibilities and deficiencies of definitions of objectives in course development see Macdonald-Ross (1973) and Popham (1987). Hirst (1975, p. 290) claims that most of the central objectives of education 'are not in themselves reducible to observable status'. (Cf. Perraton, 1995, pp. 16-17).

Courses are developed to meet the requirements, needs and interests of student bodies. To find out what courses are desirable educational organisations either try to describe existing target groups or foresee the presumed needs and wishes of groups of individuals in the societies in which they work.

For course development it is evidently important to know what types of students are to be taught. Their general education and previous study experiences, if any, as well as their specific prior knowledge of the subject to be learnt must necessarily exert decisive influences on the teaching. Under the influence of behaviourism, the following principle, among others, has been expressed.

> The course must be designed for the target population (students) that actually exists. It is foolish and wasteful to design a course without defining the target population. The major characteristics of the target population constitute the starting-point of the course, the performance called for in the course objectives constitutes the finishing-point, and the process of turning the incoming student into the skilled graduate constitutes the course itself. In other words, the substance of the course is derived by subtracting what

> the student already is able to do from what you want him to be able to do. (Mager & Beach, 1967, p.25)

Also those who think in different terms have to accept the point that students' prior knowledge and proficiency must be the basis of any educational endeavour. However, it is only rarely that a student body is both homogeneous and well known when a course is planned. The only characteristic common to most distance students is that they are adults and active citizens.

As a rule, course planners select their students by describing the expected outcome of the study and prescribing a certain standard of competence for enrolment. If, as in popular education, a broad student body is expected or desired, assumptions have to be made on the basis of existing knowledge of the population concerned.

Corporate planning and market research are thus concerns for most distance-teaching organisations. In some cases there is a strictly defined target group for which a course is created, for instance in personnel training, but generally it has been the availability of various study programmes that has offered prospective students possibilities to find study opportunities meeting their needs and requirements. Then the courses available create their own target groups. Someone interested in or with a need to know more about a subject enrols on discovering which course or courses on offer meet/s/ his/her requirements best.

Naturally many wishes to study depend on the surroundings, circumstances and societies in which the prospective students live. Serious attempts have therefore been made to create bases for corporate planning relevant to distance education. I made such an attempt in the early 1970s in the interest of Hermods, which was at that time a very large distance teaching organisation in Sweden (Holmberg, 1972, in Swedish). A comprehensive 'scan of the British Columbian Environment' relevant to the 1990s is of greater interest today (Bates, 1990; Segal, 1990). In a similar context Thomas W. Smith (1998) 'examines assumptions about adopting distance delivery of education and training by looking at distance education, not as an objective, but as a strategy that can potentially serve many educational objectives' (Smith, 1998, p. 63). A general study of the concerns of strategic planning for distance education occurs in Kilfoil (2003).

In the planning of distance education some challenging principles have been developed for a holistic systems approach stressing the whole (the system) and studying its parts not as separate units but as components of the whole, i.e. as sub-systems such as student learning, course planning, course development, instructive interaction, elements of organisational structure. Interesting examples have been developed by Renée Erdos (1975), T. Wright (1987) and Carol Miller (1998), for instance. 'The systems approach is not necessarily a step-by-step process. Analysis, synthesis and evaluation are recurring stages repeated throughout the process and not necessarily in the traditional format of beginning, middle and end' (Romiszowski, 1986, p. 58). The various components influence one another.

A change in one will affect the others. This was an experience made along with the development of holistic thinking. Moore and Kearsley (2005) base their presentation on the systems approach.

4.3. Student Learning

The learning subsystem is a particularly difficult one as we actually still know much too little about how students really learn. Some helpful typologies of learning (learners) have been developed, thus, e.g. Marton and Säljö's distinction between deep learning and surface learning (Marton & Säljö, 1976) and Pask's identification of holist and serialist learners (Pask, 1976). The former has been followed up by several writers. A practical summary occurs in Ramsden (1988, p. 19). (Cf. further Morgan, 1995). Interesting contributions to our knowledge of students' learning have been made by Marland et al. (1990 and 1992) in qualitative interview studies of the mental processes which mediate or come between the teaching and the learning outcomes. Such mediating processes are strategy planning, hypothesising, elaborating and generating. International co-operative work along these lines may be productive (cf. Holmberg, 2000, p. 3)

Helping students to learn is any educator's most important task and is a concern that must be considered already at the planning stage. All of what follows in this book is more or less relevant to endeavours that aim at facilitating and supporting distance students in their learning. While later sections will approach this from an educator's viewpoint, this chapter will briefly look into descriptive studies of how students actually learn. This is done in order as far as possible to make sure that optimising attempts are realistic and to the point. The heterogeneity of distance students makes it difficult to attain generally applicable knowledge, however.

The starting point of our considerations must be our view of what learning is. Learning should not be understood as a passive process with the learner as the object of teaching, someone who merely receives information, but rather as an active process 'in which the learner interprets information and tries to connect it with already existing knowledge and to fit it into existing cognitive structures' (Schuemer, 1993, p. 3). A consequence of this thinking may be that rote learning (i.e. merely committing facts, names, and figures to memory without looking into purposes, logical relations, reasons, and consequences) is considered relatively uninteresting. See below, however. What Ausubel has called meaningful learning (Ausubel, 1968, pp. 55ff) is our main concern. Meaningful learning implies anchoring new learning matter in cognitive structures already acquired.

When learning habits are studied, a dichotomy can be identified between problem-solving approaches and presentations of intellectual knowledge as ready-made (already discovered and described) systems. Weingartz, on the basis of a consistent view of learning as understanding and problem-solving, has provided an in-depth analysis of some distance-study courses from different parts of the world

that illustrate these differences (Weingartz, 1980, 1981), and Lehner has developed a learning theory bearing on this. He describes all learning as problem-solving in the sense that it is composed of making assumptions (i.e. developing hypotheses) and modifying these as the learning progresses: an application of Popper's epistemological principles of 'conjectures and refutations'(Popper, 1963). This leads him to the so-called 'genetic learning approach' (Lehner, 1978, 1979).

Weingartz' theoretical approach is linked with Lehner's and has resulted in her study of current practice in distance education. Apparently much remains to be done to improve problem-solving learning in distance education; on the whole the 'ready-made systems' presentation dominates, although guidance in far-reaching problem-solving occurs in some courses.

The evident conclusions of the studies referred to are that deep-learning and problem-solving approaches can and should be developed further in distance education. On the other hand, it must be realised that the 'genetic'method of retracing the paths of scholars and scientists in the search for the solutions to problems – including drawing the wrong conclusions (making the wrong hypotheses or conjectures) and later rejecting these in favour of new hypotheses – is much too time-consuming a procedure to be applied throughout, although without doubt an extremely educational experience. The same conclusion must be drawn as to excessive use of the WWW.

The procedures to be applied to support deep learning in the sense of Marton and Säljö would seem to have to direct students' attention towards the subject matter of the texts studied and away from the textual presentation as such. How this is to be done is far from self-evident, however, unless making students conscious of their own learning, by advance organisers (see under 5.2.), 'learning conversations' (4.1.) and other means as well as by influencing the learning strategies by means of assessment procedures are regarded as the answer. The problem is worth investigating further

There seems to be little cause for resignation or belief that students' learning habits are rigid or necessarily difficult to influence. A study by Laurillard shows that 'students' styles and strategies of learning are context-dependent' (Laurillard, 1978, p. 1). She rejects 'the assumption that learning is a process that is independent of other external factors, or that students possess inherent, invariant styles of learning' (op. cit., p. 10).

It has been suggested that online learning has particular potential for communicating higher-order cognitive skills, such as 'offering ideas or resources; inviting critique; asking challenging questions; articulating, explaining and supporting positions on issues; exploring and supporting issues by adding explanations and examples; reflecting and re-evaluating personal positions; critiquing, challenging, discussing and expanding ideas of others; negotiating interpretations, definitions and meanings; summarising and modelling previous

contributions; proposing actions based on developed ideas (Salmon, 1998, pp. 6-7; Fox & MacKeogh, 2003, p. 123). This may be so in discussions if online sessions are given the character of seminars inviting argument and critique and are moderated in an inspiring way.

Stressing deep learning and problem-solving may lead to neglect of the learning of facts. In some cases it may be argued that, when students' retention of facts turns out to be poor, the sacrifice made is small, as long as they understand and can apply principles. This is not always a sound conclusion. A student of a foreign language must learn the accidence of that language in toto, and in languages such as German or Finnish must automatically be able to use the correct case after individual verbs, adjectives, or prepositions. Such learning can hardly be achieved without a number of repetitions and rather mechanical exercises and so, in certain instances, repetition and over-learning are still to be recommended. Interest in rote learning has now faded, and a sceptical attitude to both repetitions and over-learning has become quite fashionable.

4.4. Subject-matter Presentation and Interaction

The presentation of learning matter has been described above as one of two constituent elements of distance education, the second being interaction between students and their supporting organisation with its tutors, counsellors and administrative infrastructure (Chapter 1). To these should, as underlined above, be added interaction between fellow-students, made possible by modern technology. In online learning all these elements can be integrated into one as tutors may teach subject-matter, interact with their students while these interact with one another.

In most distance education there is still a clear separation between subject-matter presentation and the two types of interaction although several leading distance-teaching organisations place more and more emphasis on a merger of the three in online learning.

Principles and guidelines for subject-matter presentation must in any case be considered. Any discussion about how this presentation and the types of interaction occur, how goals can be attained and what methods and media are used should be preceded by a consideration of the basic character of the facilitation of learning intended.

5. Presentation of Subject-matter

5.1. Information and Reflection

Evidently the presentation of learning matter cannot be confined to dissemination of information. As an educational endeavour it must engage students in an intellectual activity that makes them try out ideas, reflect, compare and apply critical judgement to what is studied. This necessarily includes making use of insights acquired in various connections and cannot be limited to purely intellectual experiences; there is an affective aspect to be considered, as there is in everything that engages the mind and develops the personality.

It is the task of course developers to assist students' learning by examining the learning matter by argument and reflection in writing or recording and causing students to reflect. Reflection in this context is to be understood as 'a generic term for those intellectual and affective activities in which individuals engage to explore their experiences in order to lead to new understandings and appreciations. It may take place in isolation.' (Boud, Keogh & Walker, 1985, p. 19). While the individual reflection mentioned is of particular importance in distance education when students work on their own with little or no contact with fellow students, reflective strategies can also be applied to collaborative learning brought about by modern technology which allows students to interact with one another. However, as made clear by Lamy and Hassan (2003, p. 54), 'distance learners cannot easily be persuaded to undertake either solo or interactive reflective work if task presentation is not completely explicit. Both in the subject-matter instruction and in the interaction with students distance-teaching organisations must promote reflection and deep learning, make students see contexts and options. Students must be made aware that merely assimilating facts and arguments mentioned in their course texts can never be enough. How important this is emerges from a study by Thorpe (1986) already referred to under 3.1. which showed that many students were negative to questions inserted in their course texts. One of them answered: 'Sometimes I feel they get in the way. They make me think. I don't want to think, I just want to get on' (op.cit., p. 39). An illuminating discussion of interaction and reflection in distance education with suggestions on how to prepare students for reflective thinking occurs in Roberts (2002).

The type of reflection a distance course must encourage in order to serve education can be promoted by challenging questions, invitations to explain and argue for or against positions, discuss and criticise, summarise arguments and propose ideas and actions. Suggestions of this kind are natural elements of dialogue and a personal approach, which can – and as shown above – should lead to a conversational style in the subject-matter presentation reflecting empathy between the course writer as representing the supporting organisation and the student. There can be no doubt that 'empathy is an important element of distance education'

(Miller, 1998, p. 25). The relevance of the theoretical approach presented under 4.1. seems evident also in this context.

5.2. Content and Structure

Analyses of learning objectives in many cases immediately lead to descriptions of course content. In other cases the objectives have to be translated into categories of content defined quantitatively and qualitatively. We have to consider internal criteria, i.e. those that intrinsically characterise the subject, and external criteria, which are those derived from students' needs and interests, from the labour market and society generally. This applies whether the learning objectives have been expressed behaviourally or in a more general way. It is important to specify what students must learn, what they should learn and what they might find useful to learn; to define this, as far as possible, in terms of what they will be expected to perform. It is also useful to specify the manner (orally, in writing, by laboratory demonstration, creation of something etc.) in which students are to prove their acquired competence. It is no less important to state aims bearing on such intellectual skills as cannot easily be checked by performance and affective objectives, if any, so that they may duly influence both the contents and the course structure.

However, if education and not merely training is the aim, distance-education courses should make it possible and even inspire students to strike out on their own in unforeseen directions, for instance by using the WWW. In the interest of efficiency and time saving this free search, which represents an exercise in student autonomy, has to be disciplined. (Cf. 3.1. above).

Structuring the presentation of content selected on the basis of taxonomies of objectives or other principles is sometimes fairly unproblematic and occasionally a tricky matter. In most subjects there is a logical order or a conventional pattern which is usually felt to be natural by subject specialists. This order is sometimes such that it must be followed, at least partly, because one part is based on another, knowledge and understanding of the latter being necessary prerequisites for tackling the former. It is important for course developers to specify what prior knowledge of neighbouring discipline is necessary (for instance, what mathematics is necessary for a physics or statistics course), to make provision, if possible, for the acquisition of this pre-knowledge, and in any case to make would-be students and administrators aware of the necessary sequence. Concepts and methods within a discipline usually serve as organisers which must decisively influence the structure of most courses, at university level at least.

The structuring of any presentation of learning matter is always based on the implicit or explicit goals at which the learning aims, the character of the learning content, and the types of learning concerned. Attempts have been made to develop firm rules for structuring and sequencing content on this basis. These attempts include a search for algorithmic solutions, information mapping and

concept mapping, for which sophisticated methods have been created, such as network analysis, and the so-called critical path method (Landa, 1976; Horn & Green, 1974; Wyant, 1974; Rowntree, 1974). Learning hierarchies and relational networks further exemplify attempts made in this area. Reigeluth, Merrill and Bunderson (1978) have endeavoured to clarify the discussion about content mapping and content relations in a paper that introduces their own approach to structuring. They provide illuminating examples of learning structures, procedural structures, taxonomic structures, and theoretical structures as 'pervasive content relations'.

A basic question is whether in a course to start out from the parts of a subject area or from the whole, to proceed inductively or deductively. There is, in fact, a philosophical controversy related to structuring principles. The atomistic, associative and inductive approaches, based on David Hume's thinking, have inspired modern behaviourism. Logically, the result of this should be – and among behaviourists often is – an insistence on starting out from the smallest items of knowledge, from the particular, in order to come to grips with the general. This is entirely contrary to the philosophy of Karl Popper and his school of rationalists. Popper rejects inductive methods and in his epistemology starts with the general, i.e. basic abstract assumptions, from which he deduces the particular. Strike and Posner (1976) relate these two contradictory views to education and argue convincingly that whereas the ' "bottom up" approaches to curriculum of the sort represented by the work of Robert Gagné' are based on inductivist thinking, the ' "top down" varieties of the sort often associated with Jerome Bruner' are influenced by the deductive philosophy of Popper and others (Strike & Posner, 1976, p. 115).

A most influential representative of the deductive approach in education is David Ausubel. He suggests the use of 'advance organisers' which are introduced in advance of the learning material itself and are also presented at a higher level of abstraction, generality, and inclusiveness (Ausubel, 1968), a principle attempted in this book (Chapter 3.1.).

Ausubel, who distinguishes advance organisers from summaries or overviews which 'are ordinarily presented at the same level of abstraction ... as the learning material itself'(ibid.), argues in favour of a hierarchical theory of cognitive structure. New learning materials are seen as items which are subsumed under already existing cognitive structures. Early research on the whole gave proof of the effectiveness of advance organisers, but later studies have produced conflicting evidence as to their effectiveness (Macdonald-Ross, 1979, p. 20).

The advance organisers describe the basic concepts of the immediately following part of the course and 'bridge the gap between what the learner already knows and what he needs to know before he can successfully learn the task at hand'. They have proved helpful to students because 'not only is the new material rendered more familiar and potentially meaningful, but the most relevant

ideational antecedents in cognitive structures are also selected and utilised in integrated fashion' (Ausubel, 1968, pp. 148 and 137). They can thus promote deep learning and make students aware of how they learn. They do this by relating what they already know to the learning task. The research on advance organisers has been summarised in a useful way, and practical guidelines on the when and how of their use have been presented by Marland and Store (1982, pp. 77-81).

Ausubel's thinking thus agrees with the top-down approach as opposed to the bottom-up approach of the behaviourists. In practice both approaches are often applied by one and the same course author and are not always easy to identify as applications of one or the other of the two.

It is the logical structure of the learning content that is decisive for structuring and sequencing the course presentation. Apart from logical structure, didactic and psychological considerations must be taken into account. A perfect logical presentation is of no avail in a course of study if it is not comprehensible to the students who constitute the target group. A teacher in class does not try to cover all aspects of a subject but limits himself/herself to what the students concerned can benefit from; nor does he/she try to teach at one time more of a given section of the subject than the students can be expected to grasp and remember. That course writers should follow this principle seems self-evident, but is not always observed. When writing or recording, many scholars more or less consciously have their colleagues (and critics) in mind, as a kind of secondary target group, and are thus tempted to prove their scholarly standard by means to which the students are, at best, indifferent and which may even be harmful by creating confusion and uncertainty.

In some subjects, particularly those where the teaching aims at providing the students with certain attainments that need repetitive practice, the requirement that the teaching should be student centred leads course developers to adopt a kind of concentric method. They give their students a small part of the difficult matter at a time, make them consolidate their newly acquired knowledge in various ways, support it by bringing in secondary material of both motivating and elucidating types, and also help them to check their knowledge and proficiency prior to bringing in new learning matter in the same subject area. Before this process is completed, another part of the subject is also brought in and treated in a similar way. Then attention is again given to the first topic, with a view to consolidating and widening the students' knowledge, understanding and skill in this particular field. Thus, one body of problems may be dealt with in several study units, along with various other parts of the subject. This means that the authors and other members of course teams identify with teachers and tutors who have to consider the receptivity of their students.

The method described is applied above all in the planning of language courses, in which problems of text analysis, phraseology, idiomatic expressions, grammar, style, phonetics, etc. are often dealt with concentrically. However, fundamentally

the same method is found in courses of mathematics (where, for example, algebra and geometry may be taught side by side) and physics and chemistry (where theory, discussion of experiments, and the solution of problems may be brought together). In some cases, the various aspects of a subject are considered in different courses, the units of which alternate in the students' programme of study. From the point of view of teaching method, this application of concentric instruction is only superficially different from the one described earlier.

However, a presentation cannot be really concentric, which would imply nothing but continuous review, but rather spiral. Ausubel uses the expression 'the spiral curriculum' (Ausubel, 1968, p. 209).

The so-called elaboration theory developed by Charles Reigeluth and his co-workers is a contribution in the spirit of Ausubel. Reigeleuth compares his approach with the use of a zoom lens, offering first a wide-angle view and then zooming in on a part at a time, i.e. operating 'in steps or discrete levels':

> In a similar way the elaboration model of instruction starts with an overview of the major parts of the subject matter, it elaborates on one of those parts to a certain level of detail (called the first level of elaboration), it reviews the overview and shows the context of that part within the overview (an expanded overview), it continues this pattern of elaboration/expanded overview for each part of the overview until all parts have been elaborated one level, and it follows the same pattern for further levels of elaboration. ... To summarize, the elaboration model of instruction starts by presenting knowledge at a very general or simplified level ... Then it proceeds to add details or complexity in 'layers' across the entire breadth of the content of the course (or curriculum), one layer at a time, until the desired level of detail or complexity is reached. (Reigeluth, Merril & Bunderson, 1978, p. 9)

While Reigeluth agrees with Ausubel in starting by presenting knowledge at a general level, the overview referred to is not identical with Ausubel's advance organiser, but is described as an epitome, apparently implying a small-scale presentation with a single orientation, 'which means that it emphasizes a single type of content' (ibid., p. 10). It should contain a 'generality', some instances of the generality and an exercise giving students an opportunity to apply 'the generality to new instances' (ibid., p. 11).

Reigeluth's approach (along with Merrill's component display theory linking in with it, on which see Merrill, Reigeluth and Faust (1979) has been applied by Koeymen as a guideline for the Turkish distance-teaching university (Koeymen, 1983). (See further Devlin, 1993.)

In the cases where problem-solving is the core of the learning matter, the order of presentation will evidently not be hierarchical, as no ready-made edifice of knowledge is to be presented. Here, the beginning is made by the problem and the search will be made along the lines of scholars who have looked for and

finally found solutions. Their search can then also be followed when they make errors and correct them, which implies learning by Popperian 'conjectures and refutations' in the spirit of Lehner and Weingartz, as discussed under 4.3 above.

General considerations of instructional design belong here. Instructional design has been claimed to be a science and 'a discipline separate unto itself' (Richey, 1968, p. 8). This claim has been rejected and even ridiculed. Barrow argues that the claim is that 'one may learn how to design curricula as one may learn how to skate, how to weld or how to fill in tax returns' (Barrow, 1986, p. 73), but that instructional (curriculum) design

> is more like some branch of the arts, landscaping or interior decorating than it is like engineering or cake-making, inasmuch as it is an open flexible domain due to uncertainty and disagreement over ends, crucial concepts being contested or unclear, our relative ignorance about cause and effect, and the likelihood that in this case there are many good ways to kill a fox. (Barrow, 1986, p. 75)

However, instructional design is undoubtedly, and often successfully, concerned with scholarly inquiry, the verification of observations and the practical application to teaching of findings made. (For further viewpoints, see Snellbecker (1983); on its potentials in distance education see Benkoe de Rotaeche (1987).) In the development of course materials for distance education, instructional design is inevitably an important concern, whether it is interpreted as a 'science' based on scholarly analysis of empirical findings or simply as a system for bringing reasonable expectations, experiences and insights into useful order. Its purpose is to develop validated recommendations for the structuring of effective teaching. It is often combined with the so-called systems approach which here implies considering teaching as a system with interrelating sub-systems.

Then, of course, we may ask ourselves if or to what extent we can leave the structuring to the students themselves. This is rarely possible when students have at their disposal only printed courses (although these can be used as encyclopaedias), but is a realistic option when subject matter is available online. Students may then study in a non-linear way, i.e. finding their own way through subject matter. Hypermedia and hypertext systems, which let students browse and navigate freely in learning material are of great interest to anyone anxious to pave the way for independent learning and are to a limited extent being used. While it has been suggested that individual choice of the navigational path may strengthen study motivation and facilitate learning (Ayersman & Minden, 1995), hypertext approaches have in many cases caused difficulties in that students, particularly field-dependent learners and those with poor prior knowledge, have been hindered rather than helped by non-sequential learning. It is the difficulties inherent in navigating in masses of information that have caused negative or ambivalent views of their practicability. However, navigators helping students to

master the situation have been developed. (See Bélisle, 1999; Jonassen & Mandl, 1996; and Fiorina, Colombo, Bartolomeo & Antonietti, 2004, e.g.)

While it is hardly possible to identify generalisable and always practicable principles for structuring course materials, the findings made and reported on above cannot be dismissed. However, any application of principles must be guided by common sense and intuition. It must be stressed that learning is facilitated by being connected with concepts already known and applied to problems that the student is interested in or becomes aware of. To arrange this by guiding students through the learning tasks and to help them to solve problems of increasing difficulty is an extremely important obligation for course developers and tutors. It means helping students to attain success step by step, thus creating a strong continuous motivating force. The teaching-learning conversations discussed above as over-arching principles are highly relevant in this context.

5.3. Course Character and Organisation

In most cases, distance teaching and learning are based on courses pre-produced for the purpose. As text is the dominating medium for the presentation of learning matter in distance education, not only in print but also as scripts for recordings etc., the relation between distance-education courses and other text presentations is of prime interest.

A printed study course is basically different from a textbook with questions. A textbook gives all relevant facts and, if it is a good textbook, does so in a clear and logical way, but it does not guide or teach. That is to say, it does not induce the student to learn, as we must expect a distance-study course to do. The presentation of facts in a textbook has normally to be supplemented by the exposition of a teacher, who kindles the interest of the students, tells them what to pay most attention to, what comparisons to make, directs their inquisitiveness towards profitable framings of questions, etc. A distance-study course, whether printed, recorded on audio/video tape or presented on the computer screen, guides and teaches by causing discovery learning and/or giving complete explanations with elucidating examples, by providing exercises of various kinds, by constantly referring to what the student has already learned to master, and by paving the way for successful problem solutions. This can be done by means of mediated teaching-learning conversations. The course is thus a substitute for both a conventional textbook and the exposition of a teacher (unless the course is attached to one or more books or other sources, in which case it replaces a teacher's comments and the discussion of the exposition inspired by a teacher only). Naturally, this does not mean that a pre-produced course can be a complete substitute for the teacher in class (who not only lectures but also listens, argues, illustrates by means of experiments, etc., and generally interacts with the students). It must be borne in mind that the communication between the student and the distance tutor has essential tasks, however 'conversational' the pre-produced course is and however

successful it is in meeting the requirements made clear by the Gagnerian functions listed under 2.2.2. above.

The subject matter to be taught is divided into parts, suitable as course units, which are usually sent to students as their work progresses. After students have completed their study of one unit, they answer certain questions, solve set problems, report on experiments made according to instructions, do some other written (or, in some cases, orally recorded) work which is to be submitted for corrections, comments and suggestions. They also ask questions, request advice, and may initiate communication in other ways as indicated at an early stage by Harper, Hermod and Lighty, e.g. (2.1.2.).

The idea behind the division of the material into course units is that students should be offered a suitable quantity of learning matter at a time so that they can regard the study of each unit as a separate task and can always survey the material to be learned. The theory is that in this way it is possible to prevent the bulk of possibly difficult study material from being intimidating. With each finished unit and with the tasks in it completed, the students see the result of their work.

The size, i.e. length, of course units varies considerably with the schools and universities that develop them. (In German and in the Scandinavian languages, course units are often referred to as 'letters' to emphasise the correspondence character of the communication they initiate.) Units from eight small pages to more than 100 large-size pages exist. Some attempts have been made to define criteria for what should be regarded as a suitable size (and the frequency of communication desirable), but so far nothing conclusive can be said. (On this frequency see 6.4.)

There can be little doubt that effective courses developed by the supporting organisation to some extent becomes autocratic. Distance teaching may then mean 'teacher-centred education, where the media are used as substitutes for the teacher, "telling" students what they ought to know' (Ljoså, 1977, p. 79). Hypertext approaches offer an alternative. (See 5.2.)

Most distance-education courses with their various components aim at leading their students straight to specific goals and do so on condition that the students are capable of following the exposition, doing the exercises, and solving the problems set. The course developers then tend to regard each study unit as an integral part and thus as a compulsory course component which is only rarely regarded as replaceable. The most common exception to this principle is no doubt an adaptation of the starting point to suit the prior knowledge of individual students.

This all-embracing course structure is often considered too rigid. It is felt only proper that the students should be offered a choice of which units of a course are to be regarded as relevant in each case. Such an approach leads to each unit

or each small set of units being separate and providing sufficient treatment of a limited, and strictly defined, part of the subject. When that is the case, students can build their own curricula from units or sets of units belonging to different courses. This is what in German is called the 'Baukastenprinzip', the principle of the box of bricks.

The advantage of the box-of-bricks principle is that each study unit or set of units can be used in different contexts. This is economical and can contribute to widening the offer of educational opportunities. Further, it makes provision for requirements to study only one little part of a subject (and possibly acquiring a certificate; through a credit-point system; this can be tantamount to securing what may be regarded as a mortgage on a degree or other formal competence) (Ljoså & Sandvold, 1983) and can offer students options.

Something similar applies to the modular principle inherent in the division of subject-matter into course units. It lends itself to supporting the general autonomy of the students. If each unit or set of units is provided with a kind of product declaration including statements of the objectives, the availability of sufficient numbers of units on related topics will allow individual students to select their own study objectives.

Distance-education courses can be self-contained in the sense that they contain all the subject-matter the students are expected to learn or they can be guides to the study of certain books or programmes, so-called commentary courses. Both types have a long tradition behind them. The former type occurs mainly at an elementary level, for instance in language and accountancy courses, but has been found practical also at university level in some disciplines, mathematics, for example. However, in most academic study alternative explanations and approaches have to be presented. While this can be done by a course writer's account of them it is usually better to make students read and consider original texts with the course writer's comments when this is possible. Printed extracts of such texts have traditionally been made available; today what is needed can often be found on the WWW.

University students must in any case learn critically to study scholarly presentations, accounts of empirical and other research, experiments etc. Distance-education courses can and should be helpful in this study. In this endeavour the commentary course, now sometimes referred to as a study-guide course (for early comments on which see Ljoså, 1975), has proved useful. It guides the study of scholarly works, which far from seldom make difficult reading, helps the students with explanations, references to what they have already learnt or come across, thus making it easier for them to see relevant contexts, and contributes other helpful comments. The study-guide approach with its possibilities for non-linear study and for affording individual students opportunities to develop their own learning styles is looked into in du Plessis (1987).

Study guides should, preferably, in the interest of plurality, encourage students to use a number of different sources, in print and on the WWW. This usually necessitates the availability of library services. (Cf. Stephens, Unwin & Bolton 1997.) A second best is the use of specially prepared readers which contain contributions representing different approaches. Practices of this kind evidently tend not to diminish interest in library facilities. On the basis of research by Winter and Cameron, Jevons states:

> Where books of readings are supplied as well as study guides, students make more use of almost every other source of library material or information than do students who do not get readers. Their appetite is whetted rather than satiated. (Jevons, 1984, p. 32)

Making regular use of scholarly papers in periodicals is one way both of making students aware of different approaches with possibly conflicting views and of keeping courses up to date. While finding these sources online is a practical solution today, reprinting, with due permission, suitable articles for distribution among students is a procedure apparently widely adopted.

5.4. Individualising and Common-sense Approaches

Individualising distance education is a central theme in our context. One aspect of individualisation is students' independence, on which see Chapter 10.3., another how to make individual learning possible. To base the presentation of distance-education courses on the individual students' needs and interest is naturally impossible under normal circumstances, to which belongs the mass communication character of much distance education. However, no sophisticated technology is required to allow students in the interest of individualisation to start their distance study at different levels, i.e. to take additional introductory course units or skip some of the regular units. Students may also be offered supplementary study material related to the weaknesses which they find that they have as they work through their course. Such adaptations may be based on special diagnostic tests, on students' and tutors' conclusions from work done. They may also be left to the students' own initiative. It is helpful to arrange the presentation in such a way that the students' selection of what is relevant to them is facilitated. On this, see what Waller (1979) calls access structure.

Within the framework of the aptitude-treatment-interaction research, Salomon early developed a remedial model, a compensatory model, and a preferential model. The first two correspond to the provision of additional study material, mentioned above, for the purpose of either correcting misunderstandings and generally putting things right or filling in gaps, thus compensating for prevailing deficiencies. The third tries 'to capitalize on what the student is already capable of doing' (Crombag, 1979, p. 178; Salomon, 1972). This implies a choice related to students' needs and predilections. It would seem to be implemented in distance education primarily

through the choice of courses and search on the WWW, although other applications are also possible and indeed practised (Moore, 1983).

This is, of course, a reminder of Ausubel's basic principle, namely, 'If I had to reduce all of educational psychology to just one principle, I would say this: The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly.' (Ausubel, 1968: motto before the preface).

This declaration of Ausubel's reflects not only his research orientation but above all common sense, a commodity that is a *sine qua non* as much in education as in other human endeavours. The studies and principles referred to above are all undoubtedly of value to distance educators, but in practical work they must be coupled with both common sense and elements of educational feeling. In fact, original thinking and intuition are required for us to make good use of any scholarly finding. The point was recognised by William James as early as 1899 and has been further developed by Gage (1978), who points out that neither doctors nor engineers can limit themselves to relying on scientific information. Educators are no less dependent on their own thinking and intuition.

Often enough students themselves bring about individualisation in that they pay attention only to such parts of courses that are of personal interest or use to them, skip some course units or include in their individual curricula courses or course units not foreseen. This is possible only to a limited extent in programmes leading to examinations, however.

In any case students usually feel that they constantly need confirmation that their learning leads to expected results. Distance-education courses usually cater for this by providing exercises for self checking – and then, of course, through their tutors, i.e. the academics responsible for commenting on their work.

5.5. Self-checking Exercises

Self-checking exercises are of various kinds. Some are introduced to help students solely to learn facts and to memorise, whereas others aim at providing opportunities for practical applications, normally based on the understanding and solution of problems.

To help students to learn facts, it has been found useful to provide them with a series of detailed questions intended to make it possible for them to check that they retain all important items. In most cases no answers to these questions are given, the idea being that the student, when in doubt about a question, should carefully re-read the relevant section of the course unit or other work concerned and then tackle the question again. Some correspondence schools have a system of numbering small sections of their units and then referring to the numbers in the questions. Others reject this system, as they fear that it does not require sufficiently solid knowledge for the student to be able to answer the questions and

that it may encourage him/her not to make an endeavour but merely to look up the answers while reading the questions. On the other hand, questions with full answers given on a following page occur in some courses. Sometimes answers to questions of this type on a topic already studied are included in a later course unit.

It is important not only to check knowledge but also to provide actual teaching by means of suitable questions and exercises, i.e. to make students think and thereby learn. Of course, this is nothing new but simply an attempt to apply an old method known as Socrates' 'maieutics', i.e. midwifery. Socrates put his questions in such a way that he made his listeners bring out into clear consciousness conceptions that were previously latent in their minds and made them draw the correct conclusions. He made his listeners see the solutions on their own. Something of the same kind can be brought about by suitable questions and exercises in a distance-study course.

There is a need for course developers carefully to consider the exact relevance and level of difficulty of the tasks they set, the lucidity and completeness of the subject-matter presentation that is offered and, above all, what kinds of questions can be helpful without causing too time-consuming work. They should help the students consciously to control their own learning.

Skill at solving problems and applying knowledge acquired is essential, even at an elementary stage, in mathematics, physics, chemistry, technical subjects, languages, accountancy etc., and so it is of great value to the student to get an appropriate amount of practice. It is not enough for the student to follow a theoretical discussion leading to the correct conclusions; he/she must be able independently to produce solutions to problems similar to those discussed in the course. Much thinking and much practice is needed in some subjects, such as foreign languages. Series of problems for self-checking problem provide opportunities for this. A considerable amount of active work on the part of students can be brought about in this way to stabilise their knowledge and practical skills. In some cases printed or duplicated forms, where the students fill in gaps, solve problems, answer self-checking questions, etc., can contain the exercises, and specially prepared exercise books of this type are in use.

Model answers and complete solutions of problems given in this way are often provided in the course, either in the unit continuing the exercise or in the following unit. Marland and Store, who find that 'the practice of providing model answers makes good pedagogical sense', also point out that their 'usefulness to students will increase if the purposes of the model answers are explained to them and if they are told how to use them' (Marland & Store, 1982, p. 95).

It has proved useful and even necessary to supplement some of these model answers or solutions with comments explaining, with reference to the course, why the solution given is the correct one, how it can be reached, and what possible alternatives there are. All educators should remind themselves from time

to time that the average student cannot be expected to see, without assistance, all of the logical contexts that a tutor may wish or, judging from what has been taught, expect him or her to see; course developers must be on their guard against regarding as self-evident the reasoning behind correct answers or proper solutions once a correct reply has been provided.

Comments of the type mentioned in connection with exercises are more often required than they actually occur. A discussion based on the solution of even simple problems is very often valuable in considerably improving the students' capacity to benefit from the course. Discussions in writing or on audio-tape are naturally necessary in all cases when there is no self-evident solution.

While in-text activities are not always highly appreciated Bååth reports on an empirical research project that in courses examined it seemed possible, 'without any noticeable effects – neither negative nor positive – to replace substantial numbers of assignment questions by self-checking exercises with model answers and pre-produced comments within the teaching material' (Bååth, 1980, p. 152).

5.6. Media for Subject-matter Presentation

Although the popularity of information technology may make many fall for the temptation 'to use the computer screen as a blackboard that transmits everything, even information that could be more effectively delivered in paper format' (Burge, 1995, p. 159), there can be no doubt whatsoever that print, in the form of printed texts, is the most important medium for subject-matter presentation in distance education. 'More than 85 percent of distance education programs use print either as the main delivery technology for courseware or in conjunction with other media and technology.' (World Bank, 2002). Text is more or less regularly supplemented by illustrations, diagrams, blueprints and sketches, occasionally for three-dimensional viewing, and in some cases by elements programmed in short-step frames, linear or branched. Print (like texts online) allows individualisation of information, functions in a wide range of study environments, and is easily accessible for revision. The potential and functions of printed course materials have been analysed by Peters (1973, 1979), Bååth (1986) and others.

Recordings, mostly on cassettes, have become a second very common medium, functioning in most study environments (cassette players, earphones). Students often seem to feel that audio and video recordings provide a certain closeness to reality and have something of an enactive character. In some subjects, such as science and technology, concrete materials like models and kits with written or oral work instructions on tape, occur as supplementary media for the enactive mode of presentation (Holmberg & Bakshi, 1982; Kember, 1982).

Radio and television belong to some systems of distance education, and recorded television programmes for use in videorecorders or in similar ways have gradually

become important elements in several distance-education programmes. Ether media have long attracted distance educators as being likely to be both motivating and effective. Distance educators have amassed a considerable amount of experience of the use of radio and television programmes, mainly as supplements but also to some extent as the main teaching media, thus, for instance in Chinese distance-education systems (Keegan, 1994a; Peters, 1990; Zhao, 1988). In some cases use is made of satellite communication, a characteristic feature of the teaching of the University of the South Pacific, for instance. The Open-University-of-Israel satellite communication including two-way audio and one-way video is evidently much appreciated by students.

Systematic use of radio and television as supplementary media occurs in the British Open University where the main medium of instruction is the written word. Most European countries, the USA, Canada, Australia, New Zealand, and several African, Asian and Latin American nations have experiences of using ether media for general educational purposes or as a back up to organised distance study.

In spite of this, it is difficult to find a consensus of opinion about the use of ether media and recordings. Probably, a majority of distance educators have come to the conclusion that television, apart from its potential for demonstrations, can have a strong motivating influence and that this to some extent also applies to radio. Television has also proved to be a powerful means for bringing about attitude change. These characteristics are important not only in connection with the choice of media but also for the methods used when these media are applied.

The now defunct University of Mid-America tested television as a means to attract people who are assumed to find it difficult to learn from print. It was found that 'television was liked when its content was closely related to the course, and disliked when it tried to amuse and entertain'. Further, there were signs both that students considered television less important than the printed course material provided and, on the other hand, that 'where and when television is not available, course numbers are smaller and attrition rates higher' (Hawkridge, 1978, pp. 40-41). The pacing influence of the television programmes was evidently felt to support completion of the courses.

An old case study of some relevance is the Swedish Delta project, an updating course on mathematics for teachers of that subject. It was offered as an integrated television-radio-correspondence course in 1969-71. A study of the attitudes of the students (i.e. the participating teachers) showed that, whereas over 90 per cent of them found the correspondence and radio parts of the course satisfactory, more than 50 per cent of them reacted negatively to the television elements, which were found to be neither motivating nor providing good surveys (Holmberg, 1973b, pp. 47-52).

There have been similar experiences elsewhere. This probably reflects exaggerated expectations as far as the television element is concerned rather than a rejection

of television as a medium of instruction. Critical students evidently do not want course items presented on television which can equally well be presented in print, nor do they normally want to hear formal lectures which, if provided in print, they can read in much less time than is required for listening and can then consult again and again. Nevertheless, audio cassettes with recorded lectures are occasionally used in distance education (Leslie, 1979, 1986).

Recordings can be used in profitable ways. Thus, Nicola Durbridge of the Open University in Britain writes:

> For students study material presented on cassettes offers considerable freedom. Students can choose to listen at a time and place convenient to themselves and thus use the material as and when it appears most relevant to their individual needs. They can moreover exploit the hardware of cassette-players – the stop, pause and replay devices – to organise their study approach according to personal style and preference. Thus, it can be argued that cassettes provide students with a learning medium which shares many of the advantages inherent in a written text; it is adaptable to such study techniques as skimming and reviewing and listeners can, to a large extent, control the pace and methods with which they engage with particular content. This point alone goes some way towards compensating for the ephemeracy of a sound medium. (Durbridge, 1984, p. 101)

Technology contributes further possibilities, for instance in connection with television. This applies to video discs with their large storage capacity coupled with freeze-frame and fast-search equipment (interactive video). Graphics whose construction is shown by animation techniques belong here.

It is tempting to regard broadcast radio and television programmes as educationally more or less identical with audio and video recordings respectively. This would be highly inaccurate, however, as succinctly explained by Bates:

> Broadcasts are ephemeral, cannot be reviewed, are uninterruptable, and are presented at the same pace for all students. A student cannot reflect upon an idea or pursue a line of thought during a programme, without losing the thread of the programme itself. A student cannot go over the same material several times until it is understood. (Bates, 1984, p. 31)

Presentation of text and graphics on a screen instead of on paper is quite common, but may not be a desirable trend. It undoubtedly is useful when ephemeral or entirely new information is provided. For teaching purposes, the presentation of verbal subject matter in print is decidedly superior to screen presentation: it is easier to assimilate, it facilitates leafing and browsing. Using computer-stored information available for screen reading (or on printouts) is a fashion that makes sense only if it means making data accessible which would otherwise be hard to come by. Such use is far from unusual, however. Search for relevant information in computerised data bases and problem-solving by computer processing are

valuable methods and can be useful academic exercises, on the other hand. It nevertheless seems harmful to wean students from using printed sources when they look for occasional data. To use handbooks, encyclopaedias, dictionaries, other reference books and printed reports of various kinds, and to do so with ease, remains a necessary skill in intellectual work.

Reservations of this kind do not detract from the potentials of modern information technology. These are considerable, particularly for student-tutor and student-student interaction, on which see Chapter 6, but also in our present context, the one-way traffic by means of which subject matter is presented. Apart from relevant motion pictures, for instance such as illustrate processes and the development of graphics, the opportunities to make unprinted data available are important, indeed. Artificial intelligence may lead to further developments of interest. 'Hypertext' systems, on which see 5.2., are being looked into with great interest. 'With *hypertext* and *hypermedia* the complexity of the presentational structure is no longer transparent; students navigate the text as if they were in uncharted waters.' (Peters, 1998, p. 84).

Computer media can – and to an increasing extent do – bring about programmed, i.e. simulated, interactivity as part of distance-education courses. Drill exercises, for example when learning language patterns, and problem-solving tasks, when indisputably correct solutions exist, are examples of interactive computer use.

The media options open to today's distance educators for subject-matter presentation are thus considerable. What medium or what media to choose for use in distance-education courses has been a much discussed concern ever since other options than the written and printed word became realistic. It is a decision to be made in each individual case from considerations of accessibility to students, assumed learning effectiveness and costs. Attempts have been made to create taxonomies ascribing specified functions to each available medium with a view to making media selection a standardised procedure (for a media-selection model of an algorithmic type see Reiser & Gagné, 1983), but these attempts have rarely produced more than very general guidelines. In fact, a classical work by Schramm of 1977 showed that the assumed general superiority of some media over others is largely an illusion. 'There is no cookbook of recipes for media selection that can be applied automatically in every educational system' (Schramm, 1977, p. 263). Systematic thinking has proved helpful, however. Handal as early as 1973 presented a model of his own as well as summaries of approaches developed by Bretz, Tosti and Ball, Briggs, Campeau and Gagné for this purpose. It has proved profitable to select the medium/media to be used in a course planned by first listing all the media available with their characteristics, for instance audio and video possibilities, and then making another list containing the selection criteria applicable, for example the time available, the expected attitudes of the students, the cost, opportunities for profitable co-ordination with practical work. It can be useful to judge the relative importance of the selection

criteria by awarding each of them a mark in the form of a number, e.g. from 1 to 3 in relation to their importance and compare the two lists. If this procedure is adopted an indication of which medium/media best meet/s/ the selection criteria, i.e. the needs identified, immediately appears. This approach was inspired by Lehmann (1968). When applied with judgement and discretion it seems to have been of some use.

It is in any case important to concentrate on what a medium can do rather than on what it is like technically, i.e. to pay particular attention to its attributes. Levie and Dickie, as quoted by Clark (1975, p. 199), refer to the attributes of a medium as their capabilities 'to show objects in motion, objects in colour, objects in three dimensions; to provide printed words, spoken words, simultaneous visual and auditory stimuli'. See further Sauvé (1996) and Kerres (2004).

An early but still relevant guideline for media selection worded by Sparkes finally deserves quoting:

> In general, teaching in the affective domain requires a form of communication with a strong appeal to the emotions. TV, radio, novels, drama, are particularly successful here. On the other hand, abstract concepts usually require verbal expressions rather than visual (abstract ideas cannot be photographed) although visual analogies and animation can be used to illuminate them. Tapes have the advantage over broadcasts for teaching the deeper contexts in the cognitive domain, since they can be replayed repeatedly, but texts seem the natural channel for teaching complex ideas. (Neil, 1981, p. 113).

The conversational approach discussed above has been found relevant also in this context. Forsythe (1986) commenting on the use of television looks into the 'generative' and 'degenerative' effects a medium may have. 'A degenerative effect would be one that inhibited conversation. This could be effected by stifling the imagination or isolating the participant from conversation.' (p. 23). Forsythe is particularly critical of 'feedback information in closed loops' (p. 24), an observation worth considering when pre-produced computer programmes are used.

Media for use in interaction are discussed in Chapter 6.3.

5.7. Textual Presentations

As already made clear, text is the basic medium of distance education whether we are concerned with printed courses, with online presentations, scripts for films, radio/TV programmes or recordings. Thus particular attention must be given to textual presentations.

Any text to be used for teaching-learning purposes must be developed in a way to facilitate learning not only by providing information but also by helping the learner to relate newly acquired knowledge to what is already known, i.e. to

anchor it in already existing knowledge structures (Ausubel, 1968, p. 107). If this is seen as the first principle to be followed, the second is the empathy approach with its conversational style to be used in text specially written for distance students whether self-contained courses or study-guides (commentary courses).

From a theoretical point of view an interesting cybernetic view of learning that should be mentioned is von Cube's redundancy theory (von Cube, 1968). The gist of the redundancy theory can be described as follows. Each study task contains a certain amount of information that is to be absorbed. Each item of prior knowledge and each step on the path of learning leads to a reduction of the amount of information left, and so does the capacity to form supersigns with the inclusion of new knowledge matter in its proper context. To the individual student, the task then contains redundant information beside what remains to be learned. The more that is learnt, the smaller the amount of remaining subjective information and the greater the redundancy. Felix von Cube explains all learning processes by means of this theory. The fact that meaningful material is learnt more quickly than meaningless material is explained by the higher statistical redundancy in the meaningful material: thus the amount of information per unit to be learned is lower than in the meaningless material.

A good distance-study course must be clear, easy to read and conducive to productive thinking. It should help students to learn at the same time as it inspires further search. This is no easy task. I believe the conversational technique based on the empathy approach is helpful. It invariably causes some redundancy, which is not a bad thing. (Cf. Taylor, 1977). An effective writer elaborates his/her presentation by definitions, examples, explanations. Difficult concepts and processes are described in more than one way. When the amount of elaboration is low, the text is regarded as difficult, and when it is rewritten in an elaborating way it is felt to become easier.

Redundancy thus improves ease of comprehension, a fact that the experience of several generations of distance educators have made clear. It should be pointed out, however, that excessive text elaboration has been shown to hinder rather than help learners (cf. Ballstaedt & Mandl, 1982, on 'redundant holists').

Techniques have been developed to direct students' attention to important issues, to considering and searching for solutions. Rothkopf (1970) developed questions aimed at promoting 'mathemagenic-positive' behaviour that belong here. This use of questions as attention directors has been criticised. Whereas some researchers endorse this use, others are rather negative. This would seem to apply to Weingartz, who considers formal text criteria fairly insignificant in relation to the basic text design, which may either start out from problems to be solved and thus support problem learning, or simply present ready-made systems of knowledge for reproductive learning. Even more negatively inclined is Marton, who fears that all kinds of attention directors may avert students'

interest from the content to the technical aspects of the reading process, thus encouraging surface learning and leading to neglect of deep-structure learning.

Considering arguments for and against inserted questions, it would seem to be important what type of questions are asked. If they merely concern facts, wordings, and examples provided in the text, they may certainly encourage what Marton calls surface learning. Questions causing students to think independently, to formulate their thoughts and relate these to the text are not only radically different from the questions attached to the wordings of texts, but are also instruments for encouraging problem learning and deep-structure as Marton and Säljö define this concept. (Cf. also Marland & Store, 1982, p. 93).

In fact, in-text activities with or without recourse to the WWW have proved very valuable in making students fully understand and capable of applying important principles. It is extremely important, however, that only activities of real importance should be included and that students should have been convinced that they are relevant. If not, students may regard them as too time-consuming and reject them in their well justified wish to get on (cf. p. 29 and 50 on a quotation from a research report by Thorpe, 1986).

The style to be used in teaching texts in order to facilitate learning has been studied by several scholars. Taylor (1977) in a classical report summarises relevant research on this:

> Learners grasp affirmative more easily than negative statements. They understand the active voice more readily than the passive. Equally, a declarative sentence is more easily understood than an interrogative.
>
> Abstract nouns make continuous discourse harder to understand. They can, in most cases, be replaced by verbs. For example, 'Great emphasis must be placed on the importance of consultation of the attached plates in attempting the identification of a particular species', which can be rendered, 'We must emphasize how important it is to consult the attached plates when you are attempting to identify a particular species.' The use of personal pronouns facilitates the transformation from abstract nouns to verbs. Coleman (1971, p. 167), for example, feels that most of the abstractness in scientific writing can be attributed to the traditional avoidance of the words 'I' and 'we'. Verbs, on the other hand, increase the ease of presentation. A high proportion of verbs makes understanding easier. However, a difficult passage is not made easier by merely adding more verbs without taking into account the length of sentences or the frequency of occurrence of the verbs. A useful strategy, as already indicated, is to change abstract nouns into verbs. By this means the communicator gains the double advantage of increasing the number of verbs and reducing the number of abstract nouns. Educational psychologists who insist on properly defined behavioural objectives usually make precisely this transformation. They exchange nouns like appreciation, understanding and knowledge for infinitives like to differentiate, to identify

> and to write (Mager, 1962). Comprehension decreases as adjectives increase, but pronouns, on the contrary, make the message easier. Miller (1951) found that communications with more pronouns were easier to understand, and attributed that fact to the personal interest they stimulated. Apart from such psychological factors, however, other and more powerful linguistic variables may well be involved. Lastly, prepositions decrease comprehension. The more prepositions, the harder the communication.
>
> These findings are broad generalizations derived from correlational studies and should be applied cautiously and intelligently. (Taylor, 1977, pp. 115–16)

If used with judgement, reports on research relevant to the presentation of subject matter can be valuable instruments for improving course development. They can contribute to developing the teaching-learning conversation that I have described as highly conducive to individual learning. Irrespective of the medium used, an argumentative presentation, which encourages problem learning in the spirit of Lehner and Weingartz, adapts itself in a natural way to the forms of teaching-learning conversation that state and suggest, query, reconsider, search for additional information, improve the wording of a finding and use this as a basis for further deliberations. The style of teaching-learning conversation no doubt has its rightful place in distance-study courses.

All this evidently means that there is a considerable difference between a distance-study course presented in print and a conventional book. Guidelines and activities of different kinds naturally belong to a course which has to train students to evaluate their study material at a more or less academic level. (Cf. Iley, 1983, p. 76.)

There can be no doubt that these principles are worth paying attention to. However, we must not forget that in many types of study, above all at university level, students must get used to reading complicated scholarly texts which usually completely disregard Taylor's suggestions. The easy-to-read presentations in commentary courses must then be used to help students read these complicated texts. This was fairly generally realised by distance educators around the middle of the twentieth century. The conversational way of writing has been gradually recognised as an approach serving the same purpose. It has been found important that clarity and easy accessibility should not preclude students' own intellectual activity, however. A text is weak if 'it offers little opportunity for any mental activity except remembering' (Sanders, 1966, p. 158).

The conversational approach to subject-matter presentation simulates interaction, inspires students to query statements and ask questions, but it evidently cannot answer individual questions. The pre-produced distance-education course nevertheless regularly opens such possibilities by the assignment tasks usually given at the end of each course unit with invitations to questions. This, as already stressed, paves the way for real interaction as discussed in Chapter 6 below. The

development of suitable assignment tasks is one of the concerns of subject-matter presentation as these tasks are normally parts of the pre-produced courses, but will for practical reasons be discussed in the chapter on interaction, in this case student-tutor interaction.

5.8. Visual Presentation

5.8.1. Typography

It is usually assumed that the layout and general typography of a printed course may exert influence on its teaching effectiveness. Decisions on the graphic presentation of text usually rely predominantly on general assumptions about legibility, on intuition and personal taste. This does not mean that there is a lack of scholarly studies in this field.

> The history of typographic research is a lengthy one, going back to the 1880s and probably before. The research has been ably summarized by several writers, notably Tinker (1969), Spencer (1969), and Katzen (1977). Yet despite its long history, it is clear that much typographic research seems to have little practical relevance for writers, editors, typographers, publishers and printers. (Hartley, 1980, p. 127)

Distance-education practice in this respect relies only to a very limited extent on research. Among the studies on typography that are relevant for distance educators, those by Hartley and Tinker seem particularly fruitful. The following guidelines, inspired by Tinker making use of the terms *pica* and *points* (1 pica = 12 points = 4.224 mm.), would seem to be useful:

1. Two-point leading improves the legibility of 8-, 9-, 10-, 11- and (to some extent) 12-point type in lines of moderate width.
2. With 10-point type and 2-point leading, it seems to be possible to vary the line width between 13 and 28 picas without any significant change in legibility; however, readers seem to prefer approximately 20-pica line width.
3. With 11-point type, under the same conditions, linewidths from about 14 to about 30 picas would seem to be practicable; for 12-point type the safety zone seems to be 15 to 34 picas.
4. Eleven-point type seems to be preferable to other sizes; with 2-point leading, line widths of about 22 picas are apparently optimal.

A slight modification by Hartley and Burnhill should be added:

> In general, however, a good all-purpose size is 10-point type on a 12-point line to line feed: 8-point on 10-points is possibly as small as one would want to go in the design of instructional materials (Hartley & Burnhill, 1977, p. 190).

Clarity rather than typographical elegance is usually stressed as important. Thus Hartley and Trueman (1979, p. 102) provide this recommendation

1. Set the text unjustified (i.e. with equal word spacing and ragged right hand margin, as in normal typescript).
2. End each line at a sensible place syntactically (e.g. at the ends of clauses). Avoid word breaks (hyphenation) at line ends.

Logical divisions of the text into reasonably short paragraphs, and generous spacing of chapters, sections, and paragraphs can evidently help the student considerably. A number of headlines and sub-heads are valuable not only in facilitating legibility but also in structuring the contents.

A series of detailed recommendations for the typography of printed courses are given in Dekkers and Kemp (1995).

A valuable contribution to the theory of graphic elements has been offered by Waller, who has developed the notion of access structure (Waller, 1977a, b). His thinking is based on the insight that the normal way of reading is selective. We do not normally read every word or from the top to the bottom of the page, but look for what is relevant to us at the time of reading. What a reader needs, according to Waller, is help both to plan and execute his reading strategy. Lists of content, statements of objectives, surveys, and explicit suggestions may be helpful for planning. Graphical devices, e.g. headings, are useful for the execution in that, as Macdonald-Ross (1979, p. 30) says, they signal 'the status of the communication to the reader'.

Another relevant approach is presented by Doerfert (1980) on the basis of information theory and von Cube's so-called redundancy theory. The formation of 'supersigns' is regarded as particularly important for learning efficiency. Supersigns are comprehensive concepts including 'signs' on a lower level, in the way that a word is a supersign in relation to the individual letters of which it is made up. According to von Cube, supersign formation is an effective means to bring about 'redundancy', as this concept is understood by him. (Cf. above under 5.7.)

Doerfert applies this thinking to the use of graphical elements in distance-study courses. The use of structuring key-words in the margin to denote essential concepts in the course presentation, has been tried with success: these key-words reproduce the content of the course unit as a kind of abstract and, according to Doerfert, in this way facilitate the formation of supersigns favouring redundancy. Various typographical measures including the use of italics, underlinings, etc., which aid the understanding of relations between concepts and other items of a presentation, are also seen as facilitators of supersign formation.

The application of typography to distance education is investigated within the general framework of teaching strategies in Marland and Store (1982).

5.8.2. Pictures

Illustration of what is presented or discussed in a course is usually felt to be valuable from the points of view of both motivation and instruction. In a verbal presentation, whether printed, presented online, broadcast or recorded, illustrations take the form of visualising through graphs, drawings, and photos and may consist of both pictures and sound. How illustrations are to be used is partly a matter of selecting appropriate media and partly a matter of creating course units within the limits of a medium or media already chosen.

For printed courses, Kaufman, Sketches and Usakawa (1982) have developed a two-dimensional model for classifying visuals according to their function (instructional, motivational, and directional) and mode (drawing or photograph).

Weaving texts and pictures into what Sven Lidman calls one integrated lexivisual presentation, including explanatory drawings and text units, panoramic pictures and photographs of details, documentary illustration, etc., was tried with success in the 1970s and is evidently a form of presentation that distance educators should investigate further (Lidman, 1979; Lidman & Lund, 1972).

As shown by Bock (1983), complementarity between text and illustration is a necessary condition for influence on learning. Lidman's lexivisual approach aims at complementarity in that text and picture each contributes its part to the whole. Applications of this principle can be found, independently of Lidman, in distance-study courses, for instance when processes and procedures are illustrated not by one picture but by a series of consecutive drawings or photos with verbal explanations.

Although any number of examples could be shown to illustrate text-picture complementarity few, if any, clear-cut rules can be derived from studies of practice or experiments. Not a little research has been done (Willows & Houghton, 1987), but so far it is with little practical impact. Cognition psychology pays considerable attention to the issues concerned, however, also from the point of view of distance education (Fernstudium aktuell 8, p. 3-4, 1986, the journal of the German Institute for Distance Education Research (DIFF) at Tübingen University). In this Institute, painstaking research on learning from texts and pictures was done for several years (see Ballstaedt, Molitor & Mandl, 1987).

5.9. Recorded Oral and Video Presentation

Much of what has been said so far also applies to the endeavours that are made non-contiguously to facilitate learning by oral means (radio, computer or audio recordings) and by combined oral and visual means (television or video recordings).

The main difference between radio and TV on the one hand and recording on the other hand being the ephemeral character of broadcasts, the latter have to be relegated to new items and spontaneous supplements to pre-produced courses. This need by no means be an inferior function, however, as demonstrated in a

number of question-box programmes applied, for instance, in the Swedish Delta project described under 5.6.

Audio and video recordings, on the other hand, are parts of pre-produced courses which, like printed course units, students can refer to again and again. Combinations of spoken and recorded instructions with printed illustrations have proved useful. Durbridge (1984) illuminates their use at the university level. In Sweden in the 1960s, Hermods worked with audio cassettes to guide the study of brochures containing illustrations and very brief printed comments. This was in the teaching of elementary physics and chemistry, the target group consisting of little literate textile workers being retrained for jobs in mechanical industry.

5.10. Conclusions About Course Development

The above comments will have shown that a number of different but – as a rule – compatible approaches to subject matter presentation have been developed and applied. I am convinced that the empathy approach is the most helpful guideline to course developers and should pervade the whole of the distance-education process.

Practical guidelines for course development generally are presented in Lockwood (1995), Rowntree (1990), White (1998) and elsewhere. A number of studies apart from those referred to in the preceding presentation could be mentioned.

In OTIC, the centre for distance-education research of the Dutch Open Universiteit, 'embedded support services' were developed to facilitate learning from texts (Valcke, Martens, Poelmans & Daal, 1993).

A report on an Australian research project is of particular interest to course developers considering the various methods discussed above:

> It was found that students valued and were aided by access structures, i.e. devices which gave them access to the author's argument, enabling them to gain an overview of the text and to locate the key elements of the subject. Although few used the terms 'access structures' or 'advance organizers' to describe these devices, they did mention the assistance given by tables of content, objectives, headings, introductory chapters, selective sampling and summarising. All this confirmed the importance of access structures ... It also led to the conclusion that access structures are of greater help in studying than legibility features.
>
> The further conclusion was that the use of unambiguous and logical language, with appropriate sentence and paragraph sequences, can compensate for inadequate typographic signalling; that headings, illustrations and photographs that are not directly relevant can annoy those who seek connections between all elements of the textual presentation. (Parer, 1988, p. 1)

This largely applies to course presentation also when other media than the printed word are used. There is always a text in the background. Dubin and Taveggia (1968, p. 47) underline the powerful impact of textbooks 'which cannot be washed out by any known methods of instruction'. Juler who refers to this quotation, concludes that 'text is basic to all education and that the interactions students have with their texts are just as important as the interactions they have with people' (Juler, 1990, p. 28). This, of course, applies even more to distance education than to conventional modes of teaching and learning as the interactions of distance students with texts represent a kind of simulated communication (to be accompanied by real communication with tutors and sometimes also fellow students). It is the realisation of this that is the reason for the emphasis above on the empathy approach, conversational style and the organisation of learning matter presented in print.

6. Interaction in Distance Education

In distance education students always interact with learning materials, primarily texts, referred to above as one of two constituent elements of this type of learning. This is what Chapter 5 has looked into against the background of the principles of Chapter 4, which influence all of distance education. The person-to-person interaction that has been described as the second constituent element is the subject of this chapter.

The two constituent elements of distance education, subject-matter presentation and interaction, have to be coordinated to bring about good educational outcomes. While it is perfectly possible to arrange distance education as a spontaneous exchange of questions, answers and arguments between on the one hand one or more students and, on the other hand, a tutor, organised distance education traditionally bases the interaction between learners and tutors on tasks (assignments) set in a preproduced course related to defined parts of the teaching, i.e. to what has been dealt with in the course unit or units studied before the tasks are to be done and submitted to the supporting organisation for correction and comment. Interaction among fellow students occurs both in highly structured forms and spontaneously.

6.1. Student-tutor Interaction

The picture of student-tutor interaction just referred to no longer represents the whole truth. In online teaching and learning the tutor can actually both present subject matter and interact with his/her students. 'If much of the content … is generated through online interaction and collaborative activities, how can we consider course design without also dealing with learner support at the same time? And where does one locate online interaction – within course design or learner support? Where so much of the content of the course cannot be specified in advance …, course design and learner support start to merge' (Thorpe, 2002, p. 106). The question is if much and how much of the content is presented as part of online interaction. While the situation described by Mary Thorpe is common enough in some types of distance education inviting exchanges of views and experiences, there can be little doubt that in most distance education, e.g. that provided by several distance-teaching universities, the members of the (American) Distance Education and Training Council and the European Association of Distance Learning, subject matter is usually presented in separate printed texts, on the basis of which students interact with their tutors, ask questions, solve problems, receive explanations, engage in discussions etc.

Bååth in an early study reports on still relevant views and practices of a number of European distance-teaching organisations as to the functions of interaction between students and their supporting organisation (school or university). The three most

important functions proved to be feedback ('help them to correct their mistakes and control their progress'), motivation ('supported by submission assignments serving as sub-goals') and formative evaluation based on the experiences made of students' difficulties (Bååth, 1980, p. 31). Others – like the present writer – would further like to stress support and facilitation of learning by students being made to apply knowledge and skills acquired as well as opportunities for students to reflect on the learning matter while benefiting from tutors' advice and suggestions. These are all aims and practices gradually developed as distance education has grown into its present status.

Tutoring[3] at a distance traditionally implies correcting and commenting on students' work, usually assignment solutions submitted. This is the by far most important tutoring activity in distance education. Tutoring also takes the form of leading discussions and commenting on students' contributions to online conferences and answering questions. Tutoring derives its importance from the fact that it is non-contiguous and thus a basic component of the system of distance education, whereas all kinds of contact with tutors physically present are contingent on special conditions. Non-contiguous interaction is the only type of contact with tutors that all distance students can make use of. Its chief purpose is to help students by explanations based on their work and generally to facilitate their learning and in this and other ways to support their motivation to learn.

Courses provide questions, problems, and other tasks, the replies and solutions of which, including essays, reports, and other independent papers, are to be submitted for comment, evaluation, and correction. It is possible, though seldom practised, to provide an extensive battery of assignments, from among which students are encouraged to select those that they find particularly interesting or that coincide with their specific study objectives. This could be one way to bring about student autonomy in a way useful to students who realise what they need. If students were to select their own study objectives and, on the basis of this selection, were able to concentrate on the corresponding parts of the course and were offered assignments related to the parts chosen, then they would be provided with more appropriate opportunities for autonomous study than distance education is normally capable of offering.

A less satisfactory but more common method of individualisation is to make assignments for submission voluntary without providing the students with selection instruments related to individual study objectives. They are then to select which of a number of assignments they are to work with; a minimum number of assignments may be prescribed.

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[3] Cf. what is said about the functions and role of a tutor in footnote on p.10.

The questions asked and the problems presented for solution in assignments attached to course units vary from the multiple-choice type and other so-called objective tests to topics for independent writing. The former are often both corrected and commented on by computer, each option chosen, whether correct or not, being provided with an explanatory comment. This was practised as early as the 1970s by the use of the computer off line, students submitting their assignment solutions by post to the supporting organisation and its computer. It was found to be surprisingly effective although failing to make students express their thinking. (Cf. Bååth & Månsson, 1977; Wilmersdoerfer, 1978; and Andrews & Stain, 1985.)

Tasks inviting students freely to develop their thinking on specific topics are more satisfactory, at least from an academic point of view. They train students in independent work, can, if worded properly, make them consider differing positions and inspire creative approaches. The one-to-one relation between the student and his/her tutor that characterises this situation is almost unique, Oxbridge tutorials being something of a face-to-face parallel. Experience shows that tutors can make extremely productive contributions to students' intellectual development and success by comments on their work guiding them through subject matter, its problems and perspectives.

Communication initiated by students and based on the questions that they raise and want further comment on along with suggestions for further reading, implementation, and practice, would seem to be very desirable. However, few distance-study institutions have managed to inspire more than a minority of their students to make use of this facility, and others do not even offer it. Thus it occurs mainly as a supplementary form of communication, the normal procedure being based on assignments provided by the course. These assignments vary from bitty questions and answers to comprehensive project work leading to essays and theses.

The empathy approach is naturally highly relevant in this context. Friendly contact, feelings of partnership and belonging evidently support study motivation and are likely to lead to good results. It has proved important for tutors to have this in mind when they write, or record on tape, their explanations, examples, suggestions and references. Then the almost unique one-to-one relation between student and tutor is really fruitful. Durbridge (1984) studied the relevance of the empathy approach to audio-cassette teaching: 'Student feedback on Open University courses for example (Durbridge, 1982) suggests that tutors who adopt a friendly, personal approach in their cassette teaching are very highly regarded. Such a style appears to be educationally effective for the way it can evoke the sense of a one-to-one tutorial for many listeners…' (Durbridge, 1984, pp. 99-100).

The empathy approach is applicable also when corrections and comments are given in a more 'industrialised' form as is often done when foreseeable mistakes and misunderstandings are dealt with. Some distance-teaching organisations

have developed batteries of comments on mistakes expected. These comments start out from a student's mistake fully explaining why something is correct or not, such things as the use of the subjunctive in French or German, for example. The relevant preproduced comments are enclosed when the student's assignment is returned to him/her by post with other comments written in the margin or at the end of the paper. A report on this practice, which has proved very successful, was published (in Norwegian) by Rekkedal and Ljoså as early as 1974. With the advent of the computer a more sophisticated application of the same principle became possible and practised. The preproduced comments are inserted in personal letters to students, sent by post, fax or e-mail in which their assignments are commented on (Fritsch, 1989; Hartmann-Anthes & Ebbeke, 1991).

All students have a legitimate interest to know to what extent they are successful, if they meet recognised standards, what their strengths and weaknesses are. Also their school or university is interested in this both in order to evaluate the teaching-learning system as a whole and to judge the progress of individual students. Though legitimate, this interest in grading the work of students endangers the teaching-learning character of the interaction between students and tutors. Thus to be able to be just in assessing students' work, tutors may wish as often as at all possible to work with a reasonably representative number of papers, to go through the replies of all the students concerned to a particular question at a time and to judge the relative merits of the individual assignments against one another, in other words to apply something of the procedure appropriate in grading examination papers.

This has two consequences detrimental to learning: it causes delay and it removes the focus of attention from the learning activities as such to assessment. This is a problem particularly in the cases when distance education programmes are administered by degree-giving institutions. In the highly commendable attempts to attain something of a continuous assessment system, thus avoiding dramatic examination procedures, such institutions often wish to include the achievements of students on ordinary submission assignments in the assessment on which classes of degrees and marks are based. This makes it important to make sure that each paper submitted is an individual achievement, which in its turn induces those in charge of tuition and assessment to insist on uniform pacing, co-ordinated correction and other types of rigidity that are more concerned with examining than with tutoring.

If – as I think we should – we give priority to tutoring, then we are compelled in many cases largely to refrain from using assignment results as bases for the assessment of students' achievements in the sense of awarding marks. The assessment will instead be coupled with and support the tutoring. The question we have to face is how best to motivate students, how to help them to overcome difficulties, how succinctly and effectively to explain what they have misunderstood and how to stimulate critical and comparative study of various

sources. Evidently most of this must be done by the pre-produced self-instructional course itself, which has to anticipate most problems, but where the course fails it is up to the distance tutor, the one first to notice failure, to help the student by explanations, references, advice, encouragement and suggestions, all of which should induce him or her to reconsider what has been studied and review factual presentations wherever necessary. Here we have little more than intuition to guide us. When we have reason to believe that the problems one student has are shared with other students it is recommendable to provide full explanations online for all students of the course in question. In this way the preproduced course is supplemented in a productive way.

A quotation from Kenneth MacKenzie discussing tutoring at the British Open University when this was still new, seems worth referring to in this context:

> ... there is a clear need to wean assignments and course tutors away from mere testing and passive marking, as if the written exercise is intended to be the perfect once-and-for-all-time safe 'answer'. Course teams might make increasingly plain in their supplementary material that the assignments compose an educative sequence and that the individual assignment is thought of as a creatively incomplete essay, in the original sense of a tentative and provisional effort. Similarly, the course tutor may increasingly learn how to pass through the assignment, like Alice through the looking-glass, into the reverse world of the student beyond, engaging there with the student's struggle to sort out, inform and expound his thinking. The student in turn needs to see himself and his assignments in this way too, each as a phase, cumulative and not transient, in his personal development. So that, as in a symphony, themes he has touched on at the outset return finally at the close of the course enhanced and developed in significance. The course tutor's advice is relative to that development: 'this is what you most need to attend to now, here is the way you might develop, have you thought of this forgotten aspect' ... (MacKenzie, 1974, p. 50)

A comment by Bruner is relevant here:

> Instruction is a provisional state that has as its object to make the learner or problem solver self-sufficient. Any regimen of correction carries the danger that the learner may become permanently dependent upon the tutor's correction. The tutor must correct the learner in a fashion that eventually makes it possible for the learner to take over the corrective function himself. Otherwise the result of instruction is to create a form of mastery that is contingent upon the perpetual presence of a teacher. (Bruner, 1971, p. 53)

A difficulty most tutors come across is the question what to do when a student answers that he/she does not know or does not understand how the problem in question ought to be solved. It occurs particularly in mathematics and kindred

subjects when the student asks for a complete solution without submitting any work of his/her own. There seems to be general agreement that in such cases the tutor should tell the student to try to start working on the problem and to send in an attempt so that the tutor may help him/her with particular difficulties. As a rule some suggestions or references to a lesson can – and should – be made to start the student off as he may otherwise be quite helpless. The idea behind this is that the student, to learn something, must do the work actively himself/herself and that it is the tutor's task to help him/her to learn and not to deliver ready-made solutions of problems. It is thus vital in distance education that the scrutiny that applies to any kind of test and exercise should be played down in favour of helpful communication.

Sometimes the submission of assignments, with their opportunities for expressing interpretations, suggested solutions, doubts, and queries, are the students' only means for communicating with the tutor. This makes it imperative that the tutor should encourage spontaneous viewpoints from the students on relevant topics and provide stimulating and informative comments.

It is the tutor's task to support the motivation of students by engaging them in thinking, reading, and other activities that make sense, and to try to motivate them for what comes later in the course. A pleasant atmosphere and feelings of friendly contact are important when the tutor contributes to his/her students' learning by explanations, examples, suggestions and references. Most of this work consists of personal contributions by individual tutors who write, or record on tape, their comments on individual students' work and/or talks with their students on the telephone.

This work is challenging and time-consuming. As Elton says

> If tutoring is done by correspondence, then experience indicates that it requires far more time, skill and application on the part of the tutor than may normally be found in 'essay marking' on campus. However, if this is provided, then it can be more effective than either campus essay marking or the traditional group tutoring. (Elton, 1988, p. 12)

The support given to students in this way has several purposes.

Lebel (1989) analyses this support as methodological, metacognitive (helping students to learn), motivational and administrative.

Some distance-education organisations expect students to submit their assignments by dates prescribed and thus pace them in accordance with a timetable decided on by the teaching organisation. This seems above all to apply to distance education within public education (such as many distance-teaching universities). Whether this is an acceptable procedure or not is a controversial question. An international study of some 200 distance-teaching organisations (Graff & Holmberg, 1988) showed that most of them refrain from pacing their students. Further a correlation

was found between success and approaches favouring student independence which included free pacing. According to the office of the American Distance Education and Training Council in 2004 the vast majority of its members encourage and permit their students to study at their own individual pace.

Students on the whole seem to appreciate student tutor interaction highly (Beijer, 1972; Kelly, 1982; J. Tait, 2004; Hohlfeld, 2003) An Open-University survey of 1983 provided 'conclusive evidence for the importance of correspondence tuition'. Thus

> almost all respondents (over 90 per cent) felt assignment comments were important for explaining errors and making helpful criticism. Students were also asked what they usually did with marked assignments ... fewer than 10 per cent are only interested in the grade. Seventy-two per cent read comments carefully and tried to use them in subsequent assignments. (Thorpe, 1988, p. 74)

Distance students' expectations at the latest turn of century are illuminated by Stevenson (2000), who reports from an inter-European study, that, *inter alia,* printed texts were expected to be 'the most important learning resource', that most students 'expected to initiate contact with their tutor' and that while they had very modest expectations as to the frequency of interaction, namely 'contact about once a month', they 'were expecting extensive feedback on their assignments' (Stevenson, 2000, p. 124). More and more students now also expect conferencing opportunities, i.e. online interaction not only with tutors but also with fellow-students. As indicated above academic seminars can be held in this way. On online conferencing in distance education see 6.2.

In today's distance education there is much individual online interaction between students and tutors. There is good reason to make some of this individual interaction, both students' questions and arguments and tutors' comments and replies, available to all students in the course section concerned. As on the one hand many students ask almost identical questions, on the other hand some questions and answers are of general relevance it can be valuable to distribute them to everybody as is done in conferencing. This saves time for the tutor, who can refer to earlier discussions when a question already dealt with in individual interaction crops up and can contribute to solving the often regretted problem of too little tutor feedback (Smith, Ferguson & Caris, 2002; Smith & Taveras, 2005).

Sometimes distance educators have to contend with students' too respectful attitudes. Consider the following quotation:

> The assumption behind much of our distance education materials of an independent and self-confident learner who is willing to ask, to question and to risk being wrong, may be entirely inappropriate in many cultural settings. Further, we must be more conscious that many learners have attitudes towards knowledge and towards 'educated' individuals which

> minimise the potentiality of dialogue. One of the most common statements from learners about their hesitancy in talking to tutors was that their problem was not worthy of their tutor's attention, and they were unwilling to take up their tutor's time. (Haughey, 1991, p. 20)

Experiences of this kind illuminate the importance of the empathy approach.

6.2. Student-student Interaction

While until towards the end of the twentieth century distance students had little chance of interacting with one another – although they could phone one another and they could correspond if they were aware of who their fellow-students were – but only if there were supplementary face-to-face meetings could they talk to one another. On condition that groups of students could keep to the same time-table tele conferences were also possible. Arranging peer-group interaction was usually felt to be too complicated for it to occur except in special cases, however. This situation radically changed with the introduction of the computer that made online conferences and so-called chats possible. While the latter take place spontaneously and sporadically they evidently contribute to feelings of rapport and are often regarded as very valuable. Conferencing, on the other hand, requires planning and preparation. Nevertheless, it allows free pacing as the conferencing can be a-synchronous, students being told that within a certain period they can make their contributions at any time, on any day they prefer, in the night if they wish to, etc. By offering periodical seminars on defined topics universities and schools can allow students flexibility: those who have reached a certain level in their study, i.e. have studied certain parts of their course and submitted the corresponding assignments are invited to an online seminar (or a face-to-face one) which may be provided a couple or several times a year.

However, as in computer conferences questions, suggestions and comments on a great number of different issues may appear on the screen more or less simultaneously, conferences (seminars) must be organised in such a way that each theme is separated from other themes and that the various contributions on each theme are brought together into specified topics so as to constitute a basis for further contributions. This type of organisation is referred to as *threading*. Hülsmann (2003a) discusses threading in an illuminating way. In his conclusion he, *inter alia,* writes: 'We have two fundamental strengths of asynchronous discussions, albeit with some irritating side effects. The first is that "all can speak at the same time", creating potential richness and at the same time being a source of noise. This richness can be harnessed by what turns out to be the second important feature of a-synchronous communication: threading, i.e. richness being displayed within structure.' (Hülsmann, 2003a, p. 95).

The fact that computer communication has made interaction between students possible is usually regarded as a great advantage. It undoubtedly is in the sense that it makes collaborative learning possible, an issue discussed in Rydberg-

Fåhreus (2003) and elsewhere. 'However, a number of questions arise about when collaborative learning is appropriate, what distinguishes productive from unproductive collaborative learning and are there subject domains which particularly suit CSCL[4]?' (Fox & MacKeogh, 2003, pp. 121-122). The authors quoted have – with positive results – studied to what extent e-learning methods can promote higher-order learning. (On hypertext cf. 5.3 above.) However, some studies query the value of student-student interaction. Thus Rekkedal and Qvist-Eriksen (2004), reporting on an evaluation study of student-support services in e-learning write that very few students found communication with fellow-students 'very important' for their learning (Rekkedal & Qvist-Eriksen, 2004, p. 63). (Cf. also Fox, 2004.)

A leading online-learning specialist, Morten Flate Paulsen, in his book of 2003 makes a clear distinction between online learning and e-learning, in the latter of which 'communication with real people may or may not be included' but learning content rather than communication is in focus, whereas online learning is defined along the lines of Keegan's well-known description of distance education (see Chapter 1) with the specifying additions of 'the use of a computer network to present or distribute some educational content' and 'the provision of two-way communication via a computer network so that students may benefit from communication with each other, teachers and staff' (p. 25). On communication conventions in this context see Murphy and Collins (1977).

Online learning offers possibilities for more or less structured discussions, simulations and games and can, as shown, provide a forum for academic seminars. There are favourable experiences of this. (On the methods applied to online learning see Salmon, 1998, pp. 5-6, and 2002; Fox & MacKeogh, 2003; Bernath & Rubin, 2003; and, in Spanish, Duart & Sangra, 2000.) A combination of individual assignments to be commented on by a tutor with online discussions has been found useful and is practised by several distance-education organisations, among them the University of Maryland University College.

In practically all online conferences some students are not heard from at all, and others very rarely and briefly take part in discussions. It is a remarkable fact that many of these seemingly inactive students actually benefit from the conferences. Studies testifying to this are McKendree, Stenning, Mayes, Lee and Cox (1998), who refer to these students as 'vicarious learners', Fritsch (1997), who talks about 'witness learning', and Beaudoin (2003), who uses the term 'invisible learners' for the students who learn although they 'lurk on the periphery of course activity' (op.cit., p. 122).

[4] CSCL = Computer-supported collaborative learning

6.3. Media for Interaction in Distance Education

6.3.1. Non-contiguous Communication

The media available for non-contiguous interaction are usually the written, recorded and computerised word, telephone conversations and tele and computer conferencing. Correspondence in writing completely dominated until the end of the twentieth century and in most parts of the world does so still, whereas electronic mail and telefax to a considerable extent now replace postal communication.

Assignments may be given in a printed course, while the students are required to reply either in writing or, where oral achievements are a study objective, on audio-tape. Students may also listen to recordings and comment in writing; on tutor-student interaction by audio tape (see, e.g., Valkyser, 1981; Durbridge, 1984; Evans, 1984.) Even phonetic discrimination exercises have been arranged in this way. The telephone is useful for direct and indirect communication; in the latter case, students dictate their questions on the telephone to a recording machine and receive phone calls from their tutors after the latter have listened to the questions and studied the problems raised.

Interesting studies of communication by telephone were made at an early stage by Ahlm (1972), Flinck (1978), who also reported on content analysis of instructive telephone conversations, by Blom (1986); Moore (1981), Winders (1984) and others. The last two examined telephone conferencing. Satellite communication can offer similar service (Williams & Gillard, 1986; Keegan, 1994b), sometimes including two-way audio and one-way video.

A study by Torstein Rekkedal indicates student satisfaction with telephone communication although ‘very few students actually phone their tutor(s)’ (Rekkedal, 1989, p. 35). Tutors participating in the study were highly stimulated by telephone communication agreeing ‘that the telephone conversations with the students had added a complete new dimension to their work as distance educators’ (ibid., p. 38).

On the telephone in the distance education of the early twenty-first century see Gaskell & Mills (2004), who analyse ‘the way in which institutions and students use the phone’ and ‘consider the value of the mobile phone’ (op. cit. p. 463).

Teleconferencing makes discussions between students possible at the same time as it gives the tutor opportunities both to moderate the discussion and to make his/her own contributions. It can thus be a rewarding form of non-contiguous communication on condition that the students are organised in classes following a common time-table, which is often neither desirable nor possible. Computer conferencing, on the other hand, is more flexible and makes free pacing within prescribed periods possible.

Using a combination of media for student-tutor interaction has proved very effective. Sometimes a student simply does not know how to approach an assignment problem he/she is expected to solve. A telephone conversation with the tutor can help him/her to start an attempt to come to grips with the task. Submitting this first attempt to the tutor by e-mail or fax, the latter often preferred because of the ease with which drafts and illustrations can be made by pencil, and receiving the tutor's further suggestions on the telephone may be necessary or at least helpful before the student will be capable of approaching the problem in a fruitful way. Particularly in advanced mathematics I have experiences (made around the latest centenary) of the great value of such repeated e-mail, telefax and telephone contacts between students and tutors.

6.3.2. Face-to-face Sessions

It is in line with the thinking behind the empathy approach that students wish to meet their tutors and, if possible, also fellow-students. While distance education is both in principle and in practice independent of such meetings it can be and often is supplemented by occasional face-to-face sessions. The problem is that to many students it has been either impossible or very difficult to find time and money for travelling to and taking part in such sessions. It has thus been found important to arrange study in such a way as to make face-to-face elements as far as possible unnecessary. Now that modern technology can actually bring about both aural and visual contact the function of actual meetings between students and tutors may become largely limited to promoting social purposes, the teaching-learning functions being catered for wholly non-contiguously.

Nevertheless supplementary face-to-face sessions in lecture rooms or laboratories are common and often highly appreciated by students. Particularly as introductions to individual distance learning and as refresher courses before examinations they seem to play an important part. Sometimes face-to-face sessions have been offered – or, in some regrettable cases, made compulsory – for no other reason than exaggerated reliance on conventional views of education. Asynchronous computer conferences can well function in ways similar to and by no means inferior to conventional seminars and other meetings. For hands-on exercises and laboratory work, however, supplementary face-to-face sessions are usually required, although much can be done by computerised simulations and laboratory kits.

When seminars or refresher courses before examinations require students' presence individual pacing makes it necessary for invitations to these sessions to specify what prior knowledge is required for participation. This is an administrative concern, one of many which indicate the necessity of a suitable administrative infrastructure to handle the distance-education work.

Distance study supported by face-to-face elements implies a risk that students may be over-taught. This has been a problem since the early 1900s. If an efficient

teacher teaches the contents of a distance course, but does so in ways that differ from the preproduced course he/she is likely to cause confusion; face-to-face sessions with a tutor and a group of students should help the students to learn by the tutor functioning as a resource person and a discussion moderator, not as a lecturer providing an alternative to the distance course.

Many students find face-to-face sessions supplementing correspondence, telephone and online study important even though the latter unquestionably represent teacher presence and personal relations. Some studies of the relative effectiveness of distance and face-to-face teaching have been made without providing any general evidence of differences (Granholm, 1971; Bajtelsmit, 1990; Aragon, Johnson & Shaik, 2002).

Face-to-face support of distance learning has special functions in so-called supervised distance education, a mode of teaching and learning used in schools in sparsely inhabited areas, in home teaching for children and sometimes in personnel training. In these cases distance study is organised, guided and supervised by a resource person, a mentor or coach who need not have subject-matter competence for the stages and subjects taught but who acts as a link with the distance-teaching organisation (school). (See further Chapter 8.)

6.4. Speed, Frequency and Atmosphere of Interaction

A great weakness of distance education has long been the slowness of the communication process caused by the correspondence method dominating this kind of education. For a student assignment to be sent by the student, received by the supporting organisation, corrected, commented on, registered and returned to the student so that he/she receives it within a week is considered remarkably quick and represents a turn-around time that most distance-education institutions (and post offices) seem unable to achieve.

The possible influence of short or long turn-round times is an interesting problem. When assignments are sent by post to and from the distance-teaching organisation there is an unavoidable delay of at least a few days. The handling of an assignment within the organisation (sorting and handling or sending it to the tutor, registration etc.) takes another day or two; so does, of course, the work of the tutor. Much of this delay can be avoided when assignments are sent by e-mail or fax, but this applies only if the right tutor receives the assignment directly and is in a position to comment on it on arrival. This, unfortunately, has proved far from always to be the case.

The question is if and/or to what extent a delay matters to the distance student. Careful statistical studies carried out by Rekkedal (1983) make it very clear that it does. In an empirical study of 127 students, divided into two groups, one with short turn-round time for their assignments and one with ‘delayed (normal) response treatment’ (Rekkedal, 1983, p. 250) the students receiving their

assignments with corrections and comments within a week were more successful in the sense that a greater number of them completed their courses than of those who had to wait for more than a week. 'Of the group with the quick response time 91.3 percent completed their courses, while only 69.0 percent of the students with delayed (normal) response time completed the course. This difference is significant at the .001 level. It is therefore quite likely that drop-out rates can be lowered by reducing the turn-around time' (ibidem). In an early Swedish study of 1971 Bååth had come to a similar conclusion. In both these studies the students took part in 'pure' correspondence courses, not relying on any face-to-face contact. This, however, was the case in a study by Barker et al. (1986), which seemed to lead to reservations as to the general validity of Rekkedal's conclusion. For a discussion of this issue see Holmberg, 1989b. There is every reason to accept Rekkedal's dictum that 'a week is the limit for what the students consider an acceptable time' (ibidem, p. 251) between the day an assignment is submitted and the day it is returned.

As indicated, applications of electronic mail have a potential for solving this problem. Vicky Vivian reports on early experiments with electronic mail in New South Wales, which among other things show that the 'turn-around time of lessons was dramatically reduced from 2-4 weeks to a matter of days, hours or occasionally even minutes' (Vivian, 1986, p. 6). Undelayed communication can also be brought about by the use of telefax when students fax their assignments to tutors and these also fax them back with their comments. Many tutors actually prefer telefax to electronic mail as it allows them to comment on and grade papers by hand in the traditional way, writing notes in the margin and between lines etc.

Another complicated problem concerns the ideal frequency of student-tutor interaction. Empirical studies by Bååth and others illuminate this. One of Bååth's hypotheses, which no doubt agrees with what most educators expect, was that frequent interaction (in Bååth's terminology *high submission density*) promotes learning. Surprisingly enough, his statistical study gave no support to this hypothesis. While high interaction frequency correlated with 'more positive attitudes to the assignments for submission' (Bååth, 1980, p. 151), neither course completion nor test results seemed to have been influenced. A replicating study (Holmberg & Schuemer, 1989) led to similar, negative results. Also other scholars have paid attention to this problem. A collection of relevant papers occurs in Holmberg, (1989b). There is no empirical evidence indicating the value of frequent interaction as such. It is evidently not the quantity of interaction but rather its quality that is decisive for its impact. This was Bååth's conclusion a decade after his original research had been carried out (Bååth, 1989, p. 95). (Compare Shearer: '...it can become apparent that the number of interactions required will overload the student and/or the instructor during the lesson. Also, due to cultural characteristics and gender differences, responses to interaction activities/ discussions should be based on quality, not quantity.', Shearer, 2003,

p. 13). As mentioned under 5.3. this problem is closely related to the question of the desirable size of course units.

Frequent and friendly interaction between students and tutors, the latter functioning as supporters and advisors who help students by suggestions and explanations and do so without delay, has proved very effective. Speed, frequency and empathy together should characterise interaction in distance education.

Students taking comprehensive courses, for instance degree programmes, usually get into contact with a number of different representatives of the supporting organisation, with tutors, counsellors, administrators and others. This separation of tutoring from counselling and practical concerns (like telephone times, despatch of materials, instructions for exams and similar things) has been regarded as bringing an impersonal element into the interaction and thus, possibly, an unfavourable influence into the study situation. At least at lower levels this actually seems to be the case in relation to contacts being carried out with one personal tutor-counsellor (Rekkedal, 1985). This seems further to testify to the importance of personal contacts between individual students and representatives of the supporting organisation, i.e. to the empathy approach.

Whatever organisation procedure is applied, there is always a risk that tutoring on the basis of assignments may degenerate into mere matter-of-fact correction and comment without any really personal element. This is a waste of valuable opportunities. It is important, indeed, to be fully ‘aware of the potential depersonalisation of the individual student and the danger of subordination of the real needs of students to the bureaucratic requirements of the institution’ (Roberts, 1986, p. 34) and to counteract this by personal approaches. If personal rapport is established, students are likely to enjoy the learning more and to more successful than otherwise.

In this spirit tutors can effectively support students also by monitoring processes leading to portfolios describing, summarising and evaluating the work they have done. (On the so-called e-portfolio see Chapter 11.)

7. Counselling

Interaction between students and their supporting organisation includes counselling on the various concerns that engage distance students. Practical and empathetic counselling has been experienced as decisive for course completion, general success and study pleasure. It is important to give students encouragement and help, not only as to the content and handling of what is to be learnt, but also in practical matters and, above all, in promoting motivation and study pleasure. Some of this is regarded as counselling.

Counselling has been described as a 'systematic exploration of self and/or environment by a client with the aid of a counsellor to clarify selfunderstanding and/or environmental alternatives so that behaviour modifications or decisions are made on the basis of greater cognitive and affective understanding' (Maslow, as quoted by Thornton & Mitchell, 1978, pp. 2-3).

From the counsellor's point of view, Sewart divides the counselling function into four different groups of tasks: referral (to the proper agency), vocational (career planning), information provision, and coping with students' personal study problems (Sewart, 1984, pp. 9-11). For the last mentioned task, counsellors 'must be close enough to the student to have a thorough knowledge of the student's domestic, work and study circumstances' (ibid., p. 11). Students need support that helps them 'to address problems that are not only practical and organisational but also educational and intellectual' (Kirkwood, 1989, p. 39).

There is much experience to show the importance of counselling services both of the types mentioned and frequently in the form of moral encouragement. Students need information about the paths of study that interest them, where they lead, and what they are like. In many cases they also wish to have access to personal advice both before their study decision and during their studies. The fact that distance students are usually on their own in their study, with the anxiety and problems that they encounter, underlines the need for counselling service. As a rule, students are adults who have a job, social responsibilities, and often a family. A number of everyday circumstances influence their study. Many of them may need help to master difficulties that crop up as a result of their endeavours to combine study with their other commitments. Combinations of study difficulties and personal problems sometimes become so considerable that psychotherapeutic advice is necessary. Few distance-study organisations, unlike many conventional universities, are equipped to deal with difficulties of this kind. However, most try to help their students by counselling of a more general character.

Thus, while counselling in distance education is not immediately concerned with ‘problems which are of a serious physical or mental nature ..., counsellors advise and support students’ ‘rather than ‘patients’ (Sewart, 1984, p.8).

7.1. Supporting Study Skills

Helping students to develop effective study skills is one important counselling aim. A number of recommendations have been worded for what is sometimes called study technique. One recommendation of this kind tells students to read with pencils in their hands, to underline what seems important, to list key words, etc. This applies on condition that students are deep-level readers; it is evident that it makes no sense to someone concentrating on the superficial characteristics of the text and on memorising its words rather than understanding the message.

The general rules that are frequently given about hygienic conditions for learning, for example requirements for sufficient sleep and exercise, healthy food, and fresh air, as well as reasonably undisturbed study (not too much noise, say) are uncontroversial. This also applies to the well-known suggestions about planning self-checking procedures and short breaks during spells of study.

But what about repetition and over-learning? Have we reason to fear that stressing deep learning and problem-solving may lead to neglect of the learning of facts? As mentioned above it has been argued that, when students’ retention of facts is weak, the sacrifice should be considered small as long as they understand and can apply principles. This is a questionable conclusion (as experienced by learners of foreign languages, for instance).

It is far from easy to lay down universally applicable principles for the recommendation of learning strategies and study skills, particularly as these appear to depend to a considerable extent on personal idiosyncrasies. Nevertheless, it seems safe to include in counselling activities the following recommendations:

1. Inspire deep-learning strategies by suitable types of testing. Students’ choice of learning strategy has been found to be influenced by what is expected of them in examinations.
2. Direct students’ attention to both the subsumability of new concepts under wider concepts already known and to the inter-relationships of concepts; cause students to practise subsuming and interrelating.
3. Use approaches conducive to problem-oriented learning.
4. Apply teaching methods that support individual study and students’ own responsibility.
5. Present learning matter lucidly and in a thought-provoking way.
6. Encourage activity including internalised conversations, interaction with study material and with tutors along the lines of the teaching-learning conversation.

7.2. Concern for Students, Principles, Methods and Media for Counselling

A great number of distance-teaching universities have well-known and evidently successful counselling services.

The UK Open University counselling is characterised by 'continuity of concern for students' (Clennel, Peters & Sewart, 1984, p. 336 ff.) and integrates counselling and tutoring in this concern. During the early stage of their degree studies, students used to benefit from the support of so-called tutor-counsellors who united the roles of tutor and counsellor and looked after a group of individual students assigned to them.

These tutor-counsellors did not wait for students to ask for help but themselves approached those who seemed to have difficulties or did not submit assignments for correction and comment. The importance of continuous support of this kind for students' satisfaction and for completion rates has been forcefully stressed by Sewart (1981). (See also Sewart, 1984; Coltman, 1984; Paine, 1984.)

There are, however, different views of how counsellors should work. Simpson (1977) identifies two clearly recognisable approaches, the GP approach and the interventionist approach (GP = a general practitioner who is consulted during 'surgery' hours):

> The 'GP' counsellor operates on the surgery principle. Having established initial contact ... he or she assumes by and large that if problems arise the student will contact him or her. It is assumed that students do not wish to be contacted by the counsellor unless there is some very good reason. The 'interventionist' tends to initiate rather more contact with students. (Simpson, 1977, p. 61)

Simpson's description applies to counselling at higher levels of university study at the Open University in the UK. The German tradition as represented by the FernUniversität favours the GP approach at all levels of university study (which in my opinion has contributed to very high drop-out rates). Work at the new German Private Distance-Education University of Applied Sciences Darmstadt in my experience testifies to the effectiveness of pre-active interventionist counselling in promoting motivation and counteracting drop out. (See further Thorpe, 1988, p. 97.)

Counselling is usually provided online, by correspondence, on the telephone and, where possible, face to face. The telephone plays a particularly important part in counselling at a distance. Proper advice must be based on knowledge not only of study paths and study methods but also of students' prerequisites, their formal and informal but real qualifications, and their hopes and wishes. Thus there is normally also a written element in such counselling, even in the cases where students and counsellors communicate orally.

A very simple, frequently used form of counselling that has proved to be of great importance is sending encouraging letters to those students who have not submitted papers for a period or who have otherwise deviated from their plan of study (Rekkedal, 1972b). Such letters, sent by post, online or by telefax, both express concern and ask pertinent questions.

The computer can also be used in counselling. A somewhat impersonal application of this kind is to be found in an early pre-study advisory system developed at the FernUniversität in Germany. In connection with an informative booklet a number of questions are asked. The foreseen replies to there, in their various configurations, are commented on by computer through the automatic selection and use of pre-programmed text modules (Fritsch, Küffner & Schuch, 1979). Of greater interest today are systems for students to be connected online with the supporting organisation and fellow-students for questions and answers, exchanges of experiences etc. (Cf. Phillips, Scott & Fage, 1998.)

Counselling presentations in print, which inform would-be students (making them realise what their study situation, requirements, benefits, advantages, and problems are likely to be, if and when they register), have proved to be very valuable. There is much experience testifying to this in all parts of the world. 'Based on the assumption that students will take responsibility for self-counselling', such a presentation provides 'a structure, a technique which enables a student to engage in that process' (Moran & Croker, 1981)' (quoted in Coltman, 1984, p. 47) commenting on the Deakin University counselling package). Counselling by correspondence based on printed materials has been subjected to an illuminating study by Gaskell, Gibbons and Simpson (1990).

Offering students facilities to contact fellow-students through membership of associations (Qvist-Eriksen, 1986), students' journals, or in other ways may be part of counselling. On a student-operated support network, see Williams and Williams (1987).

Whichever medium is applied, counselling must evidently 'promote a sense of close rapport between the student and the counsellor'. The latter 'needs to demonstrate empathy' and 'be sensitive to the needs, spoken or unspoken, of the student' (Thornton & Mitchell, 1978, p. 23). These requirements are fully compatible with the personal approaches advocated on the basis of theory and empirical evidence for course development and tutor-student interaction. Thornton and Mitchell further stress that

> the counsellor in his relation with the student should try to work himself out of, rather than into, a job, by promoting and encouraging student self-help. The student will become increasingly more confident about seeking and finding his own answers and solutions to problems and less dependent on the counsellor. (ibid, p. 23)

The processes and outcomes of counselling in distance education have been studied in a way helpful to practitioners by several writers, among them Thorpe (1988), who looks into a number of case studies, and Mills and Tait (1996).

Counselling is part of learner support, which includes all that has been discussed in Chapters 6 and 7 and comprises ‘a full range of activities developed to help students meet their learning objectives and gain the knowledge requisite to course and career success’ (Brindley & Paul, 2004, p. 39). Learner support is described by Tait (2000) as having cognitive, affective and systemic functions. See further Sewart (1993) and Tait (2004).

8. Supervised Distance Learning

Distance education as usually applied is primarily aimed at individual, adult students who learn in the privacy of their homes, in libraries or in rooms made available elsewhere. However, there are other applications of distance education. It is sometimes, as shown above, used for group learning relying on modern technology and is also used when students learn under supervision of tutors or counsellors present with them in classrooms or on similar premises. The last-mentioned application is important above all in sparsely inhabited areas and in places where there is a lack of qualified teachers.

8.1. Supervised Distance Education for Young People

In schools applying supervised distance education one teacher/supervisor usually looks after a number of young people learning various subjects at varying levels. Supervised distance study also occurs as entirely individual study when isolated children are taught by distance methods at home, usually with one of the parents as supervisor. Australia in particular has much experience of primary distance education of isolated children. They are taught in their homes rather than in schools. Home schooling is applied also in the USA, for instance, usually not because of geographical distances or difficulties in finding suitable teachers but for the protection of children in urban milieus. Children needing the socialising influences of play and co-operation with other children this last-mentioned application may seem questionable unless socialising can be catered for in some way.

Most supervised distance study in schools is concerned with secondary education. What has been said in the preceding chapters about methods and media is largely applicable to supervised distance education at this level. Although the term ‘supervised correspondence study’ may still be more common than ‘supervised distance study’, written communication seems to be less dominant here than in other types of distance education. This is mostly because of the face-to-face support inherent in this type. Further, for many years radio has been a most important communication means in primary education of this kind, both for one-way traffic and for two-way communication (see McGuire, 1973, and Fitzpatrick, 1982, on Australia’s schools of the air) (Bosch, 1997; Butcher, 2003). Electronic mail is, of course, of great importance to supervised distance education of any kind. Taylor and Tomlinson hold that it could even ‘signal a new approach to primary distance education’ by involving ‘the distance education teacher more closely with the isolated child’ (Taylor & Tomlinson, 1985, p. iv). (See also Vivian, 1986.)

Although there is much variation in the practice of supervised secondary distance education in classrooms, typically the greater part of each pupil’s day at school is devoted to individual learning. This involves reading specially prepared courses,

consulting reference books, doing self-checking exercises and assignments (solving problems, writing essays, etc.) to be sent to the distance-teaching organisation for correction and comment. The exercises may be done in writing/ on the computer, or, following the instructions of the distance course, by listening in little booths to recordings and/or by the pupil recording his or her own pronunciation in foreign languages. If a pupil doing individual work feels uncertain, he or she consults the supervisor. In addition to individual work, the pupils work in groups. While individual work is done in the classroom, where the relative silence of a library is observed, there are usually special group rooms. The pupils are also given some tuition orally in the traditional way by the supervisor, normally in a group of about five pupils at a time in a group room. The division of pupils into groups is based on what they have in common in their individual learning. They may, to some extent, read different things depending on what choice of subjects they have made, they represent different stages and age groups, and they invariably work at different speeds.

It is the task of the supervisors to help their pupils in every conceivable way. It is up to them to motivate their pupils and keep them aware of their goals. Completion of each course unit marks the reaching of one goal. If some pupils find it difficult to follow the exposition of the pre-produced course, the supervisor explains it to them, either individually or in groups. Sometimes pupils hesitate over what conclusions to draw from corrections when their assignments are returned from the distance-teaching organisation with a specialist-teacher's comments. Here again the supervisor must provide the necessary explanations. The supervisor also has important administrative tasks. He or she must organise the work, which makes it necessary to keep in close contact with not only the individual learners but also the distance-teaching organisation. The local timetable must be planned; as must the use of auxiliaries (such as computers, tape-recorders, projectors, and demonstration material) and the arrangements for tests and for record-keeping. Unavoidably, the supervisor must also do same teaching of a more traditional kind because there are things that youngsters usually cannot learn entirely by distance methods, such as the pronunciation of foreign languages. Laboratory exercises also require active teaching.

As it is impossible for one supervisor to acquire teaching competence in all of the subjects being learned by the pupils, the advisory and supporting roles are more important than the purely teaching roles. Nevertheless, specific training is desirable for the types of teaching that the supervisors are expected to give. All this necessarily means that the distance-teaching organisations running supervised distance-study schemes in schools have very special tasks. They include the development of suitable courses in writing and by other media, the non-contiguous tutoring of the individual pupils, the training and continuous support of the supervisors, and regular contacts with the local schools.

Much experience has been gained of supervised distance education and some of it has been duly documented. On work done in this area in Australia see Rayner, 1949; Taylor & Tomlinson, 1985; Tomlinson, Coulter & Peacock, 1985; in North America, cf. Mitchell, 1962; Childs, 1953; Woodley, 1986; in Israel, see Weissbrot, 1969; in Sweden, see Holmberg, 1973a.

8.2. Supervised Distance Learning for Adults and Similar Applications

Also adults benefit from supervised distance learning. This is above all common in staff development and personnel training. As a rule a distance-teaching school provides pre-produced courses and non-continuous tutorial service, whereas the company, professional body or military unit concerned offers face-to-face support, classes, laboratory or workshop exercises, personal counselling, and other kinds of on-site service. However, distance education of a more individualised type is also applied in personnel training and staff development. Thus the Centre for Medical Education of the University of Dundee in Scotland runs distance-learning programmes for hospital staff, for instance one on palliation in advanced cancer. It is 'interactive and includes personalised feedback from experts in palliative care'[5].

Doctors and others active in the health-care professions are also offered a distance-education training programme for a diploma in medical education and a master's degree programme.

A number of comprehensive, rather sophisticated staff-development programmes occur in various parts of the world. One such is the Swedish so-called Delta project mentioned under 5.6. (Hermods and the Swedish Broadcasting Corporation). This was a training programme for teachers of mathematics in the so-called new maths. It ran from 1969 to 1971 and was used by about 50,000 teachers. It consisted of a correspondence course with assignments for submission (evaluated by computer off line), radio and television (alternatively audio- and video-recorded programmes), and group work. The result of this training was deemed to be satisfactory by both the National Board of Education and the students. There was a drop-out rate of slightly under 30 per cent. Nevertheless, it proved a very economical training programme.

A British (University of Surrey) small-scale programme for staff development, aimed at university lecturers in Southern Asia, illuminates a further special application of distance education. The purpose is

> to provide training opportunities for academic staff who wish to acquire a more professional orientation towards their function as teachers. The

[5] From University of Dundee pamphlet http://www.dundee.ac.uk/medden/.

> course is provided entirely at a distance and leads to a Diploma and MSc with the possibility of continuation to MPhil/PhD. (Elton, Oliver & Wray, 1986, p. 29)

The course consists of both compulsory and optional modules, it includes a fairly comprehensive project on a theme chosen by the individual course participants, and there is a strong element of interaction in the form of correspondence between tutors and students. There is consistent individualisation, as the aim is to make 'the course particular for each member' (op. cit., p. 31). This is brought about by assignments which induce students 'to relate the general to their particular experience' (p. 30). In this way each student strongly influences the content of the study. In spite of this individualisation, the cost 'is less than one-third of the cost for an equivalent full-time course' (p. 35). It is particularly interesting to see that the ratio of fixed and proportional costs is about 1:3, i.e. the opposite of the balance found at the large distance-teaching universities, for whose costs economies of scale are decisive.

On similar German experiences see Kammerer-Jöbges (1992), and Schwalbe and Zander (1984).

9. The Organisation and Administration of Distance Education

9.1. Demands on Distance-education Providers

Distance-education work as described differs radically from that of other types of education.

The organisation found practical in traditional schools and universities is only to a very limited extent suitable for distance education. To the functions that are special to distance education belong

- the development and production of course materials
- the selection and employment of writers, tutors, counsellors, media specialists, instructional designers and office staff
- the provision of a telematic network including a user-friendly system for electronic mail, computer conferencing and facilities for a 'chat' function as well as other media facilities (learning and content-management systems)
- warehousing
- the distribution of course materials to students
- the handling of assignments submitted by students to be commented on by tutors and returned to students by post, e-mail or fax
- counselling in writing and on the telephone; mediated information on study arrangements, examination periods etc., conditions for and invitations to face-to-face sessions, if any
- registration of data from assignments and other communications with students.

This means, among other things,

- that combinations of research and editing offices are established
- that facilities for the organisation and distribution of non-contiguous tutoring tasks are built up
- that academic staff, editors, instructional designers and media specialists are brought together in a way facilitating their co-operation
- that arrangements are made for unimpeded co-operation between external course developers and internal staff
- that organised co-operation between course developers, tutors commenting on students' work and administrators is brought about
- that constant staff development is provided for.

To the functions listed could be added a number of other specific tasks, for instance intervention to help students over difficulties, constant study support and formative evaluation of all activities with a view to constantly improving the work.

What is required is different from ordinary school and university administration, from business and government. Units for the tasks listed above, each in its own way facilitating students' learning by rational and helpful procedures serving the upkeep of the total supporting organisation, including such mundane things as finance, buildings and purchasing, have been experienced as necessary.

Experience shows that every organisational unit must necessarily integrate its work with that of the other units for the common purpose of facilitating students' learning. A student-friendly ethos must pervade the whole of the organisation. A single enthusiastic course writer, tutor or counsellor cannot do very much unless his/her support of students is part and parcel of a common endeavour.

Many initiatives to start distance education, often in the form of e-learning, inspired around the turn of the century by the advances in technology and leading to a series of new schools/organisations, failed and caused negative views of technology-supported education. The reason for these failures was often simply ignorance of what had already been achieved and experienced by distance educators and lack of a proper organisation. Students could be given the opportunity to interact with tutors and send their assignment solutions by e-mail, but failing an effective office for running this communication it often happened that there was no tutor available or that the one or the ones available had too heavy a workload or too little insight into the situation of the individual distance student to be able to correct, comment on each student's work and generally to interact with him/her in a personal and supportive way or to do so within a day or two. Delays of several days and even weeks, which deprived the e-mail interaction of its value as compared with postal communication, occurred and may still occur. Also other organisational-administrative shortages, for instance concerning the availability and distribution of learning materials, references to Web sites and literature, information about periods and conditions for face-to-face or computer seminars or for examinations, have caused delays, irritation, lack of confidence and failure. An effective organisation of the distance-education process is a *sine qua non*. (Compare Shearer , 2004, p. 5: 'While there have been some corporate success stories, such as learning management system providers WebCT and Blackboard, there have also been a number of failures at the institutional level.'.)

There can be no doubt that the key to success is the commitment to supporting students that I described as *ethos* above, a commitment based on empathy that must animate not only the writers, tutors and counsellors but the whole of the staff of a distance-teaching organisation. The procedures for student support have been discussed in a number of studies, thus, e.g., in Rekkedal, 1972a and b; Thornton & Mitchell, 1978; Sewart, 1984; Mills & Tait, 1996; and Scheer &

Lockee, 2003, the last-mentioned contribution identifying the 'wellness needs' of online students (physical, emotional, spiritual, social, occupational and intellectual 'wellness' needs).

A basic question is who actually teaches in a distance-education situation. It would be a serious mistake to say that the course writer is the teacher and equally wrong to regard the tutor who comments on students' contributions as the sole teacher. In distance education teaching is a shared responsibility. The course writer presents the learning matter in the best way possible, which in my view means applying a conversational approach; the tutor, who may be and occasionally is identical with the course writer, interacts with students on the basis of this presentation, trying to secure students' knowledge by providing full and helpful explanations of things not completely understood, making them see how the new matter they are confronted with is related to what they have already learnt and supports them in other ways; the counsellor helps students by means of useful information and advice. Also the handling of learning materials, students' assignments, telephone, postal and e-mail messages belong to the teaching in the sense that these activities must be carried out effectively and well to meet students' requirements and in the insight that contacts must be friendly and helpful.

There has been surprisingly little discussion about suitable administrative procedures. Much can still be learnt from Öster's discussion of the organisation of a large correspondence school of 1965. Later presentations of relevance are Rumble (1986 and 1992) and, on a macro level, Beaudoin, (2004, pp. 61-101). As indicated above, learner support in distance-teaching organisations is being carefully looked into by several scholars, Tait and Mills (2003) and Brindley and Paul (2004) as well as other papers in Brindley, Walti and Zawacki-Richter (2004), among them.

We have reason to look further into some special organisational and administrative concerns.

9.2. Distribution of Learning Materials

In a truly liberal system which makes no attempt to pace the students but allows them to work entirely individually it makes no sense to distribute course materials on fixed dates, say once a month. Instead sending all the material before the study begins or in smaller batches as the individual students proceed in their study are choices to be considered. The former is a rational procedure, which has, however, caused some problems as has the distribution following a predecided plan. In both cases students have reason to complain that they are being intimidated by the mountain of course material piled up in front of them (as the first students of the German FernUniversität did; Bartels & Fritsch, 1976).

A practical solution is to send a reasonable amount of material at the outset of the study and then, together with each assignment commented on, send a course

unit roughly corresponding in size to the one finished by the assignment submitted. Office routines for this were practised very early, long before the use of computer administration (Öster, 1965), and cause no administrative problems. However, high postage costs for repeated dispatches of small batches of course materials as compared to sending all the material in one batch may make this procedure unattractive or even impossible.

9.3. The Administration of Course Development

Most distance courses are no doubt developed by a subject specialist co-operating with an editor, the latter of whom often also functions as an advisor, an instructional designer and a media specialist. A great number of successful courses have been created in co-operation of this kind. However, since the founding of the Open University in the UK in 1970 the creation of so-called course teams has been considered a most important and effective procedure to make sure that high-quality course materials are produced. Lord Perry, the first vice-chancellor of this university, illuminates the background as follows:

> To produce the drafts of the various 'course materials' that would enable an adult, working in isolation, to reach a predetermined standard of performance in a given area of study, called for the combined skills of a number of groups of people. First we had to have not just one university teacher, with his thoughts and ideas about the objectives, contents and methods of presentation of the course, but several, because our courses were to be multi-disciplinary as well as multimedia in nature. This, in turn, meant that each teacher would have different and inevitably conflicting thoughts and ideas which would somehow have to be reconciled with each other to lead to an agreed final version. Second, since the university teachers that we could recruit would mostly be unfamiliar with the special problems both of educating adults and of teaching at a distance, we would need the advice of other experts, in particular educational technologists and television and radio producers, in order to determine the method of presentation of the course. (Perry, 1976, p. 77).

These considerations led to the institutionalisation of the course team at the Open University. Perry regards this as a very important innovation: 'The concept of the course team is, I believe, the most important single contribution of the Open University to teaching practice at the tertiary level.' (ibidem, p. 91). The co-operation of several specialists has without any doubt resulted in course materials of very high quality.

However, the course-team approach, which invariably causes tough scrutiny of drafts written by colleagues of the writer and hot discussions, has not been adopted without serious criticism and debate. In 1979 Michael Drake, a professor at the Open University, published an article entitled 'The curse of the course team',

in which he criticised the course team on several points, stating *inter alia*, that 'it places more emphasis on content than on teaching' (p. 52) and that the 'course team format gives the articulate, the domineering and the thick-skinned an influence out of all proportion to their numbers or their merit' (ibidem). This contribution gave rise to strong objections. Thus Andrew Blowers, then dean of the Open-University faculty of social sciences, rejected the idea that the 'model of a corporate, co-operative approach to teaching and learning would be supplanted by the more individualistic, authoritarian approach adopted in traditional university teaching' (Blowers, 1979, p. 56) and claimed that the course team 'is a flexible instrument for change and provides the creativity and community on which our whole enterprise depends' (p. 57). Considering the question twenty-five years after this discussion there can be little doubt that the course team has proved its worth.

This does not mean that the course team is accepted without reservations. There is a danger that the product of co-operative work gets an impersonal character. The ways of address that I recommend for distance education (*I suggest you should …*) may not be felt to be a natural outcome of this co-operation. It can be, however, if an editor is entrusted with wording a course text in this way. Monika Weingartz in a thought-provoking study of 1990, regrettably available in German only, provides data and arguments which may make us query whether the course-team model may impede personal approaches and contribute to knowledge being presented more as a finished, 'ready-made' product than as a complex of problems under development. On the dichotomy problem learning vs. ready-made systems identified by her see Weingartz (1991) and above under 4.3.

Whether course teams of the Open-University type are relied on for the development of learning materials or less sophisticated procedures are applied, any distance-education organisation, school or university, must make arrangements for co-operation between subject specialists and distance educators. A step-by-step co-operation has proved more successful than complete drafts being delivered for revising. A survey of course-development procedures used in distance education was presented by Kevin Smith in 1980 and commented on by me in 1995 (pp. 136-138).

9.4. The Organisation of Communication

9.4.1. Student-tutor Interaction

Only in extremely small operations, or when the whole of the interaction between students and tutors takes place as online group discussions, is it possible to leave the organisation and administration of the interaction to individual tutors. Normally, there must be staff who keep lists of tutors available for each subject taught, who see to it that the right tutors receive the assignments of his/her students, who register dates for the arrival of each students assignment and its

return, marks given and notes made. That this is necessary in really big organisations, in which a million assignments per year or more are handled is evident, but even small organisations with less than a thousand students have to build up administrative units for this work. It is an administrative concern, but cannot be left to administrators only.

Academically responsible staff have to recruit competent tutors for each subject, divide and co-ordinate the work when more than one tutor teaches the same course, which is almost invariably the case. Monitoring the work of tutors is necessary in the interest of students who all have the right to be properly taught at a distance, to receive full and helpful comments on their work without unnecessary delay etc. While some subject specialist manage this well, others do not and must be given support and advice so that they reach an acceptable standard. If not, they have to be replaced. Arrangements must also be made to facilitate spontaneous contact between students and tutors online and on the telephone.

9.4.2. Student-student Interaction

Online conferences and seminars offer excellent opportunities for student-student interaction as discussed above. This, however, requires administrative preparation and handling. In wholly individual distance education students can interact with other students on condition that they permit the distance-teaching organisation to disclose their names and postal and/or e-mail addresses and telephone numbers to their fellow-students and make computer chats possible.

9.5. Typologies of Distance-education Organisations

The above presentation has discussed the organisation and administration of distance education mainly from the points of view of specialised distance-education providers (like the distance-teaching universities and correspondence schools). As made clear from the beginning of this book distance education is also in many parts of the world provided by traditional universities and schools as a form of teaching and learning supplementing on-campus study. These are described as dual-mode institutions. (See 3.3. above.) It is in Australia that the ‘philosophy’ of this dual-mode approach was first developed (Sheath, 1972; Smith, 1984).

The single-mode organisations like the distance-teaching universities and the American and European correspondence schools with their successors can also be described as large-scale bodies. They develop and run courses for hundreds and thousands of students. The course development is, as discussed above, often carried out by special course teams, while a group of tutors, who may or may not have taken part in the course development, comment on students’ work and generally guide their study. In small-scale organisations on the other hand individual teachers usually develop courses for their own students only, perhaps

less than 40 altogether. In the latter case the course writer is, as a rule, identical with the tutor, guides the study and often also teaches face to face during residential periods, which are usually but not always optional. The Australian University of New England in Armidale, N.S.W., is usually regarded as the prototype of the small-scale, dual-mode organisation.

Apart from these actively teaching organisations we have to count with networking bodies, which coordinate and supplement the work of the former. Examples are Norsk Fjernundervisning in Norway and the Mauritius College of the Air, on which see Jenkins (1997).

Contributions to an organisational typology are presented by Keegan (1990). A remarkable classification based on educational criteria was developed by Schuemer (1988). It is an empirical study which, in a statistically manageable way, identifies a student-friendliness concept including the recognition of the importance of student-tutor interaction and the need for student support, a flexibility concept (regarding individual choices of submission frequency vs. imposed pacing, e.g.), an autonomy concept, the place (use and role) of supplementary face-to-face sessions and similar characteristics. This results in a classification of distance-education organisations in six fairly homogeneous groups listed with relevant data.

10. Theoretical Approaches

By theoretical approaches I mean not only theories but also discussions about guiding principles. Some theoretical approaches aimed at identifying essential characteristics of distance education are well known, including Charles Wedemeyer's liberal, individualising 'independent study' (see above under 3.5.); Manfred Delling's process model (Delling, 1987; Graff, 1970, p. 44), which may be compared with Kathleen Forsythe's learning system (see 4.1.5.); Otto Peters' view of distance education as an industrialised form of teaching and learning (see 2.2.2); Michael Moore's theory of independent study, classifying educational programmes on the two dimensions of autonomy and distance (to be considered below); David Sewart's support model, called 'continuity of concern' (see 7.2.); and the student-centred, small-scale approach (9.5.). How distance education is to be regarded in relation to other kinds of education and how the study of distance education should be seen in its capacity of an academic field of inquiry are questions that belong here. So do a number of other concerns, naturally above all what is described as theories.

Regrettably theory is not an unambiguous term. It is frequently used to identify any systematic ordering of ideas about the phenomenon of a field of inquiry (thus Gage, 1963, p. 102) or to create understanding of it. In other scholarly contexts a theory represents a structure of reasoned explanations, for which intersubjective testability is a *sine qua non*. A theory in this sense is expressed as a set of hypotheses logically related to one another in explaining and predicting occurrences. Empirical data can – in principle – corroborate, refute or leave unresolved hypotheses of this kind. The normal starting point in a so far unresolved problem, for instance that of the influence of varying frequencies of opportunities for assignment submission (discussed under 6.4. above). An hypothesis is formulated. Relevant data are then traced, collected and evaluated to help to solve the problem, i.e. to support or falsify the hypothesis.

A most exacting view of what a theory is has been worded by Desmond Keegan:

> A theory is something that eventually can be reduced to a phrase, a sentence or a paragraph and which, while subsuming all the practical research, gives the foundation on which the structures of need, purpose and administration can be erected. A firmly based theory of distance education will be one which can provide the touchstone against which decisions – political, financial, educational, social – when they have to be taken, can be taken with confidence. (Keegan, 1983, p. 3)

Attempts have been made to meet these tough requirements. As early as 1970, Kurt Graff developed a decision model on the basis of a study of the structure and process of distance education, but concluded that the great problems are

beyond calculation (Graff, 1970, p. 54). Boyd (1993) on the other hand has presented a falsifiable 'prescriptive theory for use by developers of, and researchers into, distance education supported by quasi-intelligent, multi-modal computer communications or "cyberspace"' (Boyd, 1993, p. 252). (See 10.4. below.)

Hilary Perraton (1981, 1987) has ventured other suggestions as steps on the path toward a theory of distance education, and so has the present author. (See below.) A discussion of well-known approaches to distance-education theory and a presentation of a 'theory based on the American practice of education' occurs in Simonson, Schlosser & Hanson, 1999.

10.1. Distance Education as Related to Theories of Teaching and Learning

If we relate the appreciation of what constitutes distance education, as discussed in the preceding chapters, to current teaching and learning theories, we inevitably come to the conclusion that several of those theories are relevant to distance education. As briefly mentioned under 2.2.2. John Bååth has made systematic searches in this respect and has analysed the following 'models' with a view to discovering to what extent they are applicable to distance education:

1. Skinner's behaviour-control model
2. Rothkopf's model for written instruction
3. Ausubel's organiser model
4. The model of Structural Communication
5. Bruner's discovery-learning model
6. Rogers' model for facilitation of learning
7. Gagné's general teaching model

Structural communication, so far not mentioned in this book, is an exceptional type of programmed learning which is unrelated to the behaviourist stimulus-response theory and based on Gestalt thinking. It was originally developed by J. G. Bennett and A. M. Hodgson. This particular type of programmed learning is to all intents and purposes compatible with the problem-solving approaches discussed earlier in this book, whereas the behaviourist school of stimulus-response theory is not (Egan, 1976). Structural communication has been further developed by Romiszowski (1995) in connection with a discussion of the use of hypermedia.

Bååth has investigated the general applicability to distance study of each of the approaches listed and has analysed their implications for the development of course material, for noncontiguous two-way communication, and for supplementing this two-way communication by face-to-face contacts. Further, he has analysed some special relations between these various models and distance education.

The following would seem to be an accurate summary of Bååth's study:

- All models investigated are applicable to distance education.
- Some of them (Skinner, Gagné, Ausubel, Structural Communication) seem particularly adaptable to distance education in its fairly strictly structured form.
- Bruner's more open model and even Rogers' model can be applied to distance education, though not without special measures, e.g. concerning simultaneous non-contiguous communication (telephone, etc.).
- Demands on distance-education systems which should inspire new developments can be inferred from the models studied. (Bååth, 1979)

It is possible to describe some learning theories as more compatible with distance education than others. In this context it is tempting to refer to Nuthall and Snook's rational model with its view of students as 'rational agents' and its creed. 'Learning ... should not be a process to which the student is subjected but an activity which he performs.' (Nuthall & Snook, 1973, p. 67), and also to two theoretical works by Lehner, who develop a so-called genetic teaching strategy aiming at problem-solving learning. (On Lehners theory see 4.3. above).

Ausubel's theory of reception learning has proved particularly influential in the general domain of written instruction. It is interesting to note (taking one well-informed educationalist as an example) that Hudgins on the one hand says that only 'rarely have investigations of instructional media been guided by an overarching theory or conceptual structure about the nature of communication, teaching, or learning', on the other hand explicitly takes 'advantage of the basic concept of Ausubel's system.' (Hudgins, 1971, p. 177).

Ausubel's principles include insistence that major concepts should be presented before less important ones as the former 'provide a kind of ideational anchoring … and stability for the learner to hold on to as he learns lower order and less general elements' (Hudgins, 1971, p. 179) and that compartmentalisation and fragmentation of isolated parts of a subject should be avoided. On Ausubel's advance organisers see above under 5.2.

The theories analysed by Bååth as well as Lehner's genetic approach and Nuthall and Snook's rational model would all seem to show conclusively that distance education and thinking about distance education are firmly based in general educational theory. Nevertheless I cannot but regard distance education as a separate type of education with special target groups, methods, media, and other circumstances in which it differs from other kinds of education. It is, writes Desmond Keegan, 'a coherent and distinct field of educational endeavour', it 'is more than a teaching mode or method. It is a complete system of education.' (Keegan, 1986, p. 6).

10.2. Distance Education – a Mode of Education in its own Right

There are important basic differences in the appreciation of the character of distance education. To some it is merely a means of distribution that can sometimes replace oral distribution of subject matter for learning, to others it is a mode of education that exists beside and is equal to education offered face to face.

While the latter view is, on the whole, represented by the large correspondence schools, the distance-teaching universities, and similar organisations, the former view is implicit in, for example, the comparative studies of the effectiveness of distance-education methods and that of face-to-face methods that were common at a time when distance education (correspondence education, home study) fought for recognition as a useful approach to teaching and learning (Childs, 1971, p. 238ff). The usual design of such studies was an arrangement with two comparable groups of students made to learn the same subject matter, one by working through a correspondence course, the other by taking part in ordinary classroom teaching; the achievements of the two groups were then compared statistically. Peters refers to this research as relatively advanced statistical work combined with a complete lack of theory ('ein relativ fortgeschrittenes statistisches Treatment bei völliger Theorielosigkeit'; Peters, 1973, p. 17). This kind of comparison illuminates a view of distance education which entirely neglects the inherent potential for both individual and mass education (rather than the education of organised classes of students), for reaching students irrespective of geographical distance, and for the 'multiplication of advanced expert achievements' (ibid.).

Something of the same approach to distance education emerges in cases where, for technical reasons (such as the impossibility of co-ordinating in an acceptable way periods for classroom activities for gainfully employed adults, or the lack of teachers), courses are offered at a distance as a substitute for ordinary face-to-face courses. While there can be no objection to this use of distance-education procedures, they utilise only a small part of the potential of distance education. This can also be said about some small-scale applications. A striking example is the Canadian University of Waterloo practise as described by Leslie (1979, p. 36):

> ... we have fixed starting times for a course, a fixed schedule of assignments, a fixed duration of a course, and a fixed examination schedule. Our approach is to treat students as members of a class, although that class is distributed geographically. Thus our students start a course together at the same time and have to submit assignments and write examinations on a schedule in exactly the same way as a class on campus is required to do.

The insistence on classes and pacing seems to represent a typical characteristic of the view of distance education that regards it as a substitute for education face to face. Conventional views of educational planning and organisation induce protagonists of this school of thought to impose the same restrictions on distance study as are usually unavoidable in traditional study: limited geographical

coverage, classes of limited size, regular meetings, pacing, division of the year into terms of study, prescribed examination dates, vacations, etc. To the extent that, in systems adopting these limitations, the type of distance education applied is felt to be innovative, it is what Ross (1976) calls innovation within the accepted paradigm.

Once distance education is applied outside the organisational and administrative framework of conventional schools and universities, its potential for extra-paradigmatic innovation becomes evident. Its claim to be a mode of education in its own right is based on this potential.

The innovatory character of distance education in this sense emanates from the following:

1. The underlying ideas that learning can occur without the presence of a teacher and that the support given to students can be adapted to their standards of knowledge (instead of insisting on formal entrance qualifications).
2. The consistent use of non-contiguous media both for the presentation of learning manner and for the ensuing communication.
3. The methods used to exploit the non-contiguous teaching/learning situation so as to attain the highest possible effectiveness for the individual learner: structure and style of presentation and communication (teaching-learning conversation), appropriate use of media available, adaptation to students' conditions of life, etc.
4. The particular organisation which makes it possible to provide for both independent individual learning and mass education through personal tutoring and more or less 'industrialised' working methods.
5. The liberation from organisational and administrative restrictions usually inevitable in face-to face education: geographical limitations, school or university terms, keeping prescribed pace etc.
6. The possibilities it offers for economies of scale.
7. The influence distance education exerts on adult education, further training, and labour-market conditions, by opening new study opportunities as well as through its methods and organisation.

In distance-education systems using these characteristics to the full, it is possible for each student to begin, interrupt, and complete the study as it suits him/her or as work, health, and family conditions allow, to work at his/her own pace, and to disregard all the restrictions that apply to classroom teaching or group learning.

Thus there are at least two different schools of thought on distance education: one stressing individual study and individual, non-contiguous tutoring, the other aiming at parallelism with resident study and usually including class or group

teaching face to face as a regular element. The former can and does serve mass education. It is in this context that the industrial approach is particularly important. It stresses rationalisation and division of labour in the interest of quality and economy. This view is widely accepted as shown in the following statement:

> The extra effort required in the development of distance-education courses pays off when the same materials can be used to teach any number of students at any number of different institutions. The creator of the course need not be involved in delivery, and the tutor who deals with students ceases to be the master of the content and must become the guide, mentor and catalyst to aid the student's journey through a pre-structured or open-ended learning experience. ... Communicating with distant students requires special skills for which training may be provided. This is an area that would benefit from further attention by researchers. (Calvert, 1986, p.102)

Industrialisation in this sense implies using first-class specialist authors, editors, media specialists, designers, etc. for the development of courses to be produced in large editions, and other specialists for counselling, tutoring, assessment, administrating the work, etc. High quality is attained by the division of the work among specialists for each individual task.

This approach is fully or partly applied by the large distance education organisations, whereas small-scale distance education in many cases favours procedures more in line with traditional face-to-face education. Both usually aim at individualising their tuition. Thorpe (in 1979) said about one large-scale organisation, the British Open University, that 'the course teams provide the reading material (texts, broadcasts, kits) for hundreds or thousands of students in general and the course tutors and tutor-counsellors teach the students as individuals' (Thorpe, 1979, p. 1).

It is evident that the industrial approach in this sense does not preclude individualisation or personal communication. It is thus quite compatible with the attempts to create rapport between tutors and students, characterising the conversation concepts discussed under 4.1.

Distance education, using its full potential as indicated, must necessarily be regarded as a separate kind of education which can only to a limited extent be described, understood, and explained in terms of conventional education. This is one of the main conclusions of Otto Peters' analysis of the 'industrial' character of distance teaching as compared with traditional teaching (Peters, 1973, pp. 309–10).

10.3. Student Autonomy vs. Control of Students

In the first two decades of the twentieth century Hans Hermod of Sweden and William Lighty of the USA as quoted above under 2.2.1. and 2.2.2. based their

arguments in favour of independence on the special character of the adult distance students they worked with. They paid attention to the life and work situations and to the maturity of the students. They insisted on freedom for students to arrange their learning as it suited them, to start, interrupt, pace and finish study as they saw fit. Thus Hermod repeatedly described the distance student as constituting 'a class of his own'. Both Hermod and Lighty advocated invidualisation and promotion of independence within the framework of pre-produced distance-education courses.

However, independence can go much further. Several scholars have tried to identify and promote independence, among them Michael Moore and Farhad Saba (1989). Moore at an early stage conceptualised autonomy, his word for independence, distance, dialogue and structure, the latter three concepts used to qualify degrees of 'autonomy':

> Autonomy is the extent to which the learner in an educational programme is able to determine the selection of objectives, resources and evaluation procedures. … Distance in an educational programme is a function of dialogue and structure. Structure is the extent to which the objectives, implementation procedures of the teaching programme can be adapted to meet the specific objectives, implementation plans and evaluation methods of a particular student's learning programme. Dialogue is the extent to which interaction between learners and teacher is possible. (Moore, 1977, p. 33)

Moore had, when this was written, made an empirical study which showed that autonomous persons are particularly attracted by distance but do not reject guidance, i.e. dialogue (Moore, 1976). In his later writings Moore develops a theory of transactional distance which stresses the fact that 'distance is a pedagogical phenomenon and is not simply a matter of geographic distance' (Moore & Kearsley, 2005, p. 223).

With the advent of computer technology it became possible to give full freedom to students to search and decide independently and individually on the learning content. Earlier attempts in the same direction are reported on by Ljoså and Sandvold (1983) and Elton, Oliver and Wray (1986). Complete independence represents, in Moore's terminology, neither dialogue nor structure, and is not compatible with distance education offering both subject-matter instruction and interaction with a tutor. Distance education by definition includes support of students. What independent search and use of texts on the Web not stored for particular courses can do in distance education is to provide *additional* learning matter supplementing the preproduced course (cf. Peters, 2003, p. 53).

Really far-reaching student autonomy would imply not only complete flexibility and independence for students in the process of study but also the right and possibility to decide the learning content. This freedom is usually a fact in so far

as students can choose courses. Only in exceptional cases is it possible for a student to select his or her own study objectives. It is technically possible to provide a wide range of study opportunities, with clearly defined study objectives for each small unit, and to offer a completely free choice of such units in individual combinations, but this hardly occurs in practise. Constructive approaches which engage students in the selection of objectives were developed at an early stage by Potvin (1976) and Ljoså and Sandvold (1983), however.

Awareness of the role of learners in the construction of knowledge, what is called constructivist thinking, is relevant here:

> Knowledge does not exist independently of those who possess it. It cannot be transmitted unchanged to the learner. It always fits into the existing framework of understanding of the learner and is shaped by this framework. ... Learning for meaning and tight teacher control sit uneasily together. Learners must make their own maps of knowledge. (Boud, 1990, p. 65).

The arguments both for and against complete flexibility, allowing students full autonomy, are based on ideological principles as well as on practical considerations. Those in favour of full student autonomy feel that any uninvited intervention in adult students' work (sometimes even offers of assistance in coping with specific problems) encroach on the personal integrity of students, whereas those prepared to limit students' independence by various control measures consider it a moral and social duty as far as possible to prevent failure.

The practical arguments in favour of student autonomy are based on adult students' general situation, which usually means that family and job commitments and social obligations must be given first priority. Study occurs when these duties allow and students are physically and emotionally prepared for it. This is taken to mean that no timetable that is arranged by others than the students themselves is to be followed. Complete flexibility and far-reaching student autonomy create a very open system attractive to many but hardly likely to lead to course completion in a majority of cases. It cannot be denied that here we often have reason to refer to the survival of the fittest, a kind of 'natural selection'.

> If a system has, as its chief priority, respect for the freedom and autonomy of the individual student, it will allow him to begin a course whenever he chooses and to finish it at his convenience. The student paces himself and there are no external constraints although the good correspondence school, whose model this is, will have a system of written reminders, encouraging phone calls and even financial incentives to incite him to keep at it. Nevertheless the drop out, or non-completion rate, with such a free approach is usually horrendous (over 50 per cent) if the students are humans rather than angels. (Daniel & Marquis, 1979, p. 34).

The practical arguments in favour of control are usually based on anxiety to avoid wastage. It is felt to be essential that course completion should be attained

in as many cases as at all possible. See Coldeway (1986), who stresses the influence of pacing on completion rates: ‘Students are less likely to procrastinate when deadlines are clear. Getting behind schedule makes it even more difficult to generate energy to continue.’ (Coldeway, 1986, p. 89). This leads to somewhat restrictive practices which exclude would-be students unable to adapt themselves to them. Irregular working periods, travel on duty, poor health requiring occasional hospitalisation, pregnancy, care of sick children, etc. are conditions which may prevent students from following a timetable but yet may allow periods of concentrated study, for example during normal vacation time. Control measures of the kind mentioned inevitably cause a kind of pre-active natural selection, supposedly more merciful than failure after enrolment and a period of organised learning, but perhaps unnecessarily obstruct study that promotes personal development.

In practice the potential of distance education, as discussed under 3.5, is exploited more or less fully also in relation to student autonomy vs. institutional control of students. A careful study of student autonomy and its limits in distance education was carried out in 1990 by Monika Weingartz. Using as her empirical basis the data collected in a FernUniversität international study comprising some 200 distance-teaching organisations (cf. Graff & Holmberg, 1988) she identified an autonomy score, a score of individual control, one of goal-oriented control and one of control by additional media. Her study shows that almost 25 per cent of the organisations studied endeavour to promote a high degree of autonomy, whereas some 70 per cent of them apply highly individualised control methods, i.e. personal tutoring and counselling. Weingartz’ analysis includes contract learning (on which see the end of this section 10.3.). She concludes that selected individual control measures of the kind mentioned are essential for student autonomy, that independent study does not imply unlimited freedom but a differentiated guidance of learners engaging students and tutors together and that the need for tutoring and counselling diminishes as students become more independent (Weingartz, 1990, p. 81). Isaacs writing on computer-assisted learning comes to a similar conclusion: ‘In courses aimed at making students more independent as learners a degree of control is placed in their hands; students learn control by practising control.’ (Isaacs, 1990, p. 86). On the independence and control concepts see Boud, 1988; Baynton, 1992; Candy, 1987; and Elton, 1988.

Occasionally the value of attempts to promote student autonomy is queried. Garrison and Shale ask ‘whether autonomy is desirable, realistic, or even possible to attain’, and believe that ‘the usual notion of independence runs a serious risk of obscuring the true nature of education’ (Garrison & Shale, 1990, p. 124). They state their position as ‘independence is not an essential characteristic of distance education’ (p. 129). (See also Willén, 1981, pp. 249-50.)

In higher education and adult education, those in favour of student autonomy can find themselves in a dilemma. Should student autonomy be promoted by

intervention (advice, suggestions, offers of support), which is possibly unacceptable to autonomous learners who consider study their private concern and decline what they regard as well-meant officiousness? Alternatively, should students be left alone to fight for survival, i.e. completion and/or success in their study? This dilemma is aggravated in adult education, as its students can hardly ever give first priority to their study.

Adult students can reasonably be expected to be mature. Maturity seems to go well with autonomy. Thus, on the one hand, should adult students not be expected to be (and thus be treated as) autonomous learners, so that the responsibility for searching for solutions and asking for support when needed should be left to them alone? On the other hand, does their difficult situation with heavy commitments other than study not warrant special support? Distance educators and adult educators generally have to navigate between Scylla and Charybdis here.

From what has been said in the preceding chapters, it is evident that we can identify at least the following degrees of student autonomy in distance-education practice:

1. Voluntary study and free choice of course.
2. Autonomous execution of study based on prescribed curricula.
3. Free choice of optional elements as part of autonomous learning according to 2.
4. Possibilities to add to and reduce curricula, by including course units from other curricula and omitting units from the curriculum to be studied, as part of autonomous learning according to 2.
5. Free choice of learning objectives, course units, optional supplements etc. combined with autonomous execution of the study.
6. Autonomous work under the guidance of tutors (representing interdependence).
7. Autonomous project work.

If students are to be treated as mature people, and if student autonomy is to be promoted, this must have methodological consequences. The following principles belong here:

1. Student participation in the planning of the study is to be aimed at in order to secure its lasting relevance to the individual students.
2. Students' individual interests and/or experiences should influence the study content and process.
3. Flexibility in the structure and use of pre-produced courses is an indispensable condition: modular principles, study-guide approaches, student-initiated deep study of selected subject areas are applicable.
4. Problem-oriented discussion of subject matter should supplement and guide endeavours to impart knowledge; as an alternative to presenting

'ready-made' systems of knowledge, courses can start out from particular problems (the approach investigated by Weingartz, 1980).

5. Conversation-like, pre-produced presentations of subject matter, inviting students to query, check, investigate on their own, and pose explicit questions, are to be aimed at.
6. Dialogue, contiguous or non-contiguous (the latter dominating in distance education), causing awareness of problems and attempts to solve them and making students consider and try to reach positions of their own, must be catered for.
7. Empathy related to the independence orientation of the students should characterise the work of the supporting organisation in subject-matter presentation, tutoring and counselling.

A theory of student autonomy described as the 'theory of co-operative freedom' has been developed by Paulsen (2003 and 2004). It attempts to unite individual flexibility and freedom with group collaboration.

A very interesting survey of the autonomy issue occurs in Peters (2004). Among other things Peters warns that in online learning replicating 'the traditional pattern of expository teaching and receptive learning' 'prevents us from discovering, developing and applying the marvellous powerful approaches made possible by networked computers' (p. 223).

In attempts to benefit from and further develop students' independence distance education is sometimes applied to what is called contract learning. This implies that after a period of individual preparation and preliminary reading a student suggests a detailed degree programme that suits him or her but need not have occurred earlier. The suggestion does not only include a very full description of the subjects to be covered, a reading list and other requirements but also the conditions for the assessment of learning results and examinations (written and/or oral, thesis, hands-on work etc.). This suggestion is submitted to the university where it is scrutinised, modified and often supplemented before it is passed. The study of learning materials developed for distance education and full distance-education programmes may be included, but contract learning often relies exclusively on other reading matter, study visits, research tasks and practical work. Leading representatives of contract learning are, among others, Empire State College (of the State University of New York) in Saratoga Springs, N.Y., and East London University in the UK. (For information about contract learning see Lehmann, 1975; Coughlan, 1980; Worth, 1982; Lehmann & Granger, 1991; Weingartz, 1991 and Nunnenmacher & Jechle, 2004.)

10.4. Search for Theory

The facts, issues and arguments discussed provide background matter for a possible general theory of distance education. Hilary Perraton's approach, mentioned above,

is pertinent. Perraton (1981) bases his arguments on a view of education as connected with power and makes a case both for expanding education as an egalitarian requirement and for stressing the importance of dialogue. His contribution to a theory of distance education is in the form of fourteen hypotheses or statements.

The dependence on political contexts is stressed by Perraton, as are the possibilities inherent in distance education for economies of scale and the expansion of education. This is evident from his statements:

> 'No 2 Distance teaching can break the integuments of fixed staffing ratios which limited the expansion of education when teacher and student had to be in the same place at the same time.
>
> No 3 There are circumstances under which distance teaching can be cheaper than orthodox education, whether measured in terms of audience reached or of learning.
>
> ...
>
> No 5 Distance teaching can reach audiences who would not be reached by orthodox means.'

The following statements seem partly to coincide with my theory attempt presented under 4.1. :

> 'No 6 It is possible to organise distance teaching in such a way that there is dialogue.
>
> ...
>
> No 10 A multi-media programme is likely to be more effective than one which relies on a single medium.
>
> No 11 A systems approach is helpful in planning distance education.
>
> No 12 Feedback is a necessary part of a distance-learning system.
>
> No 13 To be effective, distance-teaching materials should ensure that students undertake frequent and regular activities over and above reading, watching, or listening.'

Perraton finishes his theory paper by asking if his formulation of hypotheses suggests 'ways of testing them which would yield useful knowledge for practical educators' (p. 24). This is exactly the concern that has caused me to attempt a theory, as presented under 4.1. and discussed in detail below.

An interesting though complicated, prescriptive theory of distance education 'for the cyberspace area' is presented in Boyd (1993). It is an attempt to unite system theory (Beer, 1985) with desiderata 'for democratic systems aimed at promoting human understanding' (op.cit., p. 246). Boyd expects of a theory of distance education that it should be a 'theory of organisation as well as an embedded theory of instruction' (p. 234) and introduces as his core idea the claim that the

modern development of communication and subject-matter presentation offers distance education an opportunity to evolve 'from being mainly a way of providing access to knowledge and credentials for highly motivated, scattered, or otherwise isolated, students, into the paramount means for building pluralistic, geographically extensive networked learning communities of complementary human capabilities which can work together in mutual appreciation to improve our world' (p. 235). Boyd's system includes functions concerned with organisation, prediction of developments ('an anticipatory-intelligence discourse space'), brainstorming in search of visions, recruitment/marketing, resource allocation, instructional design including 'learning-teaching conversation discourse-space systems' with student support. Boyd lists eight functional sub-systems of his system structure (students' psychostructure, goals, subject-matter, media, places for study/homes, study centres etc./, socio-structure, supplementary materials and controls). All functions are said to need 'to carry learning conversations' in which the requirements of all those concerned 'can be combined for democratically optimal practice and evolution' (p. 247).

Other attempts have been made to develop a theory of distance education. (Cf. Keegan, 1993.) While with few exceptions (evidently Boyd among them) scholars seem so far to agree that a really comprehensive theory of distance education including all relevant and social aspects is out of reach the situation may well be different if theorising is limited to the teaching-learning process.

A teaching-learning theory of distance education could consist of a mainly descriptive part, dealing with learning, and a more prescriptive part concerned with teaching. Whereas the former would expound the assumptions about learning, how and under what circumstances it occurs at a distance, the latter would attempt to gather into a coherent, inclusive exposition the principles for action supposed to cause effective teaching, i.e. facilitation of learning. Organisational, administrative, and financial conditions are relevant to both these parts.

It should be possible, at least to some extent, to express these assumptions as logico-deductive hypotheses (if A, then/then not B; or, the more/less A, the more/less B), which can be transformed into prescriptive rules. If the hypotheses are based on (generated from) a consistent view of what is probable (a logically coherent but, at the outset, possibly only implicit theory), the testing of the hypotheses would then imply an attempt to falsify or corroborate the underlying theory.

10.5. A Theory of Learning and Teaching in Distance Education

In my search for an inclusive theory of this kind, I have for many years been concerned with the personal and the conversational as characterising distance learning and teaching, have paid attention to the influence of emotions and have in this spirit developed (and published) attempts to base theory wholly or partly

on this approach. My theory of the empathetic teaching-learning conversation, first indicated in 1960 and later formalised and subjected to empirical testing (reported on in 1982 and 1983), has been summarised in the discussion of overarching principles for course development (4.1). The relevance of personal approaches also to mediated communication has further been demonstrated (under 6) and shown to be in agreement with empirical research findings (thus Rekkedal, 1985, e.g.).

A more comprehensive theory of teaching for distance education, including the former theory, was presented at the ICDE conference in Melbourne in 1985 and subsequently published (Holmberg, 1985b). In my book of 1986, I developed the same thinking and tried to provide a general base for it in a series of descriptive statements (Holmberg, 1986a, pp. 108-11) and a general view of distance education (p. 114). In this presentation it should be possible to forgo these two elements as in the preceding chapters the concept, system, potential, and practice of distance education, with its constituent elements, have been dealt with at some length. Here I prefer to explore a theory concerned with the purely educational aspects of learning and teaching with their surrounding circumstances and restrictions. There is a short presentation of the theory discussed below also in Moore and Anderson (2003).

Decisive to my approach is the realisation that, as David Boud puts it, 'feelings and emotions are part of learning of any kind' and that 'learning is holistic. Learners cannot separate ... their understanding from the excitement of discovery' (Boud, 1990, p. 7). Necessary foundations of theory construction in our field are the meanings attached to the concepts of independence, learning, and teaching. These have been discussed in the preceding chapters. Meaningful learning, which anchors new learning matter in cognitive structures, not rote learning, is the centre of interest. Teaching is, following Rogers (1969), taken to mean facilitation of learning. Individualisation of teaching and learning, encouragement of critical thinking, and far-reaching student autonomy are integrated with this view of learning and teaching. A basic presupposition is the reliance on a school or university to administer distance education, in the spirit of what Delling calls the supporting organisation.

I thus try to build on my previous attempts, as indicated, and include learning, teaching, and their organisational/administrative frames in a theory of distance education capable of generating testable hypotheses.

10.6. Theory Content

My theory can be worded as follows:

> Distance education is based on deep learning as an individual activity. Learning is guided and supported by non-contiguous means which activate students, i.e. by mediated communication, usually based on pre-produced

courses. The development of courses may apply large-scale methods and may also be carried out for small groups of students. Subject-matter presentation and mediated interaction are the two constituent components of distance education, for which a supporting organisation is responsible.

As individual study requires a certain amount of maturity, self-discipline, and independence, distance education can be an application of independent learning at the same time as it is apt further to develop study autonomy. Central to the learning and teaching in distance education are personal relations, study pleasure, and empathy between students and those representing the supporting organisation.

Feelings of empathy and belonging promote students' motivation to learn and influence the learning favourably. Such feelings can be developed in the learning process independently of any face-to-face contact with tutors. They are conveyed by students' being engaged in decision making; by lucid, problem-oriented, conversation-like presentations of learning matter that may be anchored in existing knowledge; by friendly, non-contiguous interaction between students and tutors, counsellors, and other staff in the supporting organisation; and by liberal organisational – administrative structures and processes.

This epitomising theory presentation, the factual and argumentative substance of which has been developed in the preceding chapters, immediately generates hypotheses, all of which can be worded as *if. . . then* or *the ... the* propositions and can, at least in principle, be empirically tested. Examples of hypotheses generated by my theory are:

If students are emotionally involved in the study, this promotes deep learning and goal attainment.

If there is friendly, personal contact between on the one hand students, on the other hand tutors and other representatives of the supporting organisation, then emotional involvement is promoted.

If the supporting organisation is characterised by empathy and a student-friendly ethos, this is likely to enhance course completion and students' success generally.

In my book of 1995 I listed seven hypotheses on distance learning, thirteen on distance teaching and seven on the organisation and administration of distance education.

10.7. The Testability of the Hypotheses

Most of my hypotheses have been expressed as straightforward statements like 'Emotional involvement in the study promotes deep learning and goal attainment.'. It is, as shown under 10.6., evidently easy to translate them into *if ... , then* , ..., or

the ... , the, ... hypotheses: if the conditions mentioned occur (the more they occur ...), then (the more) learning will be promoted.

As far as the hypotheses about teaching are concerned, I have also elsewhere suggested exact wordings of this kind (Holmberg, 1985b, pp. 122-130). Proper, non-ambiguous operationalisation of concepts is required to make testing meaningful.

The teaching and administrative hypotheses derived from the theory are easier to operationalise than those of learning. If we assume that emotional involvement, intellectual pleasure, and empathy exert influence on learning, we can test this assumption only if we specify which signs are taken to indicate the presence of these feelings. In our case, the outcome (as to attitudes and learning) of measures taken (i.e. the teaching and administrative procedures mentioned above) to bring about the phenomena desired, the effect of which can more comfortably be tested, is the indirect means to check on the relevance of the assumptions about learning.

Quite a few of the relevant hypotheses have, in fact, directly or indirectly been tested. This applies to hypotheses about subsumption (Ausubel, 1968); conversational style (Holmberg, Schuemer & Obermeier, 1982); readability (Langer, Schulz von Thun & Tasuch, 1974); access structure (Doerfert, 1980); frequency of assignment submission (Bååth, 1980 and Holmberg & Schuemer, 1989), quick handling of assignments, i.e. short turn-round times (Rekkedal, 1983) and the allocation of personal tutor-counsellors (Rekkedal, 1985).

10.8. Epistemological Considerations

While I feel committed to much in Popper's rationalism, it must be admitted that my theory concept only partially agrees with his. The hypotheses derived can be submitted to falsification following Popper's epistemological principles, as quoted under 4.1. According to these, the task of scholarship is both theoretical, to bring about explanation, and practical, to provide for application of technology.

According to Popper the aim of the theoretician:

> is to find explanatory theories (if possible, true explanatory theories); that is to say, theories which describe certain structural properties of the world, and which permit us to deduce, with the help of initial conditions, the effects to be explained ... My explanation of explanation has been adopted by certain positivists or 'instrumentalists' who saw in it an attempt to explain it away – as the assertion that explanatory theories are nothing but premises for deducing predictions. I therefore wish to make it quite clear that I consider the theorist's interest in explanation – that is, in discovering explanatory theories – as irreducible to the practical technological interest in the deduction of predictions. The theorist's interest in predictions, on the other hand, is explicable as due to his interest in the problem whether his theories are true; or in other words, as due to his

> interest in testing his theories – in trying to find out whether they cannot be shown to be false. (Popper, 1980, p. 61).

My theory is not what the 'critical rationalists' in the spirit of Popper would call nomological, i.e. it cannot be said to apply everywhere and under all circumstances. It is 'impossible to determine an absolute set of instructional procedures that will be "best", for different learners, or for different learnings by one learner' (Hosford, 1973, p. 114). Education as a research area is, of course, concerned with human beings with personalities, hopes, and wills of their own. If we are not determinists in the sense that we totally reject the assumption that human will is in any respect free, then it is impossible to postulate any automatic cause-effect principle in research that aims at optimising educational methods and procedures. Thorpe (1995, p. 175) rightly says that 'we are faced with a conceptualisation of learning as dynamic and, in many ways, unpredictable.'. Here theories usually have to be limited to statements to the effect that if such and such a measure is taken under specific circumstances, then this is likely to facilitate learning.

The requirements which my theory is meant to satisfy are, with the reservations made, those usually expected of educational theories, i.e. that they should

1. have internal consistency as logical systems.
2. establish functional relationships between the teaching and the outcomes of learning.
3. be capable of generating specific hypotheses and predictions.
4. be expressed in such a way that research data capable of possibly refuting (falsifying) the theory can be collected.

My theory with its hypotheses in this spirit may stress prediction more than a truly Popperian theory would do. However, it has some explanatory power, as it implies a consistent view of effective learning and teaching in distance education which identifies a general approach favourable to learning and to the teaching efforts conducive to learning.

10.9. Conclusions About the Distance-education Concept and Theory

The principles, facts, and arguments developed above lead to the following conclusion: Distance education is a concept that covers the non-contiguous learning-teaching activities in the cognitive and/or psychomotor and affective domains of an individual learner and a supporting organisation. It can be carried out anywhere and at any time, which makes it attractive to adults with professional and social commitments.

Through distance education a course of study can be offered to very large numbers of students. This implies possibilities for division of labour in the supporting organisation between counsellors, course writers, tutors, instructional designers, editors, developers of radio/TV programmes and audio-visual materials,

administrators, etc. This leads to a varying amount of mass-communication and industrialisation and to economies of scale.

Distance education requires a degree of maturity in its students, as they usually carry out the study activity autonomously. While expecting a certain amount of student autonomy, distance education can also promote the further development of autonomy as far as the choice of study objectives, critical appraisal of competing schools of thought, and problem-solving are concerned.

Special methods have been developed for use in non-contiguous communication, including counselling, course development, the application of media, and administrative work, which rely on principles of instructional design and dialogue. Conversational approaches and general empathy have been shown to be conducive to students' satisfaction and goal attainment. On the basis of investigations of empathy approaches and other aspects I, on the one hand, conclude that predictive theories of distance education are possible and that a beginning has been made, yet, on the other hand, concede that empirical studies testing theories/hypotheses may cause both interpretative difficulties and modifications of assumptions without necessarily categorically refuting (falsifying) them. Rumble may well be right when he says that they are unlikely to be 'conclusively falsifiable in the same way as, for example, the discovery of a black swan falsified the theory "All swans are white."' (Rumble, 1992, p. 112).

Theoretical approaches more concerned with the economic, social, political and cultural contexts of distance education are sometimes asked for and are no doubt possible. Attempts in this direction occur in Campion and Guiton (1991), Edwards (1991), Evans and King (1991), Evans and Nation (1992); and elsewhere. Theorising in this area faces problems regarding the separation of scholarship from value judgements (Holmberg, 1998; and Ljoså, 1991).

Finally, it is important to recognise that distance education is a separate kind of education, which cannot merely be regarded as a substitute for conventional schooling. This is so because of its openness to adults gainfully employed and/or fully occupied with family life, its independence of face-to-face meetings, classes, and generally of time and place, its combination of mass-communication and individualisation, its potential for student autonomy, and its special methodology.

11. Evaluating Distance Education

11.1. Principles and Procedures

The term evaluation denotes different things in different contexts. Sometimes it refers to the assessment of students for the purpose of awarding marks, sometimes to the judgement of complete educational systems. Evaluating these implies an appraisal of their status in society, of the relevance, quality, quantity, and results of their teaching and their impact on education, training, and the labour-market (Tate, 1986) including in many cases consideration of their accessibility to various social groups, i.e. equality. This appraisal of the contribution of educational systems is usually related to the costs that they incur. Examples of such evaluation of distance-education systems are given in Keegan (1990, Part IV). It is important to realise that time invested and work carried out have to be included in the cost concept.

How to evaluate educational programmes has been carefully studied. Thus methods for comparing students' achievements after a course with study objectives and performance standards have been developed and so have procedures for consulting experts, employers and students themselves. Course programmes are subjected to both formative and summative evaluation, the former meant to influence and improve the programme, the latter to lead to a kind of product declaration. Formative evaluation is often described as developmental testing denoting try-out procedures characterised by small groups of students taking courses in preliminary editions before these are offered for general use (Henderson, Hodgson & Nathenson, 1977; Nathenson & Henderson, 1980). Both the achievements and the opinions of students are investigated for the purpose of finding ways to improve the course. Sophisticated types of quantitative analysis are often applied (Chia, 1990; Ganor, 1990 and 1991, e.g.) as well as more qualitative ones. In so-called 'illuminative evaluation' there are three characteristic stages: investigators observe, inquire further, and then seek to explain' (Parlett & Hamilton, 1972).

A very interesting - and evidently highly rewarding – approach is applied at the Open University of Israel. It is based on Guttman's facet theory. 'Specification of course content and its instructional objectives in "course maps' serve as a basis for preparing a teaching syllabus, establishing a computerized bank of questions and assessing all course components.' (Ganor, 1991, p. 80). Not only pre-produced courses but also student support and the assessment of students' achievements are subject to this evaluation. The information collected through the evaluation work is used as a foundation for staff development within the university.

The principles and practices of evaluation in distance education are illuminated and discussed in Thorpe (1988), Schuemer (1991), Perraton and Hülsmann, (1998) and elsewhere.

Evaluating courses and programmes is something different from assessing student's progress, an activity that is no less important. Studying the processes of students'

learning is naturally a prerequisite for helping them. The assessment of students' progress is needed both to give students feedback so that they know how they succeed, and, in all cases where diplomas or graded certificates are required, to provide the basis for marks. In all examination systems it is important that tests should be both valid and reliable. If continuous assessment (rather than final examining only) is to some extent applied by distance-education institutions, it does not follow that these demands can be neglected. In the light of the literature available on psychometric and other considerations applicable to testing generally Lewis shows the importance of paying due attention to the development of exercises and tests:

> Let us suppose we took the trouble to analyse the co-occurrence of mistakes on (say) our computer-marked assignments; students who get question 1 wrong also tend to get questions 3, 8, 17 and 24 wrong. This suggests that the five questions are all actually tapping the same underlying dimension of confusion. This being so, we may be marking the student down five times over for having made just one mistake. (Lewis, 1972, pp. 119-20)

In one respect testing has special relevance for distance education. If students are offered the possibility to start, interrupt, and finish their study when they wish, to pace themselves, and generally to organise their study as they see fit, there is necessarily be a great demand for frequent examination opportunities in all subjects in which formal qualifications are required. A mastery-learning system allowing individual students to be examined when they feel they are ready for an examination (as according to the Keller Plan) would seem to be called for. This requires a bank of validated test items. On the Keller Plan, as related to distance education, see Holmberg (1981), Coldeway and Spencer (1982).

In other respects, examination problems can be disregarded here; distance education causes no problems for assessment other than those occurring in all examination situations. The exceptions are those of an organisational and administrative type, for instance arranging decentralised written and oral examinations in special study centres, under the auspices of other educational bodies, embassies, consulates, etc.

An interesting, innovative form of individual evaluation concerns the creation of a portfolio, a kind of learning journal and more containing the work a student has selected while studying, thus showing how the learning has developed and bearing witness to his/her critical reflection. The portfolio concept has been defined a 'a representative collection of one's work fashioned for a particular objective and carried from place to place for inspection and exhibition' (Wiggins, 2000 as quoted by Barrett, 2001). If electronic technologies are used it is possible to collect work pieces as portfolio artefacts presentable as texts, graphics, pictures, audio or by any other media type. It is this type of portfolio, the so-called e-portfolio that is seen as more or less ideal. It is important that through its work pieces it should elucidate the student's reflection rather than list a collection of arbitrary artefacts.

Developing portfolios of this kind with the support of and under the supervision of tutors monitoring the work serves evaluation as described, but also constitutes part of the teaching-learning process. (See further Walti, 2004a and b; and Ó Súilleabhain & Coughlan, 2004.)

11.2. Economics

In order to come to grips with the economics of distance education, comparisons with other forms of study may be helpful. If we compare the costs of reaching a particular educational goal, for instance a degree, by distance education with the cost of attaining the same qualification by conventional study, we should be able to draw important conclusions. Then it is essential to compare both input and output. The input would be the total cost (students' fees, government or other financing and subsidies, the loss of income incurred by students who give up work for study, as well as the time and work invested), whereas the output would be the degree or 'other study goal reached and possibly even its economic value.

From these points of view it is interesting to look at the most sophisticated distance-education system known, that of the Open University in the UK. Its size in the UK and its importance as a pattern for other distance-education institutions makes such a study particularly interesting. The economics of The Open University was, in fact, thoroughly investigated at an early stage and found to be very favourable in comparison with conventional universities: 'If the drop-out rate in the future does not differ significantly from the past then the average cost per graduate is likely to be below half that at conventional universities.' (Wagner, 1977, p. 365). The actual drop-out rate during the first years of the Open University was, in fact, under 50% (Wagner, 1972).

The fact that the highly sophisticated multi-media system of the Open University compares very favourably with conventional universities would seem to indicate that distance education generally can be very economical. To what extent this applies to all procedures and media applied is less certain. What we do not know, for instance, is whether the costs of study-centre activities or television programmes or various kinds of face-to-face support, all very expensive in relation to the use of printed, written or computerised communication, contribute to the effects of the system in relation to their costs.

The economics of distance education is a complicated subject which has been competently dealt with in a series of studies. Of particular relevance are those by Hülsmann (2003b), Perraton and Hülsmann (1998) and Rumble (2004). If we make full use of the potential of distance education as discussed above, refrain from or strictly limit contiguous elements and benefit from economies of scale we are no doubt entitled to go further in a positive appreciation of the economics of distance education than Perraton who more than twenty years ago said that 'it is possible only to claim that there are circumstances in which distance teaching looks attractive from an economic point of view' (Perraton, 1982, p. 61).

11.3. Completion and Drop Out

Course completion, already referred to in the case of the British Open University, is usually taken to imply success, whereas drop out is interpreted as failure. In distance education this understanding is valid only to a limited extent, at least if by course completion is meant the submission of all of the assignments of the courses concerned. If by success we mean goal attainment, then only knowledge of the individual student's goal can help us to decide if the student and the course are successful or not. Some students have other goals than course completion. This situation is highlighted by a reply given by a successful inventor to a question as to why he had not completed his course: 'I am a busy man. I took this course to learn how to solve a certain problem in advanced physics. When I learned that, I stopped sending in lessons.' (James & Wedemeyer, 1959, p. 93).

The completion issue has been investigated by several scholars. Reviews of the completion/ drop-out problem are provided in, for instance, Cookson (1990); Schuemer and Ströhlein (1991); and Morgan and Tam (1999). Various attempts are being made to improve completion rates.

However helpful any counter-measures may be, the really decisive factor for course completion is the student's personality. Data culled from three German studies carried out in the 1980s show that:

1. The agreement between personal interest and course offer (degree structure) is the most decisive factor for success (continuation of study) and failure (drop out) (Bartels, 1982, p. 11; Bartels, 1983, p. 16).
2. Students inclined to work on their own rather than collectively, i.e. those who do not feel any handicap of isolation but rely on their own initiative to establish contacts when desired, tend to be successful (Bartels, 1982, p. 18), whereas most drop outs suffer from learning in isolation (Bartels, 1983, pp. 24-25).
3. A certain amount of resignation concerning the chances of professional promotion is common among the drop-outs (Bartels, 1983, p. 7).
4. The drop outs have 'greater problems co-ordinating the requirements of their jobs, families and study than those continuing their study and are less capable of sustaining heavy workloads and changes in job situation; the latter are more prepared to accept that their personal lives suffer during their time of study' (Bartels, Helms, Rossié & Schormann, 1984, p. 94).

A study by Rekkedal already referred to indicates, on the basis of statistical evidence, that:

1. Practically no relationship could be established between students' domestic background and discontinuance (Rekkedal, 1972a, p. 17); this is remarkable, as distance students generally stress the importance of encouraging support

from husband/wife and other family members (see Bartels, 1982, p. 14 and 1983, p. 20, confirming this).

2. Older students 'survived' to a greater extent and achieved better results than younger students (ibid. p. 26), which, as far as the first statement is concerned, agrees with a study by Donehower of 1968; as to the second statement, Donehower 'found that the oldest group (only 9 students more than 60 years old) received the lowest marks; except for these oldest students, the achievement rose with increasing age of group at least up to about 45 years of age' (Rekkedal, 1972a, p. 26).
3. Not unexpectedly, there were positive correlations between the levels of previous education and both survival and achievement.

The greater success of older and better qualified students and of students already familiar with intellectual work of some kind, as well as the lack of influence of the domestic background, can all be related to motivation. Older, mature, and well-informed students may be assumed to be less likely than younger students to enrol unless they are strongly motivated. Good basic education, relevant prior knowledge, reading habits, and similar background conditions naturally confer advantages and make for initial good results; the maxim 'Nothing succeeds like success' interprets the motivational influence of this. Strength of will, self-discipline, and similar qualities are evidently connected with motivation.

The decisive influence of motivation for goal attainment in distance education is stressed by Sewart in a statement that puts other aspects referred to in perspective:

> In the final analysis, we are left with the conclusions that neither age nor distance nor domestic environment nor any other quantifiable term stands out as a salient feature. It is motivation above all else which, despite physical and general social and environmental problems, brings success. (Sewart, 1983, p. 168)

In all of the cases where dropping out occurs without goal attainment, counter-measures are evidently desirable. In my view the best possible assistance that can be given to students, and thus an antidote against unwished-for discontinuation, is the empathy approach that produces conversation-like real and simulated communication and personal relations between students and tutors, thus supporting students' motivation. Stein as early as 1960 indirectly supports this conclusion when he commented on a course with originally low completion rates. After a change of tutors 'from a cold subject-oriented man to someone equally competent in the context who also liked people', the 'percentage of completers was doubled'. Stein adds: 'A warm, friendly attitude by the instructor leads to higher completion rates and a stronger feeling of satisfaction by the learner; the reverse is also true.' (Stein, 1960, p. 165-166). Encouraging reminding letters have also proved to be helpful, as shown by Rekkedal (1972b) and others. Further, as discussed under 6.4., both a short turn-around time of assignments that are

submitted for correction and comment and a suitable frequency of non-contiguous communication can be of great importance. Further illuminating studies of the retention-drop-out question occur in, for example, Gibbs (1993) and, with special attention paid to e-learning, in Rekkedal (2004).

11.4. A General Appraisal of Distance Education

As shown under 10.2. above the potential of distance education is far from always fully used. It can be more or less innovatory. There are different types of distance education which make more or less consistent use of the potential of its special characteristics. Within these types there are also more or less successful practices. Like conventional types of education, distance education cannot be described as intrinsically either effective or ineffective, good or bad. It opens up a number of possibilities, however, and it does so in ways that are different from those of conventional education.

Those practising distance education a hundred to fifty years ago – then almost exclusively based on the printed and written word and occasional audio recordings – were convinced that distance education could be made effective, and some of them saw to it that this was done. Naturally there was much interest in studies comparing the effectiveness of distance education with that of traditional face-to-face teaching and learning. A number of such studies were carried out, regrettably rarely with the acumen required of proper scholarly examinations. One of the scholars who did meet the requirements of sound educational and statistical study was Gayle B. Childs of the University of Nebraska. He could show that correspondence education as practised in the USA in the middle of the twentieth century was by no means inferior to traditional education in imparting knowledge and skills. In 1965 he wrote: 'One thing of which we may be certain is that correspondence study does an excellent job of subject matter instruction.' (p. 80). Similar conclusions were drawn in Sweden, for instance, where correspondence education had by then acquired so much prestige that the leading (and largest) correspondence school, Hermods, had in 1958 been given official status as an examining body for university entrance and other examinations. On Childs' and other early effectiveness studies see Childs (1965 and 1971) and Granholm (1971).

Thus long before information technology had begun influencing media use and methodology distance education had proved its effectiveness in what, following Bloom, Masia and Krathwohl (1956), we call the cognitive domain and also, to some extent, in the psychomotor domain (drawing, typing, shorthand writing, manipulating machinery). Much later its potential also in the affective domain was looked into (Sparkes, 1982).

Negative prejudices against distance education were long-lived, however, and are even today aired in the USA. With the advent of information and communication technology there was, to judge from press publicity, in some circles, a radical change in the opposite direction, at least initially. A kind of technology euphoria

was widely spread in the 1990s, and education based on the use of computers became both popular and respected. This contributed to drawing attention to favourable experiences made by distance students, to the extensive methodological development work that had been carried out and to the inclusion of distance-education research in respected academic milieus.

About the turn of the century 2000 thus fewer voices querying the effectiveness of distance education are heard and evaluation reports support the positive conclusions drawn from what is generally said and written. As early as 1994 Bartels showed that 38.7 percent of the FernUniversität graduates in business administration had, only five years after they had attained their degrees, been promoted into top management positions and high-scale salaries. Woodley (1995), who pays considerable attention also to outcomes other than those concerned with careers, reports that around three out of four Open-University graduates declare that they have gained ‘great’ or ‘enormous’ benefit from their study.

The preceding chapters will have shown that distance education is applicable, and has been successfully and economically applied, to many educational tasks and many different target groups. It mainly serves adult students, the secondary and tertiary stages of formal education, vocational and professional basic and further training, and self-actualising study with or without purposes connected with academic credit or labour-market interest. Methods have been developed that strengthen its personal relevance to individual students and make it effective from the aspects of goal attainment, intellectual and emotional development, and involvement in serious study, as well as from those of energy, time, and financial resources invested. The big distance-education providers regularly carry out careful evaluation studies which invariably testify to the effectiveness of distance education (as shown by the references above to Bartels, Ganor, Thorpe, and Woodley). We are thus on safe ground when we state that distance education has proved to be an excellent form of study for many students. A number of success stories characterise the work in the field. Distance education can safely be described as a useful and flexible kind of education with special potential for student autonomy. While for a long time looked askance at, distance education is evidently generally accepted in the early 2000s.

Distance education has been shown to have generated theoretical considerations, which are concerned with its particular character, and hypothetico-deductive approaches to its educational effectiveness. After early attempts at distance education in the eighteenth and nineteenth centuries, followed by about a hundred years of innovations and experiences with organised distance education and a great number of scholarly studies into its theory and practice, we are entitled to describe it as an established mode of education in its own right.

The application of distance education to conditions in developing countries is a special concern. On this see Perraton (2000).

12. Distance Education as an Academic Discipline

In 1986, 1988 and 1989 the Journal of Distance Education/la Revue de l'éducation à distance published a discussion about the possible status of distance education as an academic discipline. While the present writer was in favour of thus recognising the scholarly inquiry into distance education others were more reserved or negative in their judgement (Holmberg, 1986 and 1989c; Coldeway, 1989; Devlin, 1989).

In a learned article of 1988 Rumble insisted that in distance education there 'is no sense in which there is a real disciplinary culture that is distinct from education as a whole' and that 'there are no grounds for seeing distance education as a separate specialist domain of knowledge' (p. 53). He claimed that there 'is no corpus of "deep level" theory and methodology particular to distance education' (p. 53) and stated categorically 'It cannot be regarded as a discipline.' (ibidem). How deep the theory development and methodology must be to make it acceptable to refer to distance education as an academic discipline appears to be controversial. It seems as though the discussion is basically one of terminology. Coldeway 'as a pragmatist' sees 'little utility to this debate with respect to the development, advancement, or application of distance education'. He adds: 'I am struck with the thought that such a debate is of no consequence.' (Coldeway, 1989, p. 65).

Whether we call the study of distance education a discipline or a field of academic inquiry is not of great importance. However, as shown by Peters (1973 and 1996) as well as above under 10.2., it is undoubtedly *sui generis,* a separate phenomenon different from other types of education.

The criteria for recognising a field of study as a discipline are, according to Sparkes (1983 p. 181), that

1. it must grow in degree of relevance to real and important problems ...
2. it must grow in theoretical and conceptual depth;
3. it must develop its own 'conceptual structure'; that is,
4. there must be a complex set of inter-relationships between its fundamental ideas. (Sparkes, 1983, p. 181)

This book should have shown that distance education is growing, and has been growing, at least since the 1950s, in all of these respects. However, it must be conceded that on a further issue mentioned by Sparkes, the use made of distance-education theory and data by other disciplines, there is so far little to be adduced.

Other criteria that can be insisted on are

- that there is a body of published research; that this is the case in distance education will have been made manifestly clear by this book with both its constant references to research and its bibliography. However, the study of

distance education is evidently benefiting from knowledge and theory developed in disciplines that were established earlier (general education, pedagogics, andragogics, philosophy, psychology, sociology, history, economics etc.). This dependence on other disciplines is nothing new or remarkable. Biochemistry is another example of a discipline based on or drawing on neighbouring disciplines;

- that the field of inquiry 'poses sufficient problems to stimulate research, and one that leads to the publication of journals in the subject area' (Sparkes, 1983, p. 179). There are now several periodicals devoted to research on distance education, both in print and online. Among the former should be mentioned the American Journal of Distance Education (USA), The Journal of Distance Education/ Revue de l'éducation à distance (Canada), Distance Education (Australia), Open Learning (UK), among the latter the International Review of Research in Open and Distance Learning (www.irrodl.org), They all have an international character. There is also a series of national journals and journals published by professional bodies , among them the DETC News (USA), and the EADL Newsletter (Austria), and series of periodical scholarly publications (the ZIFF Papiere of the German FernUniversität, e.g.);
- that the area of knowledge is taught as a university subject. It is a well-known fact that distance education is taught at several universities in the UK, USA, Australia and elsewhere; there are masters programmes at some universities (the UK Open University, Athabasca University, the University of Maryland University College, for instance).

For the reasons mentioned it seems doubtful if the claim that distance education is a discipline can be categorically rejected. Something should in this context be said about its general character.

Distance education evidently meets the criteria identified. As has been shown in the preceding chapters, distance-education research has been and is concerned with problems of understanding and explaining its circumstances and conditions; the needs and requirements of its students; the measures taken to meet these needs and requirements; methodology; media use; organisation and administration; evaluation of these measures and of complete distance-education systems from educational, social, and financial points of view. The search for understanding and explanation has in many cases resulted in attempts to find a kind of instrumental approach to improving distance education, i.e. facilitating distance students' learning. As shown in Chapter 10, these attempts have had some success in. The present author shares Popper's already quoted epistemological view, according to which the task of scholarship is both to bring about explanation and to provide for application and technology. Both at the beginning of its history and today the social backgrounds are objects of study as well. Questions about power and control, societal

pressures and other external forces influencing and being influenced by distance education are being studied as illuminated in, for example, Harris (1987), Campion and Guiton (1991), Raggat (1993), and Tait (1994).

The industrial character of distance education has caused some scholars to fear an alienation effect. This makes it imperative to demonstrate the fact that in distance education we actually have the only real one-to-one relationship between student and tutor that – but for Oxbridge tutorials – occurs in education. However 'industrial' the course development may be, mediated student-tutor interaction – in writing, on the telephone or online etc. – brings about personal contact between each student and his/her tutor. The importance of this one-to-one tutoring can hardly be exaggerated. It is also, as shown in Chapter 6 of this book, a most important and fertile research topic.

There are evidently good reasons to describe the study of the separate field of distance education as both theoretical, in search of understanding and explanation, and practical or technological, applying principles that have been investigated with a view to facilitating and in other ways improving practice. In my terminology this means that it is an academic discipline.

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