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THE BEMETEL SYSTEM OF APPRENTICESHIP TRAINING

by

© PAUL HARTMAN

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH

IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE

OF MASTER OF EDUCATION

IN

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DEPARTMENT OF INDUSTRIAL AND VOCATIONAL EDUCATION

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "The Bemetel System of Apprenticeship Training" submitted by Paul Hartman in partial fulfilment of the requirements for the degree of Master of Education in Vocational Education.

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Date April 6 1979

ABSTRACT

This study describes the Bemetel system of apprenticeship in The Netherlands.

Data for the study were obtained from literature published in The Netherlands and by means of interviews with Dutch officials during a visit to that country in 1973. The Dutch apprenticeship system calls for a fixed program of practical training. The program for a trade is drawn up by the national organization concerned and applies to all firms offering that particular training. There are 32 national organizations in total. They must be non-profit making.

The membership of the governing boards must be such as to represent employers and employees associations, parents and the schools.

Next to the national organizations (Foundations) there are regional organizations. While the national organizations have a duty to draw up the entrance requirements, the training program and the examination requirements, the regional bodies provide information and advice and maintain contact with parents, apprentices, schools, vocational guidance institutes and employment agencies. The theory behind this structure is that the apprenticeship system has a social as well as a technical function.

Bemetel is a national organization, encompassing both the met-al and the el-ectrical industries.

It was found that through a corps of consultants or training officers, the Bemetel Foundation stays in close contact with the on-job training of the apprentices, and is able to monitor the quality and guide the curriculum through both evolving thought in educational methodology and new technological developments.

It was also found that a final qualifying examination technique sees that all apprentices, finishing their training period, make exactly the same testpiece in exactly the same week from exactly the same blueprints provided by the Bemetel Foundation. The testpieces are brought together in one central place where over 300 industrial experts for a period of approximately two weeks score each piece. This method, which may seem rather drastic, provides (according to Bemetel officials) the advantages of maintaining a national standard of quality and the opportunity of showing up regional or local shortcomings. Appropriate measures can consequently be introduced rapidly to overcome the shortcomings and deficiencies.

The study concludes with recommendations to continue the investigations into apprenticeship programs in other countries so that local researchers and administrators charged with manpower development can become acquainted

with systems that appear to have found answers to problems connected with apprenticeship training.

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THE PROBLEM

Introduction

The need for skilled technicians and craftsmen to meet the demands of an expanding economy and a developing industrial complex has exerted pressures on those agencies charged in Canada and Alberta with organizing the required programs.

The thrust of federal government funds for educational programs, especially those concerned with preparation for manpower requirements, made the construction of physical facilities possible. However, physical facilities are but a part of a successful program in technical and trade training.

For not all manpower training does take place in a formal school setting. Apprenticeship as an alternative method of manpower development has a long history (Butts, 1955, p. 9), where the training takes place for the greater part on the job-site rather than in a classroom.

Since the dawn of civilization, the concept of learning and training through apprenticeship has seen the young learner work (and live) with the experienced master craftsman for an agreed upon period of time for the specific pur-

pose of learning a craft.

As the trade Guilds developed in Western Europe, the apprenticeship arrangements became formal and gained status (Phelps-Brown, 1962, p. 66).

The Guilds controlled the system, and to this day it is common in Europe for the employer or trade organizations to control the apprenticeship programs and to conduct the examinations the apprentice must pass.

The formal organization of apprenticeship training in Alberta was legislated in 1944 with the passing of the Apprenticeship Act (Young and Machinski, 1972, p. 47). This Act specified the length of time to be served as well as the training requirements. Standards of competency were to be maintained by the Provincial Apprenticeship Board in cooperation with management and labour through advisory committees.

Apprenticeship in a designate trade begins for a young man or woman when he or she, and the employer, jointly apply to the Apprenticeship Board for approval and registration of the proposed apprenticeship. Work experience is gained through on-the-job training under the auspices of an experienced journeyman. Once a year the apprentice is required to attend one of the provincial institutes of technology where courses are taught to provide the necessary theoretical knowledge, and training in supporting subjects such as mathematics and science, and to provide experience in the use of machines and instruments not found in all places of employment. The total time to be served varies from trade

to trade, but is generally four years. The training courses for the apprentices at the technical institutes are generally of eight weeks' duration, but may vary from four to 12 weeks according to the trade.

At the conclusion of each training period at the institute, achievement ratings are forwarded to the Apprenticeship Branch who also conducts a final examination. Promotion to the following year's program is determined by the ratings obtained by the apprentice on this final examination and the institute rating as well as recommendation from the employers. The apprentice is issued a Certificate of Proficiency in the particular trade at the conclusion of the specified training period, having attained passmarks for the entire program.

The length of training has been set to some extent by tradition and varies from trade to trade and from country to country (International Labour Office, 1966, pp. 56-61).

Similarly, the final passing [sic] of the young tradesman into the ranks of journeyman varies with tradition (Butts, 1955, p. 157).

While examinations play a major role, in many countries emphasis is still placed upon the apprentice passing a test of practical skills.

The tradition of the Guilds required the making of a "masterpiece". Acceptance of this "chef d'oevre" showed that the training period was at an end and the apprentice had become a master craftsman.

Although examinations in related theory are sometimes set, the weight is usually much less than the practical examination (International Labour Office, 1966, pp. 1[illegible] 129).

In Alberta, however, the emphasis appears to be on (theoretical) paper-and-pencil tests, rather than on examinations of practical skill. This is supported by the statement taken from Is Apprenticeship for You (Provincial Apprenticeship Branch, 1970):

> When the period of apprenticeship has been served (four years in most trades) and all courses successfully completed, the apprentice writes the Journeyman examination, and if successful, he is certified as a qualified tradesman.

As illustrated, apprenticeship is of a dual nature, by being simultaneously a method of education and of craft skill development.

More specifically, the philosophy and methods used to evaluate the progress and the skill and the knowledge gained by the apprentice vary considerably from country to country.

Considering the number of changes that have occurred in technology, and in the function and specialization of the trades, apprenticeship will continue to be a major method of training tradesmen (Muir, 1971).

To continue as a viable system, the recognition and formulation of the objectives of apprenticeship training is necessary. The determination of the principles and objectives must be undertaken in a systematic way.

T.W. Broad in his Master's Thesis (1972) proposed one such a way. In his systems approach to apprenticeship train-

ing, analysis of most major aspects is undertaken and tested for validity. As ideas are found to stand the test of time, they are employed; if not, they are modified or discarded. Consequently, the built-in quality control function provides continuous validation. The use of a systems model also provides a flow of information between different segments of the model.

Besides this locally-based research, other studies of training practices have pointed out the benefits that can be obtained by subjecting, to scholarly scrutiny, the administrative machinery and evaluative instruments used in specific apprenticeship training schemes.

Broad alludes to one such a system: the BEMETEL-Method used in The Netherlands, which seems to have found ways and means to handle with apparent success the on-the-job training and the evaluative aspects of apprenticeship programs.

In his Recommendations for Further Study he writes:

> A study of Bemetel Foundation's method of assessing and scoring practical examinations is a necessary further step in instituting a scheme of apprenticeship. It is recommended that as part of such a study the researcher or researchers pay a visit to the Bemetel Foundation, Holland, to view and discuss the designing as well as the method of scoring these examinations.

He continues:

> This study could also develop the Bemetel method into areas of practical work in which it does not appear to be used as yet, but where preliminary work carried out during this present study indicates that it might have an application (Broad, 1972, pp. 122-123).

In recent times, the Alberta concept of apprenticeship

training has received criticism. The complaints, which indicate that the existing system is not keeping pace with the changing demands can be broken down into five major categories:

1. Little recognition is given to the fact that technological developments are changing the traditional craft skills.

2. Many of the existing training manuals used by apprentices tend to stress skills required in the past rather than those that will be needed in the future.

3. Insufficient attention is paid to defining the likely future needs of individual apprentices.

4. Great concern is voiced about the quality of much of the on-the-job training.

5. Poor integration is evident between the off-job educational practices and the experienced gained on the job.

These categories of complaints are both common and widespread.

The 1970 report of the Alberta Department of Labour dealing with the Apprenticeship and Tradesmen's Qualification Branch lists (on page 8) "some problem areas".

> The quality of field experience of apprentices varies greatly. There are some ten thousand establishments in the Province where apprentices are, or could be, employed. In some the opportunities for a broad working experience are excellent - in others the possible scope of apprentice work experience is limited. In some the training capability of the supervisors of apprentice work is high - in others little attention to training needs is possible; the responsibility may even not be accepted.

> Apprentices are reasonably free to transfer and many do. The Board has a limited number of men in the field providing some guidance and direction. The Work Record Book focuses attention on the need. But the objective of a broad working experience for all is some distance from being realized.

Next to the above problem in the area of field experiences, the report continues to deal with training needs and states:

> True training needs are difficult to identify. The task of program development and maintenance must of necessity involve industry - there could be no program without the support of the workshops of the Province. Training schools must also have a voice if they are to be encouraged to provide quality instruction. All of this tends to bring needs into focus that are not necessarily the needs of the working tradesman - the aspirations of Unions with respect to their jurisdictions; the aspirations of management with respect to its contracts; the aspirations of schools and instructors with respect to the dimensions of their operation; even the aspirations of administrators of the program. Having established true needs, if this were possible, the real "crunch" comes in determining what else is essential to keep the machinery well oiled - surely a task for Solomon himself.

The above statements indicate that it will indeed be a valuable exercise to research how other administrations have dealt with these problems of apprenticeship training.

Purpose of the Study

The general purpose of the study is to describe the BEMETEL system of apprenticeship training and evaluate whether that methodology can be employed to alleviate problems encountered by the Alberta system. The relevancy of the BEMETEL methods will also be evaluated against an apprenticeship training program based on a systems-approach model,

as proposed by Broad.

Significance of the Study

Much research has been carried out in the fields of general education, especially primary and secondary education. Problems related to post-secondary education in community colleges and technical institutes, dealing with their staff and students have also, especially recently, been the concern of researchers. Not too much attention however has been paid to problems associated with apprenticeship training, although as an educational tool the method is gaining rapidly in popularity. Alberta Advanced Education and Manpower reported that in 1977 training was provided for 16,756 apprentices as compared with 8,905 students in other mainly two-year technical program areas (Annual Report, 1977).

The study should be significant not only to administrators of apprenticeship programs, but to all individuals or organizations that support apprenticeship training agencies by taxation, donation of time and expertise or by other means.

All those involved (and this includes certainly the apprentice) ought to expect that the energies and resources are directed and aligned with the requirements so that they efficiently provide the need of skilled manpower.

Any program to be effective requires continual reassessment and research and, with little done in the apprenticeship training area, it would appear that such a study is

both timely and necessary.

The Bemetel system of trade training has drawn much attention from other countries. In recent years, Bemetel features have been studied in detail by researchers from Great Britain, Sweden and Italy (Bemetel, n.d., p. 22). It is hoped that an evaluation of the system will also be of benefit to the improvement of the Canadian and especially the Alberta Apprenticeship Program.

Delimitation of the Study

The study is confined to two areas of apprenticeship training programs: the monitoring of the on-the-job training aspects, and the evaluation of training results. The basis for the restriction is the belief that more value may be derived from a narrow in-depth analysis than from a survey covering apprenticeship systems in their entirety. The consideration appears to be justified, since industrial training varies between geographical areas and is dependent on political, social and economic philosophies.

Also a study of a total program examined in the light of another will tend to become unwieldly.

Limitations

The findings of this study are dependent on the openness and frankness with which all those queried respond, and

on the level on which the socio-economic climate in the geographical areas under consideration can be equated.

The information regarding Bemetel is limited to publications by Dutch writers and the respondents involved in the Bemetel program.

Definitions of Terms

The following definitions were found appropriate and were selected for terms that will be used throughout this study.

Apprentice

An apprentice is a person who enters into a contract with an employer for the purpose of learning a skill.

Apprenticeship

Apprenticeship is a legal agreement (indenture) whereby one individual (group of people) agree(s) to serve another individual (group) for a prescribed period of time in return for instruction in a trade, art or business.

Bemetel

Bemetel is the Dutch acronym for the BEdrijfsopleiding METaal (en) ELectrische (Industries), which literally translates as Training (for) Enterprises Metal (and) Electrical. This is an independent non-profit foundation for vocational

training in the metal and electrotechnical industry.

Certificate of Proficiency

A Certificate of Proficiency is a certificate issued an apprentice who has served the required time and passed the required examinations. It entitles the holder to practice in the specified skill area. It is often referred to as a Journeyman's Certificate or "ticket".

Journeyman

A journeyman is a person who is recognized as being a qualified tradesperson by the granting of a certificate of proficiency.

On-the-Job Training

On-the-job training is a structured, coordinated work experience, which, combined with related information, meets the established objectives of (trade) training.

Work Experience

Work experience is the part of the apprenticeship program where the apprentice is learning under the guidance of a journeyman at the place of employment.

Organization of the Thesis

The introductory chapter states the problem and the

need for research. The search of relevant literature on apprenticeship and related studies is presented in Chapter 2. Chapter 3 describes the investigative method and the collection of data.

Analysis and discussion of the data is presented in Chapter 4.

Finally, Chapter 5 summarizes the findings and offers conclusions and recommendations resulting from the project.

Summary

In this chapter a brief description was given of apprenticeship, its development and trends, and the position it takes in manpower development.

Based on statements regarding the Alberta situation made by the Trade and Certification Branch of the Department of Advanced Education and Manpower, and on a recommendation made by T.W. Broad, the assumption was made that a study of the Bemetel System of apprenticeship training in The Netherlands would be beneficial.

Five key complaints are listed as well as some problem areas the Alberta authorities have identified. The terminology to be used is defined and the chapter concludes with an organizational outline of the remainder of the study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Studies on apprenticeship training reveal a number of points that are relevant to this study.

Such matters as training both on and off the job were discussed and inquiries were conducted into testing and examinations, since this issue appears to be central to the study.

Also it was thought necessary to look at suggestions for change. Such suggestions are readily provided by journalists, politicians, educators and students. A common characteristic to many of the suggestions is that they are based on personal beliefs and philosophical thoughts. Undoubtedly, a major function is to be fulfilled by the philosopher in regard to education. Increased emphasis must, however, be placed upon the findings of research to help in making wise decisions.

Students are increasingly challenging the relevancy of the curriculum; and the taxpaying public is demanding accountability of the educator.

Decision-making has to be based on theory, which in turn is based on valid research. Mort and Ross (1957, p. 4) illustrate the point when they state that

> Action divorced from theory is the random scurrying of a rat in a new maze. Good theory is the power to find the way to the goal with a minimum of lost motion and electric shock.

Research in the physical sciences has generally been well accepted, probably due to the applicability of the findings. Research in the social sciences however has received less support. Ingram (1972, p. 207) listed as reason:

> A major criticism of the uncoordinated, fragmented, overlapping approach to educational research is that it has a minimal impact on policy and practice.

Since apprenticeship training as an educational method is both widespread and common, the search included an inquiry into the attitude as it pertained to the acceptance of this method of education both from the apprentice's point of view and from society at large. In turn the review will look at the method of apprenticeship training in general, covering Canada, the United States, the European countries and Japan. An in-depth look will then be taken at apprenticeship in Alberta, Ontario and The Netherlands. In the latter instance both from the legal and organizational points of view.

Since "examinations" are a vital issue, this aspect will be researched in general and that part of the literature that applies will be reviewed. The Dutch approach to qualifying examinations will be described in detail in Chapter 4. A short overview of developing trends and attitudies concludes the chapter.

Apprenticeship aining

In comparison to other areas of education, insufficient studies on apprenticeship training have been carried out in North America. The studies that have taken place in Canada incline towards the economic value of apprenticeship. For instance, the exhaustive study by Hathaway, titled The Cost and Benefits to Employers of Apprentice-Machinists in Ontario (1978).

A possible reason for the lack of published and unpublished literature may be the informal and often private e.g., industry or union based, organization of apprenticeship programs in the United States of America. In Canada the organization and control rest generally with branches of the provincial governments, but many corporations carry on a system of their own. The latter are in existence with Canada's railroads and airlines, while the Armed Forces also operate a highly structured scheme (Broad, 1972, pp. 32-36).

Although apprenticeship is one of the oldest methods of training used by man, it has changed little over the years. Muir commented that,

> Despite the number of changes that have occurred in technology, in approaches to training, in learning theory and in the function and specialization of the trades, the skills of the trade are still passed from journeyman to apprentice in much the same way as was done under the guild system. The only real major change which has occurred in the system of training over the centuries has been the introduction of the trade school into the system (1972, 1, p. 1).

Studies by Muir (1971) and Bernier (1971) found that

while there was controversy concerning the structure and content of apprenticeship programs in Canada, the acceptance of apprenticeship as a system of preparing skilled manpower was almost universal. Some experts in the United States say their apprenticeship training system is moribund while others say it is the most effective way to train workers for careers in the skilled trades.

In Canada, apprenticeship has grown steadily over the past quarter of a century. Although apprenticeship training is under the jurisdiction of the provinces, the rate of growth has depended largely on the financial support provided by the federal government (Department of Manpower and Immigration, 1968, p. 2). The federal government has been involved in providing assistance to the provinces for apprenticeship training since 1944. Muir draws an important conclusion regarding the development of the apprenticeship system in Canada:

> The renewed interest in apprenticeship was sparked by the federal government and their willingness to invest heavily in apprenticeship training (1971, p. 19).

Nearly all of the literature reviewed on Canadian apprenticeship training is written in a positive tone, and any criticism is constructively aimed at advancing the cause of apprenticeship training. Typical of the wide support given apprenticeship training is this statement by the Apprenticeship Training Committee of the Canadian Construction Association at its 46th annual meeting:

> The Association has decided to accelerate its activities to promote apprenticeship training after having concluded that employment opportunities, increased production and improved workmanship were becoming more dependent on the education and trade training of the Canadian Labour force (1964, p. 191).

Apprenticeship training in the United States has not had such unqualified support. In fact Feisil maintained that:

> Apprenticeship is not an important source of training in the United States.... Relative to the working population under age 20, the number of apprentices is miniscule compared to the proportions of apprentices in Great Britain (1968, p. 127).

Foltman wrote that:

> Many thoughtful students of this aspect of industrial training seriously believe that apprenticeship is now obsolete (1964, p. 28).

He elaborated on this by saying:

> Technological and occupational changes; changing attitudes toward skilled occupations; reluctant employers; reluctant unions; and a relatively small staff for promotion - all of these militate against the creation of apprenticeship training programs (1964, p. 33).

However, apprenticeship training does have its advocates in the United States, many of whom are or were in a position to influence the course of apprenticeship training. George Meany (cited by Foltman), speaking as President of the AFL-CIO, contended:

> There is general agreement that the demand for skilled workers will grow very rapidly in the next decade, while the opportunities for unskilled workers will continue to shrink. Therefore, our interest and the national interest must look to an across-the-board increase in apprenticeship training (1964, p. 30).

Some of the writers in the United States blame the demise of apprenticeship on lack of data and knowledge. Murphy felt that:

> The basic facts surrounding apprenticeship have been for too long a matter of individual experiences, conjecture and periscope observation (1967, p. 108).

And Christian observed:

> Skill development which combines instruction in theory with actual practice and controlled experience on the job is the best means of skill development for occupations beyond the routinely manipulative. For this and other reasons we seek to refine, improve and extend apprenticeship concepts rather than scuttle them (1964, p. 625).

Apprenticeship in Europe

Extensive and detailed reports on the European approach to apprenticeship have been published by the International Labour Organization (I.L.O.) with headquarters in Geneva.

Although the industrial revolution did send the apprenticeship system especially in England into a decline (Ashton, 1964, p. 78), the willingness to change and adapt to a new industrial world (International Labour Office, 1966, p. 183) has created a new vitality with the result that the European apprenticeship system is showing marked increases in the number of apprentices each year (International Labour Office, 1966, pp. 179-197).

The Office of Manpower, Automation and Training (O.M.A.T.) of the United States Department of Labour financed a study of apprenticeship in eight European countries. The study was carried out by the Center for Information and Research (C.I.R.F.), the research branch of the International Labour Organization. The study showed that:

> In six of the eight countries - Austria, Czechoslovakia, Denmark, Germany, Switzerland, and the United Kingdom - apprenticeship is the principal means of acquiring recognized trade qualifications (1966, p. 14).

Taking 1950 as a base year, all eight national systems showed a marked increase in the number of apprentices over the previous years, while the populations remained stable.

The systems studied in Europe had a number of basic concepts similar to apprenticeship systems in the United States and Canada. The International Labour Organization outlined four of these:

1. The transition of adolescents from full-time education to adult work should, wherever possible, be organized as a period of training in employment.
2. There should be special legislation for each major trade and occupation and detailed regulations to determine the relations between adolescent workers and their employers and the standards to be attained in training.
3. Public authorities, working in close cooperation with employer's and worker's organizations or semi-public bodies composed of representatives of industry and the trades, should supervise and control the implementation of these regulations.
4. Training should include both theoretical and practical instruction and should be provided within the hours of a normal work week (1966, p. 11).

The International Labour Office noted that research projects are being launched that examine the many facets of apprenticeship training, not only the period of training but also the training methods and the training syllabi (International Labour Office, 1966, pp. 179-197).

Similarly in Japan (maybe even more so than in Europe), apprenticeship is used as a specific tool for the development

of the manpower a modern industrial country requires. The goal of developing skilled tradesmen that are versatile and possess in-depth knowledge of their trades is clearly stated (Okamoto, 1970, p. 7).

Apprenticeship in Alberta

The Manpower Development Act provides for the establishment of a provincial board known as the Alberta Apprenticeship and Trade Certification Board, consisting of a Director and not less than seven members to advise the Minister on all matters concerning the apprenticeship system.

The Director is assisted by a clerical staff, responsible for the administrative aspects of the system. A group of Program Development Officers coordinate courses and curricula. They organize the school programs, and administer examinations.

There are also local and provincial advisory committees. The local committees hear concerns of employers and apprentices in matters pertaining to the training of apprentices and make recommendations concerning such subjects to the provincial Board. The provincial committees are made up of members from each of the local advisory committees and, according to Muir, make recommendations regarding the trade or trades they represent on:

(i) qualifications concerning the age of apprentices;

(ii) length of time for apprenticeship;

(iii) the number of apprentices who may be apprentices to each employer;

(iv) the content of the courses to be given at the trades training school or center;

(v) the establishment of standards of proficiency to be reached during each year of apprenticeship and the setting of the final standard of competency upon which journeyman status is granted; and

(vi) to conduct such practical tests and written examinations as may be deemed necessary to prove attainment of the desired standards (1971, p. 66).

The training programs leading to the position of journeyman are also under the direction of the Apprenticeship and Trade Certification Branch. The Branch summarized the training given as follows:

> An apprenticeship training program under the provisions of the Act has its beginnings for a trade or industry when those (or their representatives) engaged in that trade or industry make petition to the Minister for designation under the Act. Apprenticeship in a designated trade begins for a young man when he and his employer jointly apply to the Branch for approval and registration of their proposed apprenticeship. Contracts are signed by all concerned. Providing a broad working experience and on-the-job training is the employer's responsibility. Technical school training is provided at public expense - costs being shared equally by the Provincial and Federal governments under the provisions of the Technical and Vocational Training Agreement and the Apprenticeship Agreement. Courses are offered mainly at the Northern Alberta Institute of Technology and the Southern Alberta Institute of Technology.
>
> Standards of training and competency are established and maintained by the Apprenticeship and Trade Certification Branch working in cooperation with management and labour in industry and with personnel of the technical schools. Provisions are made to award credit to those who approach apprenticeship with a background of technical education and of experience. The opportunity of education upgrading is provided for those who are selected by industry and who are unable to display the competency in basic educational skills

> considered essential for successful performance in a particular program. All who serve the working time, complete the technical school program and pass established examinations are awarded the Completion of Apprenticeship Certificate (Preface).

Under the Adult Occupational Training Act (April 1, 1967), the federal government agreed to pay training allowances to all apprentices who had been in the labour force for three or more years. An amendment to the Act now permits the payment of training allowances after one year in the labour force. Currently the training allowances are for a part of the apprentices provided via the Unemployment Insurance Commission.

Apprenticeship in Ontario

Similar legislative arrangements exist in the other provinces of Canada and need not be reviewed in detail except that mention should be made of a variation to the general scheme in the Province of Ontario.

The Ontario apprentice training system followed a suggestion proposed by the Canadian Manufacturer's Association called training blocks. Training blocks in a trade area are sufficiently common to be used as a training core for the area (Broad, 1972, p. 56).

Each block in the Ontario plan has a terminal objective and performance standard that the trainee must meet in order to receive accreditation for the block. Training blocks are assembled to suit a particular training need

(Dempsey, 1970, pp. 16-24).

A similar system exists in the Maritime provinces under the designation DACUM.

Apprenticeship in The Netherlands

The status and development of apprenticeship in The Netherlands required a detailed and in-depth search, since BEMETEL is "part-and-parcel" of the existing traditions, characteristics, and legislative regulations of the Dutch approach to trade training. The literature search, which included the Consulate-General of The Netherlands in Vancouver and the Embassy in Ottawa, produced a most useful pamphlet under the title VAKOPLEIDING and published by the Stichting Vakopleiding Bouwbedrijf (1972).

Gregoire (1972, p. 29) refers to "stichtingen" and translates the term as Institutes, stating that they supervised apprenticeships; being in fact the governing bodies made up of employers and labour. Gregoire further reports that the government has no power to influence the decisions made by these Institutes, but that the Dutch Federal Government does pay all net costs for apprenticeship programs. There is an Institute for each main branch of industry, but there are no rigid lists of recognized trades. Trade standards are flexible, so firms have considerable freedom in the training of their apprentices (Gregoire, 1972, pp. 30-45).

Considering that what Gregoire calls Institutes must

by (Dutch) law be non-profit organizations, a better translation of Stichting would be Foundation and the following translation, severely condensed provides nevertheless an overview of the approach the Dutch use regarding apprenticeship training.

Apprenticeship - Legislation

The apprenticeship scheme in The Netherlands was first regulated by law in 1919 (the Technical Education Act). The purpose of the Act was to encourage vocational training with Government support. It opened two ways of training as a skilled craftsman: the trade school and apprenticeship. Preference was given to the school. Since, in many places, there were no schools, however, the apprenticeship scheme acted as a substitute.

During the Depression in the 1930's, the apprenticeship scheme did not develop as desired. However, after 1945, it began to flourish as a result of industrialization and the attendant demand for skilled craftsmen. Both the number of participating firms and the number of apprentices grew. Another important point is that the apprenticeship scheme developed into a continuation of the work of elementary vocational schools and general schools. In 1968 the Technical Education Act was replaced by the Apprenticeship Act. The apprenticeship scheme in The Netherlands has a number of peculiar characteristics. These are:

1. Participation in the scheme is in principle entirely voluntary, both for firms and employees.

2. The apprenticeship scheme is open to all trades. So far the technical occupations have been by far in the majority, though there are also training schemes in the agricultural sector and (for girls) in the domestic occupations (family, home helps, domestic workers, mothers' helps, and hairdressers). Preparation is going ahead in schemes for office workers.

3. The formal basis of the training is an apprenticeship agreement, which has to be drawn up in writing. Like an employment contract, the apprenticeship agreement creates an employer-employee relationship.

An apprenticeship agreement may be concluded solely with a young person who is above compulsory school age and younger than 27 years. He must at the same time satisfy the entrance requirements included in the practical work programme.

Every apprenticeship agreement specifies a probationary period during which the agreement can be terminated at any time by either party. The probationary period may be anything up to three months, and is not additional to the training period, but part of it.

During their training apprentices receive the rate for the job according to the collective labour agreement in force. It is compulsory for apprentices to attend classes in vocational and general subjects, and if these are held in working hours they may be released on full pay.

4. There is a fixed programme of practical training. The programme for a particular trade is drawn up by the national organization concerned and confirmed by the Minister. The fixed programme applies to all firms offering that particular training. The programme must include the entrance requirements, the length of the training and the examination requirements at the end of the apprenticeship.

Provision is made for both elementary and advanced apprenticeship training and courses, though advanced courses are only available in certain trades and are open only to those who have completed the elementary course.

The length of elementary apprenticeship training is at least two years.

The length of an advanced training course must be at least one year.

5. In addition to practical training, apprentices are required to attend classes in general and vocational subjects at a school designated in the apprenticeship agreement (by mutual arrangement). These classes used to be held almost exclusively in the evenings, and there are trades in which this is still the case (about 30 percent of all apprentices). There are others in which apprentices attend some classes during the day and some in the evenings, or on day release for one day a week. General and vocational classes have no point unless the connection with the practical training is made clear to the apprentices. The view is gaining ground that the classes must function as an aid to the appren-

ticeship training, special attention being devoted to the personal and social development of the apprentice. Another important step forward has been the idea of concentrating these classes, which were formerly held in lower vocational schools, in separate establishments known as apprenticeship training schools, eight of which are now in operation. A plan for opening schools of this type all over the country is now in preparation.

6. The organizational bodies of the apprenticeship system are Foundations whose task is to foster the development and the proper functioning of the apprenticeship system. They must be non-profit-making.

There are national and regional bodies. The membership of the governing boards must be such as to represent employers and employees associations, parents and the schools.

There is only one national organization per trade category. A trade category is made up of trades which are clearly associated, irrespective of the industries in which they occur. The national organizations have the duty to draw up the practical training programme, to arrange examinations and to assist in the conclusion of apprenticeship agreements.

The regional bodies are responsible for an area comprising a province or a part thereof. They provide information and advice in their region, and maintain contact with parents, apprentices, schools, vocational guidance institutes and employment agencies.

The existence of national organizations for apprentice-

ship agreements per trade category and of regional organs for all apprenticeship agreements within their region is a structure that may be characterized as a system of common occurrence. The theory behind it is that the apprenticeship system has a social as well as a technical function. The national organizations are mainly responsible for the technical aspect, and the regional ones for the social aspect.

The governing bodies can call on the service of clerical staff and consultants, who are responsible for the supervision of compliance with the apprenticeship agreements and for the promotion of the apprenticeship system in general.

7. All trainees take an examination at the end of their apprenticeship. These are arranged by the national organizations and run by boards of examiners appointed by the Minister. Employers are obliged to give apprentices time off to take the examination.

The examination comprises both theory and practice. Successful candidates are awarded a certificate.

Trade Examinations in General

The key difference between a student and an apprentice can be said to lie in the location where each receives his schooling. For the former, this is nearly always in a formal classroom setting, for the latter it takes place on the job site.

Consequently, it follows that an apprentice, to show

his skills and abilities and his worth to his employer proves that he can, in the work-situation, perform the required tasks. Depending on how well an apprentice performs, a prediction can be made of his success in the trade and his usefulness to his employer.

Otis and Leukart write:

> Workers show their value to a company in their ability to perform jobs and their individual worth is reflected in other ways than production alone. Such factors as receptiveness of supervision, attendance, quality of work, ability to get along with others are examples (1956, p. 443).

The standard of performance that an apprentice should meet to indicate successful completion of his indenture should, according to Smith (1964, p. 60), be the objectives of the training program. Smith implies that these should be stated only in behavioral terms. Evaluation during the period of training to indicate a pattern of development is considered a complex matter. There is agreement that judgments on performance without fixed and stated objectives are inherently subjective.

Seashore and his industrial psychologist colleagues, doubt whether job performance measurements are indeed valid. They claim that the size and direction of the correlations of job performance variables were more variable than could be expected on the basis of measurement and sampling errors. They felt that job performance measurement had limited validity and would remain at a primitive and empirical level until some complex theory of job performance was created

(Seashore et al., 1962, pp. 215-217).

The International Labour Office is of the opinion that the apprentice is the most vulnerable partner in the indenture agreement and recommends that judgments of apprentice performance should receive close scrutiny (I.L.O., 1966, p. 105).

The literature is generally in agreement that supervisors and instructors of apprentices have to keep the trainee informed of his progress and provide him with the necessary advice and assistance, even if the bases for this are founded on judgments and opinions.

The argument in favour of using evaluation is that feedback of some form is a human requirement and the apprentice is in need of some indication from his supervisor regarding his performance. The higher the degree of frankness employed in outlining the expectations and the performances, the better the worker and the company learn to understand each other's interest and goals (Hutchinson, 1963, p. 61).

The request (or maybe better stated, the demand), by Smith that the performance standard (in trade training) be stated only in behavioral terms and preferably at the completion of the training period comes very close to the European apprenticeships. In general, in nearly all European systems the apprentices take only one examination set at the end of their period of apprenticeship by the authorities controlling apprentices. Intermediate examinations are sometimes arranged on a voluntary basis to assist in identif

ing deficiencies (International Labour Office, 1966, p. 113).

The two kinds of performance standards commonly employed are accuracy and speed, with the former generally receiving the greater emphasis.

Under accuracy, the first standard, two factors are to be considered, namely the percentage of answers that have to be correct, or on practical tests the percentage of dimensions to be correct and the second consideration, within what tolerances must these answers, or dimensions be.

The second standard, dealing with time constraints is simpler to determine, but the difficulty arises whether the penalty assessed for going over the time limit is to be given the same value as the reward for staying below the set time frame.

The writings of Robert F. Mager on developing instructional objectives have contributed to the setting of performance standards in behavioral terms.

Even with the assistance of the writings of Mager and Gronlund, there are still difficulties in determining to whom the trainee is to demonstrate the standard he has attained, especially in apprenticeship training. Is the demonstration designed to satisfy the instructor, the employer or the examination committee? Another point is, where does the acceptable balance appear between accuracy and quality, for instance in judging the soundness of a weld.

While the European scene favors the performance on the actual job site, Bemetel calling it the "preferred

situation", the (British) Industry Training Board, which is influenced by the Bemetel philosophy, states in their mimeographed pamphlet Practical Testing for the Trades Apprentice:

> When testing is carried out in training centres, productive work should normally be used.

The Canadian and Alberta approach tend in general to measure more the ability of the apprentice to prove his mastery of the knowledge involved in the task rather than proving the skill elements of this task.

John P. Foley has written very lucidly on performance testing, especially as it applies to military training. He says:

> From our public schools and universities, we have a long tradition of measurement, complete with techniques for making tests reliable, for making them discriminate well among students, for making them of equal difficulty, etc. So far as (Air Force) training is concerned, there is only one catch. We are usually not interested in how well a student answers questions on a test. What we really want to know is how well he can diagnose trouble in a radar set, fabricate sheet metal or repair a motor.
>
> We should, therefore, concentrate our efforts towards grading on practical performance or work sample. Tests that duplicate, as closely as possible, the performance that will be required of the student on the job (1963, pp. 2-5).

If it appears, as suggested by Foley, that on-the-job performance is the preferred approach not only to training but also to examination, why is there not a wider application of the philosophy? One reason is provided by Harris who writes:

> ...it appears that the reason that practical tests are not more widely used is that satisfactory practical tests have not been developed (1962, p. 28).

The other reason is that the scoring of practical work generally lacks a rating scale. Remmers and Gage remark that there is an uneasiness using "non-symbolic activities of educational endeavour" (1955, p. 153).

The two-fold scoring of practical work products, the required attribute or dimension measured is present or absent, is good or bad, lacks the refinement in evaluation the educational world is accustomed to. Scaling techniques for rating work products are being tested, but the reliability of the judges remains a weak link.

An important dimension that cannot be overlooked; and somewhat akin to the well known phrase that justice must not only be done, but also appear to be done; is the attitude of an individual towards taking tests. This was summarized by O.G. Brim with the statement:

> If a respondent believes that standardized tests of ability are accurate, or that his performance on such tests accurately reflects his real intelligence, he will be more likely to hold positive rather than negative attitudes towards taking these tests (Brim et al., 1969, p. 97).

To obtain objectivity in performance tests by stipulating the test conditions of time and accuracy to maintain a satisfactory standard of craftsmanship, great efforts have been expanded by the Bemetel Foundation in Holland.

Chapter 4 describes their approach and methods in detail.

It has to be recognized though, from the outset, that both training and examinations meeting the objectives set

for apprenticeship training are not obtained by chance, but are deliberately planned by those at various levels of responsibility, who are charged with the task of the preparation of skilled tradesman.

Trends and Attitudes

The International Labour Office has noted that the vitality of the European apprenticeship system is apparent in its willingness to change and to adapt to a new industrial world (International Labour Office, 1966, p. 183). Also noted is that apprenticeship training is in a period of rationalization. The period of apprenticeship is being examined as are training methods and examinations. Research projects are examining many facets of apprenticeship training, to offer solutions to the many pressing problems which have been identified (International Labour Office, 1966, pp. 179-197).

It appears then that apprenticeship has declined under practices that used apprenticeship training incorrectly.

Industrialization created partly in sequende and yet also simultaneously two entirely different, opposing aspects to the training of craftsman. On the one hand the division of labour broke down the old skills into many small parts. This division of labour so well described by Smith in the pin factory example (Smith, 1920, p. 6), was continued by Frederick "Speedy" Taylor and his Scientific Management.

The School of Scientific Management studied each manufacturing process and broke it down into smaller tasks which the worker had to follow, since it was the most efficient method to reach the production target.

This degrading of the skills of the crafts found strong worker opposition, but management also discovered disadvantages as more sophisticated technologies were applied to industrial processes. These new technological developments required not only that the worker was conversant with a broad spectrum of skills, but even more so that the tasks performed provided job satisfaction.

Eli Ginzberg of Columbia University in a lecture at the University of Toronto discussed these aspects with insight when he stated:

> The average worker is increasingly less willing to accept his working role without question (1969, p. 6).

and

> Management has to realize that job satisfaction is more potent than holding down just a job, and an employee will move on if the job is not in accordance with his skills and knowledge (1969, p. 6).

The points made by Ginzberg are supported by a theory of (workers) attitudes developed by Breer and Locke of the School of Industrial and Labour Relations at Cornell University. A number of laboratory experiments supported the theory (Breer and Locke, 1965, p. 256).

The research findings can be summarized by saying that:

> In working at a certain task, occupation or trade, an individual develops certain beliefs, values and preferences specific to the task itself (Breer and Locke, 1965, p. 10).

The implication of the study is that, especially in a mobile society, there will be a lack of symmetry between the attitudes brought to a work situation and the reinforcing properties of the situation itself (Breer and Locke, 1965, p. 20).

To make allowances as much as practical for individual differences, the educational technology of today has developed the individual progress plan. It is beyond the scope of this particular study to examine this facet in detail. It has to be pointed out that this key educational problem, (and it haunts this practitioner as much as any other dedicated educator), can be dealt with in apprenticeship, that is in an on-the-job situation more readily than in the off-the-job training situation.

With a sympathetic supervisor and the one-to-one relationship between apprentice and his on-the-job instructor, who might well be called his mentor, much is possible.

This aspect is given recognition in the on-the-job training of professionals when medical doctors intern mainly on a one-to-one basis, or when school teachers follow practice teaching.

The Bemetel System recognizes the need of:

> Either matching the trainees' motivation, intelligence and other characteristics with those of the trainer, or of structuring the course to "fit" the trainees' characteristics (Ridgeway, 1971, p. 175).

This approach of closely monitoring the on-the-job training needs of the apprentice carries with it an addi-

tional important advantage. The job requirements of the individual employers are monitored at the same time and these requirements, probably different, can be taken into account.

By making the employer responsible for the on-the-job phase of the training, Bemetel obtains and maintains through the monitoring a quality control function and assures that the traditional form of apprenticeship is, with adaptions, continued.

With apprenticeship likely to continue to be an important method of training and with the lack of previous studies of the other systems, there is an indication of a need for a study of this kind into the evolving trends, especially those recognized as successful adaptions.

Summary

The search of the literature brought together information on the subject of apprenticeship training from many sources, both continental and trans-continental. Discussions centered on points especially relevant to this study.

The necessity of objectives in educational and training endeavours, whether off-the-job or on-the-job, was shown to be a definite requirement. If examinations are to be meaningful, the use of measurable objectives appears to be necessary. The applicability of written examinations to measure ability on the job was found to be open to question-

ing by Foley and the Bemetel authorities.

A major segment of the search was devoted to the organization of apprenticeship programs. The European approach gives the employers responsibility for the on-the-job training of their workers. Via industry-wide organizations a support function is provided, which encompasses stimulation, advice, supervision, and evaluative control. This promotes industry participation and provides for adaptability to changes. The quality control function assures that required training standards are attained and maintained. In the training for manpower the traditional forms of apprenticeship can be adapted to modern times by this approach, which is in agreement with the thinking and the call for active rather than passive roles in modern educational philosophy. The information obtained by the search shows that knowledge and understanding and adaptation of evolving training trends could be beneficial to local apprenticeship programs.

CHAPTER 3

APPROACH TO THE STUDY

Introduction

The search of the literature does not provide evidence that a complete in-depth study of the Alberta apprenticeship system has ever been carried out. Neither have such studies been done on apprentice training schemes in other countries, but writings on the various specific topics which are part and parcel of a trade training system are numerous. Most deal with the economic benefits of on-the-job trade training methods, but several concentrate on the evolving trends in Europe. The system developed by Bemetel in The Netherlands is frequently mentioned, since its methods have been adopted in England, Sweden and Italy and the I.L.O. is adapting the Dutch methodology to training courses they are developing for Third World countries.

A decision was made by this author to try to obtain information on the Bemetel System.

It is probable that gains can be made from an examination of an apparently successful training scheme. Extensive personal knowledge of the apprentice system in Alberta was considered an asset as was the fact that this researcher's mother tongue is the Dutch language.

Many of the findings listed below are translations from original Bemetel and associated relevant or government literature in the Dutch language.

To start the study:

1. A letter was written to the Bemetel headquarters in The Hague, Holland (see Appendix).

2. Letters were written to the Provincial Departments charged with the administration of apprentice training in the ten provinces of Canada.

3. A letter was written to the International Labour Office in Geneva, Switzerland, requesting their manual titled European Apprenticeship.

4. A letter was written to the Engineering Industry Training Board in Watford, England, requesting information on the apprenticeship programs under their direction.

5. A letter was written to the Office of Economic Cooperation and Development in Paris, France, requesting their policy paper titled Manpower Policy in The Netherlands.

6. A letter was written to the Embassy of the Kingdom of The Netherlands in Ottawa, requesting information on apprenticeship training in that country.

7. Letters were directed to a number of craft unions in both the United States of America and Canada, requesting information on union activities in apprenticeship training.

8. At a later stage of the study, similar letters were directed to the Dutch Vakverbonden (unions) associated with Bemetel programs.

9. An organized study of available library material was made. This library research covered publications on apprenticeship, and associated programs as well as material on literature dealing with the design of research, especially interview instruments.

10. A personal visit was arranged to The Netherlands, which included meetings with the Director of Bemetel and visits to job sites as well as interviews with administrators and apprentices.

Categories

The interviews were divided into four discrete categories. The four categories of questions can be grouped under the following four headings:

1. The general requirements demanded from respectively employer and employee to participate in Bemetel and/or parallel organizations.

2. The control exercised by Bemetel over employer and apprentice.

3. The curriculum and the development of training methodology by Bemetel and their implementation.

4. The monitoring of the effectiveness of the training via the Examination Board.

Results of the Enquiries

Each of the above enquiries was successful in that useful material and (indirectly) ideas were obtained.

The information derived from these enquiries, especially from the Bemetel organization, is reported, as far as practical in this study. It is obvious that enquiries covering two continents generate a great number of sources and a wealth of general information.

Under the term of practicality a large amount of information has been excluded, to keep this study practical. The emphasis has been placed on two aspects of the Bemetel system only; these are the ones that vary most from the practices on this continent and consequently offer better chances of usefulness.

These two areas are:

1. The monitoring of the on-the-job training aspects.
2. The evaluation of training results.

The fact that these two areas offer aspects of applicability to implementation in apprenticeship programs based on a system-approach as proposed for Alberta by T.W. Broad (1972), was an additional reason.

The Visit

For the purpose of gathering the primary data for this research study, the researcher visited The Netherlands dur-

ing the summer of 1973 to interview the various participants. In addition to conducting the interviews, a quantity of printed information on apprentice programs as well as on the topic of vocational education was collected.

The financial expenses of the journey were for the greater part covered by a grant from the Civil Service Association of Alberta.

The researcher carried letters of introduction from Dr. J.E. Gallagher, Chairman of the Department of Technical and Vocational Education, University of Alberta, from Dr. Karel Puffer, P.Eng., Director of Research and Academic Development, Northern Alberta Institute of Technology, and from T. Wm. Broad, President of the Civil Service Association of Alberta.

A fortunate coincidence was the presence in The Hague of Dr. H.R. Ziel.

Dr. Ziel was a speaker at the Technological Assessment Congress, which met at the same time this researcher was conducting some of the interviews. Valuable guidance regarding interviewing techniques and vital not-to-be-missed questions were only a part of the support provided.

Design of the Interview Schedule

A library research was made of resource literature to assist in the design of the research instrument as well as in formulating the questions that were to be an integral

part of the instrument.

The interview schedule in its original form was written in English and placed in the hands of the Chairman of the Department of Industrial and Vocational Education for review and criticism. This procedure was followed to determine if the questions that had been formulated were easily understood; if each question was properly phrased to fully communicate its intent to an interviewee; and if the questions of the research instrument would have to be revised before being used in the major investigation.

From this review there were minor modifications made to a number of the questions on the interview schedule.

Because the instrument was to be used with Dutch speaking participants, it was translated by the researcher into Dutch. To verify the accuracy of the translated version of the research instrument, it was given to the official translator of the Dutch Consulate General for back-translation. It was indicated that the translation was accurate. The English version of the research instrument can be found in Appendix A.

The reactions of participants to questions on the research instrument were tape-recorded, and handwritten notes also were made during each interview. The recordings that were made during the interviews were later subjected to analysis for pertinent comments related to the study. The handwritten notes also were analyzed to identify supporting comments made by the participants to questions they

responded to on the research instrument. The more significant comments that were made by the participants are included in Chapter 4.

During the on-site visits to The Netherlands to interview the people that made up the population for this study, the following cities were included: The Hague, Amsterdam, Rotterdam, Utrecht, Tilburg, and Mierlo.

Following a brief introduction to the participants, the researcher explained the objectives of the study and its purpose, and the role that the participants would have in the study. A copy of the research instrument was placed in the hands of the participant, who was then asked to read it over carefully. When the participant indicated that he had read the instrument and was ready to respond to the questions, permission was asked for the researcher to use the tape-recorder to record the responses made by the participant. This permission was readily granted in all instances.

Summary

In this chapter the procedure that was used to collect the data for this research was presented in detail.

A visit to The Netherlands was made to gather specific detailed information on the Bemetel organization. An accompanying benefit was the collection of a substantial quantity of books, pamphlets and articles on the Bemetel methodology and associated apprenticeship programs.

To supplement the bibliographical information, interviews were held in several cities with key Bemetel staff and consultants. These interviews were conducted with the aid of an interview schedule, which had been specifically prepared for the research. A tape-recorder was used as an additional aid.

The interviews were divided into four discrete categories. The four categories of questions can be grouped under the following four headings:

1. The general requirements demanded from respectively employer and employee to participate in Bemetel and/or parallel organizations.

2. The control exercised by Bemetel over employer and apprentice.

3. The curriculum and the development of training methodology by Bemetel and their implementation.

4. The monitoring of the effectiveness of the training via the Examination Board.

In the following chapter a description of the place Bemetel occupies in the Dutch trade training scheme will be presented.

CHAPTER 4

THE BEMETEL SYSTEM

Introduction

In Chapter 3 the investigative method was discussed; the results of the enquiry are now presented.

To understand the relative position of the role and activities of the Bemetel Foundation, this chapter first provides the reader with an overview of the organization of technical education in The Netherlands.

Bemetel is but one part of the total organization, if albeit one of the larger parts encompassing both the met-al and the el-ectrical industries. The other major Foundations are the SME-OMA Foundation, charged with the training for medium and small enterprises in the maintenance mechanic, refrigerating, and agricultural implement field. The VAM Foundation for the Trade Training for the Motorcar, Motorcycle and Related Business and the VEV Foundation for the promotion of training in the electronics industries, primarily radio, T.V. and telecommunications. There are 32 nati nal organizations (Foundations) in total.

After the introduction to technical education in general, the Bemetel Foundation and its history and the reasons why it is such a major component are presented. Fin-

ally, the role of the Consultant and the Bemetel approach to Examinations is discussed.

Technical Training in General

In The Netherlands, technical (vocational) training is given both in schools and on the job-sites. It generally starts as early as age 12 or 13, at "ambachts scholen", (elementary technical schools).

The elementary technical school, generally a three-year, sometimes a four-year program, immediately followed by practical training in the workshop, falls under the category of elementary vocational training. Secondary vocational training includes what is termed a secondary technical school, usually giving a two-year course that is immediately followed by a practical year. (This course will probably be extended in the near future and become a four-year course of which one year will be devoted to practical work.) At this school the students are given training fitting them for first-line supervisory posts. Higher vocational training is given by the technical colleges, which produce technicians. The course takes four years, the third one of which is a practical year. The technician is the man who will be employed later as the head of a department, manager or in some comparable capacity. In a great many cases the graduate from a technical college is of the calibre that factory managers are made of. Finally, after the tech-

nical college come the institutes of technology, which produce scientific engineers.

In this set-up, elementary and secondary technical education may be regarded as the training of youths with a bent for practical work, whereas higher technical education and vocational technical education at university level provide training for the theorists and scientists. Although the kind of previous general education enjoyed is generally decisive for admission to a specific branch of education, the educational system is such that it is possible for a talented student to transfer from a lower form of education to a higher form. Although this will always be an exception, the "very talented" invariably constituting a very small percentage of the total population, cases do occur where the pupil goes from the primary school to an elementary technical school, passes through all the various types of school and finally graduates as an engineer from an institute of technology.

Vocational training in The Netherlands is given both at school and in the workshop. In general, the pupil who has just left the primary school is given general basic technical training at a school, which is followed by specialized trade-training in the workshop. During this practical training he also receives, partly at a day school, supplementary theoretical training.

For example, the training of carpenters and of machinists. The elementary technical school, immediately follow-

ing the primary school, generally gives a three-year course (it may be four years in some subjects). The first year takes the form of an "orientation year" in which the pupils receive partly post-primary education, partly preparatory technical education. At least two-thirds of the time is devoted to general education, but for the rest of the time the pupils are introduced to metal working, wood working, etc. During this year it is determined whether the pupil really has a technical bent, and if so, in what direction.

In the first class, then, pupils are both selected and oriented. If the pupil shows an ability for wood working, he proceeds to the general wood working class in the second year. (The pupil with a bent for metal working goes on to the general metal working class.) The curriculum in this class is half technical and half general. The technical part, however, also remains general. At the end of the second year it is decided which branch of the trade the pupil has chosen will suit him best. The wood worker, for instance, can decide whether he wants to be a carpenter or a joiner; the metal worker can decide whether he wants to become a bench-hand or a motor mechanic. Having left this school, the pupil may be employed by a firm under an apprenticeship agreement. The bench-hand, for example, may become an apprentice engine-turner in an engineering supply company; the carpenter may be apprenticed to a building contractor. To ensure proper training, the employer and the father of the minor apprentice conclude an apprentice agree-

ment under which the first party undertakes to train the apprentice properly, and the second party promises, on behalf of himself and his son that the latter will undergo the training. Such an apprenticeship agreement, which contains a number of obligations binding on both parties as well as other provisions concerning the training, is concluded with an industrial organization. That organization sees to it that the apprentice agreement is observed faithfully by both parties and by the apprentice.

Before entering into greater detail it has to be pointed out that the practical training given as a specialized follow-up of the program at the elementary technical school is regulated by a separate Act, the Apprenticeship Act. Although this training is regarded as a form of post-primary education, it merits separate legislation on account of its specific character. In the case of regular education, the school is the focal point, but with this type of practical training it is the firm that plays the role and, during this training, the apprentice has already begun his working life in society. Although training in the enterprise is rightly regulated by the Apprenticeship Act, the Act cannot be regarded as entirely divorced from the general Post-Primary Education Act, since the apprentice, while receiving practical training from the firm, also receives supplementary theoretical instruction at a day school. The apprentice may attend school in the evening (four evenings per week) or during the day for one day per week. Day-

school tuition in the firm's time is becoming increasingly popular since it is easier to organize and more easily absorbed.

Technical Training in the Workplace

Particularly since the War, technical training in the workplace has expanded enormously in The Netherlands. This form of training was launched diffidently in the late 1930's with about 2,000 apprentices, but has now come to occupy an important position in the Dutch educational system (in 1968, about 30,000 firms were training about 70,000 apprentices). This development is not regarded in the Dutch literature as anything out of the ordinary, for the following reasons:

1. The organization, which sees that the apprenticeship agreement is observed, is an organization constituted by industry itself, consisting of representatives of both employers and employees. The supervision of training is thus regarded by the industry as something they have willed and created themselves.

2. The organization receives a generous government subsidy but is not dominated by the Government in any way.

3. The Government's concern with vocational training differs from its concern with ordinary education. Vocational training has an important socio-economic background. Consequently, it should be firmly geared to the need and requirements of socio-economic life and adjust itself con-

tinuously not only to social developments in general, but also, and more particularly, to technical progress. It is, therefore, better for the Government to delegate this form of training to society rather than direct it itself.

4. The organization that sees to the observance of the apprenticeship agreement has not only a supervisory role but acts also in a stimulating advisory and organizational capacity. It drafts programmes, produces teaching aids and examines candidates, all in close consultation with experts from industry.

5. Every branch of industry has its own vocational training organization (as referred to under 4). The directives formulated by the organizations do not apply to any one firm, but to all the firms in that branch of industry. Its examinations are consequently recognized in the entire branch of industry.

6. The apprentice is not only a trainee, but also an employee. The apprentice is therefore engaged under a contract. This also means that the apprentice receives normal wages during training.

7. The training programmes are not syllabi in the true sense of the word. They state only the requirements which the apprentice must satisfy at the end of his training period. In other words, the goal is fixed, but the path leading to it is not.

8. Point 7 above means that the trainee may receive his instruction while engaged in and by means of the produc-

tion process. Productive work is permitted (it is indeed encouraged both for the firm's economy and to maintain the interest of the apprentice) provided it is also instructive.

9. Training is entirely on a voluntary basis. No employer is compelled to train an employee and no employee is compelled to undergo training.

10. The training organization exercises its supervision through a group of technical consultants. Each consultant has his own district with regular rounds, to the industrial workshops. These consultants, who are employed by the training organization of the industrial branch concerned, constitute a regular form of liaison between the training organization and industry. Consequently, directives are not allowed to become outdated, because the training organization is able to keep closely in touch with developments in the branch of industry concerned.

There are, of course, other reasons for the fairly rapid growth of the apprenticeship system. The general explanation is that The Netherlands was, at the end of the War, a very damaged and impoverished country. She had lost her colonial empire; the service trades, and the transit trade in particular, were paralyzed; the hard guilder had lost its value. Given the continuous increase in population, it was evident that the solution of the Dutch socio-economic problem had to be sought for the most part in the field of industrialization. This, combined with the economic growth of the European communities and almost breathtaking

technical progress, could not but place vocational training at the centre of interest.

The important position which vocational training began to assume meant that careful thought had to be given to its possibilities and limitations. It was found that the elementary technical school was not in a position to turn out fully-skilled craftsmen: the various trades and industrial skills are much too varied and specialized for that. Consequently, the school can provide no more than a general technical schooling, which must be followed by specialized training. Moreover, pedagogic-didactic standards are changing. The transfer of knowledge from teacher to pupil is no longer simply a case of the latter passively absorbing what the teacher reads out to him. The pupil must himself be active. Activity, however, presupposes interest in the subject. Particularly in the case of vocational training, this means that the subject should hold the pupil's interest and should be taught in a manner suited to the pupil's level of development. These considerations prompted a revision of education, emphasis being placed on the idea that what is new today may be antiquated tomorrow. The problem of the continuous adaptation of education has received full consideration these last 20 years, particularly in the field of vocational training.

On the other hand, the Dutch writers concede that it is quite impossible to anticipate technical progress. It is known that a few years hence the situation will be differ-

ent, but there is no knowing how it will differ. Consequently, it is impossible to train a pupil for a post which he may be required to fill in a number of years' time. The more reason, then, to give the pupil the widest possible technical background and such general education as will best enable him to adjust to the future situation.

Elementary technical schools should therefore provide a general background, but the training in the enterprise that immediately follows should be specialized and intensive. This is a further reason for the rise of systematic training in the enterprise. The flexible handling of general training requirements and the close observation of technical progress and new industrial methods have enabled the Dutch system to meet the demands of modern industry in general as well as those of the individual.

Training in the enterprise is, in fact, nothing new. Training under a master was, even in the very earliest days, the only way in which a young man could learn a trade. More than 4,000 years ago the famous Code of Hammurabi contained detailed provisions concerning the rights and obligations stemming from the master-apprentice relationship; from the time of the Roman Empire, about 2,000 years ago, we still have the complete text of an apprentice agreement concluded between a weaver and the father of a weaver-apprentice, stating the exact fines payable by the master or the father if they did not honour their obligations under the training agreement. The detailed training instructions formulated

by the Guilds in Western Europe in the 17th and 18th centuries are widely known. It is interesting to note that during the industrial developments of the 19th century, there was no room for trade training in the workshops and that this first industrial revolution gave the impulse to the establishment of independent technical schools. In the second industrial revolution which we have been experiencing since the War, on the other hand, training in the workshop has become increasingly commonplace.

Statutory Regulations

As already stated, trade training under the apprenticeship system is statutorily regulated and ranks equally with other forms of education in the Dutch educational system. This means that the Government subsidizes this form of education also. The Government (through the Minister of Education) subsidizes independent organizations set up by the industry, in which organizations of both employers and employees are represented. These organizations (in future referred to as "training organizations") use the subsidy to pay for their administration, to pay the salaries, the travelling and hotel expenses of the technical consultants they employ, and to pay for the organization of examinations, etc. Although the Government makes certain stipulations as to how the subsidy shall be spent, the Ministry of Education gives the training organizations

a free hand in determining their training policies. The training must meet certain standards as set by the Government. They are, however, general standards and there is regular and fruitful consultation between the training organization and the vocational education inspectors. However, under the supervision of the Ministry's inspectors, the training organization is free to formulate its policy in accordance with the demands made by industry. This is possible because the training organization gears its policy to the entire field covered by a particular branch of industry, which means that a trainee's usefulness will never be restricted to the particular enterprise in which he received his training.

Trade Requirements

The training organization, in consultation with experts from the branch of industry concerned, determines the requirements for every skilled trade belonging to that branch. The apprentice instructor can then train his apprentice in accordance with those requirements. As already stated, he is free to decide how his pupil shall proceed towards his goal. The instructor is assisted and advised by the training organization, which provides him with examples of workpieces for practice and arranges for regular personal visits by the technical consultant.

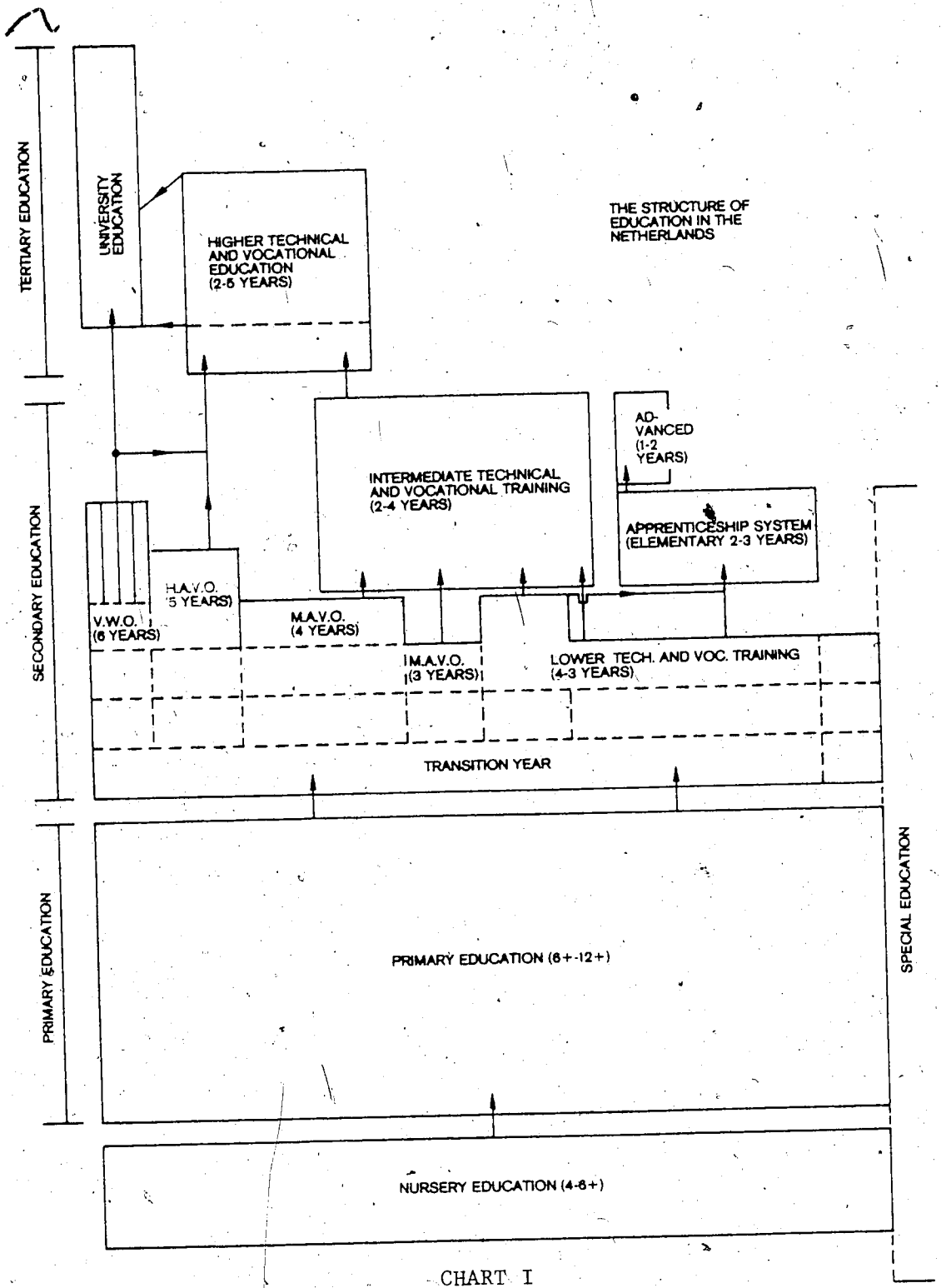

CHART I

THE STRUCTURE OF EDUCATION IN THE NETHERLANDS

Record Book

The apprentice is obliged to keep a record book from which the consultant may see what the apprentice has done since the previous visit and assess his progress.

Length of Training

The length of training depends on the trade. Two years are usually needed if the apprentice has had previous training at a technical school, and at least three years without such training.

Practice and Theory

Training in the enterprise is, in essence, practical training whereby the apprentice learns to use his hands. But practical knowledge without theoretical knowledge has little value. The modern craftsman is expected to know not only how to do a thing, but also why it should be done that way.

Therefore, under the apprenticeship agreement, the apprentice is obliged to follow complementary theoretical lessons.

General and Theoretical Vocational Training

The apprentice receives this complementary training at school, either in the evening or for one whole day a week. As already stated, training on one day in the week is preferred. At the school the apprentice is given general

education and technical-theoretical training relevant to his trade.

Examinations

At the end of his training, the apprentice has to take an examination. It is essentially a practical examination for which he has to make a workpiece. The kind of workpiece he must make is selected by a voting procedure of the examining board composed of experts from the industry and teachers appointed by the Minister of Education and Sciences from a short list submitted by the training organization. The examining board judges the examination result and advises the training organization on whether or not it should award a diploma.

The candidate is often examined also on the theory.

Diploma

Since the training requirements proposed by the training organization are approved by the Minister and since the members of the examining board are regarded as Government supervisors having been appointed by Ministerial Decree, the diploma is a legally recognized professional diploma. As the standards of both the training and the examination have been laid down nationally for the entire branch of industry, the diploma is fully recognized throughout the industry.

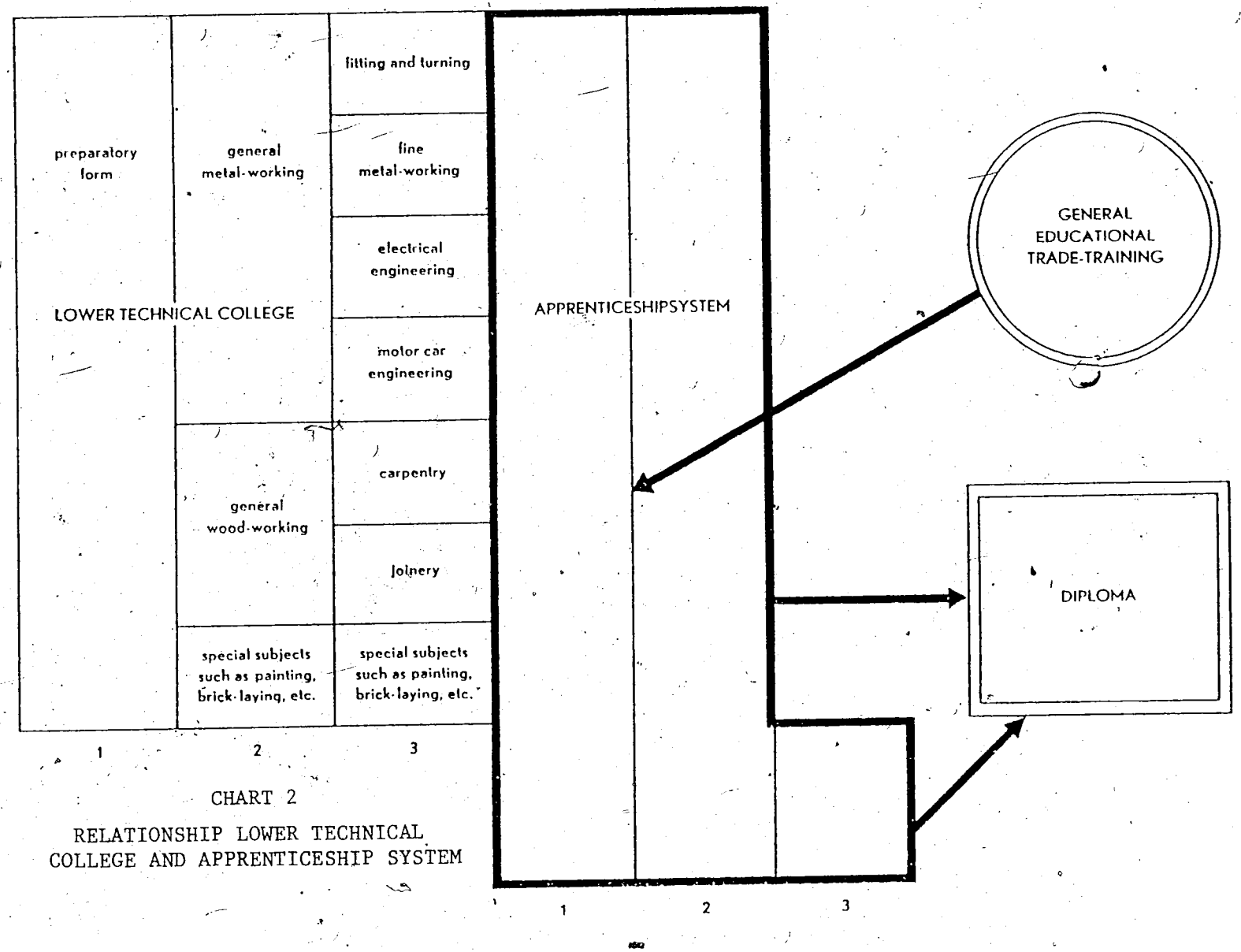

CHART 2

RELATIONSHIP LOWER TECHNICAL COLLEGE AND APPRENTICESHIP SYSTEM

Labour Relationship

There is not only an apprentice relationship between the apprentice and his master, but also a labour relationship. The provisions of the apprentice agreement and the labour agreement must never be in conflict. The fact that there is also a labour agreement has the advantage that the apprentice receives wages. This encourages the apprentice to accept training. A young employee is less likely to be exploited, since his training is under constant control.

Cost of Training

The Government subsidizes the training organization. The subsidy does not always cover all the expenses incurred by the training organization. Any expenditure that is not covered by the subsidy must be borne by the industry itself.

In The Netherlands any enterprise providing training facilities receives an allowance towards the cost of training from the training organization. The training organization in turn is entitled to enter such allowances in the estimates which it presents to the Government as an item qualifying for subsidy. Consequently, the Minister has laid down a fixed amount per apprentice per annum for that allowance, plus a premium for each examination passed. The allowance is only a fraction of what the training costs the industry although no figures are available. In many cases, the allowances are repayed, either wholly or in part, to the training organization to defray any extra expenses it

may have. The refund is an insignificant loss fo the firm, but to the training organization the total of such refunds represents an important source of income.

What it actually costs an enterprise to train an apprentice is impossible to ascertain. Under the Dutch system, the apprentice is an ordinary wage-earner and he is even productively engaged if such is compatible with his training. So the expense of the apprentice to the firm is partly recouped by the firm through the apprentice's work. Although the cost of training is much higher than the immediate benefit, the long-term advantages to the firm of a well-trained craftsman will more than compensate the initial loss.

An important point is, whether professional training is too expensive, and can only be a matter for the larger concerns. Within fixed general lines, however, the Dutch system is flexible. Since strict chronological training programmes do not have to be followed the training can be adapted to suit the character of the individual enterprise. One firm, for instance, will arrange for its training to be given in a separate schoolhouse: another firm will have it given in a partitioned corner of the workshop, and in a third firm the young man will receive his training in the workshop itself. In fact, a separate workshop for trai ing is not even regarded as preferable. The aim of training not exclusively to teach the apprentice to use the tools of his craft, but in the first place to prepare him for his eventual function as a craftsman. The Dutch are of the

opinion that the closer one comes to reproducing a normal working atmosphere, the better the results of the training will be. In this way, industrial training constitutes a flexible link between school and employment. It is obvious - and Bemetel claims that the experience in The Netherlands has confirmed this repeatedly - that any firm, however small it may be, is capable of training a young man to become a fully skilled craftsman.

Training under the apprenticeship system may be given by all types of firms. In The Netherlands this method of professional training is used in about 30 different branches. It is, however, beyond the scope of this paper to discuss the entire list of existing training facilities. Although the basic principle underlying all these training courses is the same, the way in which they are carried out varies from one to the next. The training of an apprentice butcher in a butcher's shop will obviously differ in character from that of an apprentice welder in a shipyard; the training of a skilled operator in the chemical industry must subject to other standards than the training of an apprentice seamstress in a ready-made-clothing factory. All these training courses are nevertheless based on the same principle. The young workers receive wages and are productive during their training period. The instructional content of the work is guaranteed by the system of regular information and control.

The Dutch authorities feel that training of this kind

may be given anywhere and by anybody, provided the employer has the right attitude: he should not only be able to provide training, but he should also have a positive wish to do so. If he has that mentality he will no doubt see his way to adapting the interests of his own business to the interests of the trainee - and vice versa.

The Bemetel Foundation

Introduction

It is essential that the activities of the Bemetel Foundation be pictured against the background of the conditions prevalent in The Netherlands at the end of the Second World War. The traditional association with the Dutch East Indies was radically altered and subsequently completely severed. Jobs had to be found for demobilized soldiers and additionally for the thousands of people returning from Indonesia, concentration camps and prison camps. The position was further complicated by a rapid natural population increase in an already densely populated country.

The only solution was to industrialize.

Today, The Netherlands has not only made good the War damage that it suffered, but has established an expanding industrial economy. There is, in some European countries, such as Germany and Switzerland, an uninterrupted tradition of apprenticeship dating from the Middle Ages. Systematic apprentice training had its golden days in the

times of the guilds but, in many countries, apprenticeship in this form was broken up in the 18th century when the activities of the guilds stopped, owing to the influence of the French revolution. This fact has had its advantages as well as its disadvantages. In the countries where the tradition was unbroken, apprenticeship is a normal thing, whereas in other countries the management of companies had to be convinced that the training of young people in their own workshop is part of their responsibility and is in the interest of the apprentices as well as in that of the company. On the other hand, those countries where apprentice training as a well organized system had vanished, could start from the beginning with a new system designed to meet the new situation.

Since the Second World War in particular, one can speak about a revival of systematic apprentice training. In many countries the economic and social circumstances have changed fundamentally. In The Netherlands, for instance, it proved necessary to industrialize a country which before the War could mainly be considered as agricultural. Not only had the economic and technical situation to be changed, but Dutch youth had to be convinced of the importance of technical occupations. One of the advantages in The Netherlands was the extremely close cooperation between employers' organizations and trade unions. This was built up secretly during the War, when the occupation authorities prohibited the activities of the trade unions, and the

employers dissolved their own organization from a sense of solidarity.

Post Second World War System

Directly after the War, the so-called Foundation of Labour, secretly prepared during the occupation, came into the open.

It was the executive section of this organization, which was specifically responsible for the social aspects of economic life in The Netherlands, which decided in 1945 that each branch of industry ought to have its own organization for the promotion, development and application of apprentice training. During the period 1945 to 1961 central training organizations of this kind have been developed in practically all branches of industry, e.g., printing, engineering, textiles, the chemical industry, the building trades and others. These training organizations cooperate in a central training association. It is a characteristic feature of these organizations that employers and trade unions are represented on their boards. Because of this bipartite representation the common interests of employers and workers are expressed and in The Netherlands we can say that there is no essential difference of opinion in the matter of training and apprenticeship between the two groups.

As early as 1938 the general employers' organizations in the metal and electrotechnical industry had taken the initiative to create an association for vocational training.

This association was transformed in 1945 according to the new plans; its new name was - by abbreviation - Bemetel. To avoid all misunderstanding it must be mentioned that the Dutch expression "metaal- en electrotechnische industrie" includes engineering, electrical engineering, shipbuilding, steel manufacture, foundries, the aircraft and motor car industry.

Financial Assistance

Another characteristic feature of the situation in The Netherlands is that the Ministry of Education and Sciences is empowered by a new Law on Apprentice Training passed by Parliament in 1967, to delegate the direct control of apprenticeship to industry's own organizations and substantial financial help is given to the training organizations set up in each branch of industry as well as to the companies where apprentices are trained.

The Ministry pays the operating costs of the central training organizations insofar as they occupy themselves with apprentice training in the strict sense of the word. This includes, for example, salaries and travelling expenses of Bemetel's training officers and staff and the costs of examinations, but excludes all special courses, the design of teaching media, etc.

The same law empowers the Ministry to pay to each firm 60 guilders per annum for each apprentice.

These subsidies to the individual firms are paid by

the Ministry of Education and Sciences via Bemetel. Although Bemetel is responsible to the Ministry of Education and Sciences for the way in which this finanical help is used, it must be emphasized that the Ministry is not represented on its board. During the interviews it became apparent that the cooperation between Bemetel and the representatives of the government can be said to be most effective and cordial.

The general attitude in The Netherlands is that it is efficient [illegible] government subsidies in central organizations [illegible] branch of industry which can give expert advice [illegible] technical help to their affiliated member-companies.

Indentures

The legal basis for apprenticeship is a written contract between the employer and the apprentice or his legal representative.

In the Dutch metal and electrotechnical industry the contracts (indentures) are countersigned by Bemetel. By countersigning the indentures Bemetel accepts the responsibility to see that both parties keep to the regulations of the contract.

The first task of Bemetel is to set up standard trade requirements for each trade for which apprentices are trained. Experts from industry at various levels (craftsmen, foremen, engineers) give advice to Bemetel on all

details of these trade requirements.

All companies taking part in the training of apprentices have to bring their apprentices to that standard, regardless of the firm's size or position. It must be emphasized that these trade requirements are not to be considered as "programmes" because the Dutch attitude to this question is that the training of apprentices has to be adapted to the particular situation in each industry. It is recommended that as much production work as possible should be introduced on condition that this work fits into the firm's individual training scheme and brings the apprentice to the level stated in the trade requirements.

A few years after the end of the Second World War Bemetel decided also to accept as members other firms and institutions, not belonging to the metal and electrotechnical industry, as long as they employ skilled metal workers, e.g., for maintenance and repair, and as long as they are able and willing to train apprentices.

Therefore textile companies, oil companies, clothing manufacturers, paper mills and also the Royal Navy, the Army, the Air Force, K.L.M., The Netherlands Railways, university and hospital laboratories, and many others are among Bemetel's members.

Duration of Apprenticeship

The duration of an apprenticeship varies according to the previous education and the "difficulty" of the trade

chosen by the apprentices.

In the metal and electrotechnical industry the training of an apprentice-turner takes two years if he has followed a junior technical school course, three years if he has not. The training of a toolmaker takes three years for apprentices from junior technical schools and four years for others. According to law all apprentices have to attend technical schools, either in the evening or one day per week. The part-time system is growing rapidly. The wages during this day are normally paid by the employer.

At the evening as well as at the part-time schools the curriculum includes technical and theoretical subjects as well as general education. Normally all practical training is done in and by the company.

Relationship Between Industry and Technical Schools

Bemetel was able to play a role in bridging the gap between the Dutch technical schools and industry. The following paragraph summarizes a not-unknown scenario and the Bemetel interviewee's opinions of what they are striving for.

Technical school teachers, who sometimes think that they have a monopoly as pedagogues, must be convinced that industry too has its own training experts. On the other hand industry must be convinced that it is not true that these teachers are nothing but "out-of-date school masters". It is of great importance that emphasis is laid on both the

training of technical school teachers and instructors in industry.

Teaching Media

Bemetel's experience has indicated that another task is to design and make available various teaching media.

The most important ones are complete manuals for various trades. In 1964 these manuals consisting of a series of drawings of workpieces indicating work methods, operational sequence, solutions of difficulties and marking sheets, were available for fitting, turning, sheetmetal and fabrication work, welding and grinding.

In producing these manuals, which consist of approximately 36 exercises each, gradually increasing in difficulty and complexity, it has been the intention of Bemetel to create a methodical system of training.

With the aid of experts in the specific field, a correct method of producing the workpieces is given.

The important details in the various stages of manufacture are outlined and, wherever necessary, illustrated. The operational sequence given is not the only method of manufacturing the workpiece and therefore the manuals are to be considered as suggestions for the instructor, not as a compulsory course.

It is recommended that the apprentice makes test pieces regularly during the training period. This can be a production item as produced by his company, requiring a

similar standard of skill to that of the corresponding Bemetel test piece. It need not necessarily be one of the workpieces from the manual.

It is important that, first of all, an operational sequence or order of work is made by the apprentice which, after checking by his instructor to ensure that he understands the correct method of working, will serve as a directive in manufacturing the workpiece.

In order to allow for an evaluation of the completed workpiece, each exercise of the manual is provided with a marking sheet.

Three of these manuals, on bench-fitting, turning and universal grinding have been translated into English. Bemetel cooperates with a publishing firm in the production of text books for technical schools. These books deal with engineering, shipbuilding and many other subjects.

A recent activity is the design and production of transparencies for the overhead projector. Series on measuring, micrometer reading, developing and turning (the latter in cooperation with the Royal Dutch Navy) have been produced.

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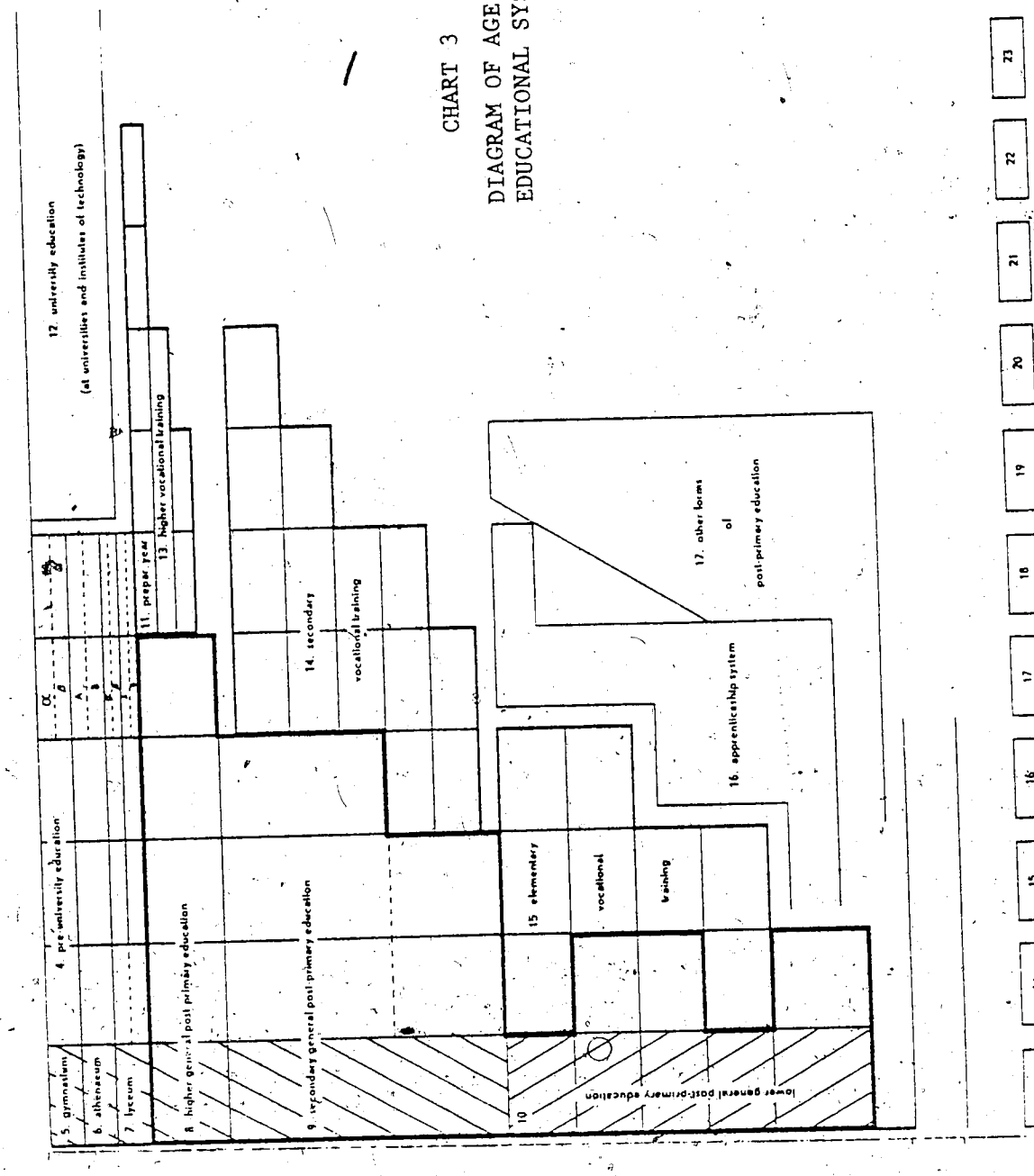
* A new and very interesting undertaking is the "apprentice-village". Under the guidance of several Foundations in close cooperation with the participating companies and trade unions, apprentices, pretty well by themselves, create and build rehabilitation cum holdiay resorts. These villages or camp-style resorts are located in sanatorium-like, quiet, clean-air, lake or forest areas. They are used by members of the participating groups for recuperative or therapeutic sojourns. Typical uses are immediate pre- or post-natal care for both mother and infant, extended day care for children when parent(s) are hospitalized or as a locale where injured workers can recuperate or be rehabilitated.

CHART 3

DIAGRAM OF AGE AND EDUCATIONAL SYSTEM



The Consultants or Training Officers

Bemetel employs 55 full-time technical training officers. It is their task to see that companies comply with the standard trade requirements, to collect experience and to advise and assist in the maintenance of correct training standards.

One of the main advantages of this system is that Bemetel, through the medium of its training officers, can coordinate the interchange of training experience, practices, concepts and ideas among its member companies.

It is important that these training officers are considered by industry as experts, employed by its own organization and not as government officials exercising a controlling function. Bemetel training officers are all specialized in a trade or group of trades. There are three chief training officers, seven group training officers for general engineering with 20 training officers, one group training officer for shipbuilding with 12 training officers, one group training officer for fine mechanical trades with six training officers and one group training officer with three training officers for foundry trades and specialized training officers for the training of gold and silversmiths, for measuring and regulation technique and for "orthopedic instrument-making".

Another extremely important task of the training officers is assisting individual firms to set up and main-

tain training programmes according to the individual requirements of that particular company.

It must be clearly understood that under Bemetel it is not the training organization but the particular enterprise that provides the training. It is the employee (respective instructor) assigned by the firm to teach the apprentice who gives the training: the consultant from the training organization observes how he does it, in other words the consultant provides the quality control.

In many other countries excellent courses are organized to train trade instructors for their job. Bemetel also provides such courses, but they are still in the experimental stage. This is mainly due to the fact that there does not seem to be such an evident need for on-the-job instructors in The Netherlands, where the consultant is able to rectify any shortcomings the instructor or the journeyman acting as instructor may have.

The consultant is generally a technician of secondary technical level, with several years' industrial experience He is often qualified as a technical teacher and holds a teaching certificate. He forms a link between the train ng organization and the individual firm, and through his colleagues between the various firms. He has a stimulating, organizing, advisory and supervisory task as outlined in detail below.

Coordination

The control exercised by the constultant is the key to the proper functioning of the Dutch system.

Since such a position is unknown in Alberta a more detailed description is necessary to understand his work. The functions of the consultant are summarized from the job description and show that a classification of the tasks is possible under nine general headings.

1. Information and Stimulation. Informs and stimulates the appropriate persons, organizations, and factories as regards the ~~apprenti~~ceship scheme. Sets out what is understood by trade training under the apprenticeship system and more especially publicizes the aims and methods of the Training Organizations.

2. Organization. Where sufficient interest is shown, arranges the drawing up of contracts, talks with the employers or their representatives, with local committees, regional committees, labour exchanges (e.g., about the number of available pupils and their placement), technical schools (e.g., about general and vocational instruction), local employers and workers organizations etc.

3. Administration. It is clear in 1 and 2, but especially in the drawing up and signing of contracts, that administration is an essential part of the consultant's job.

4. Instruction. The consultant will certainly have to teach the instructors the best training methods. Concerns do arise as to whether the consultant does not also

have a responsibility as regards the instruction of the pupils themselves.

5. Collection of Data. One of the most important aims of the Training Organizations is to ensure that the training in each branch of industrial activity progresses as smoothly as possible. It is clear, then, that experience gained in practice must be made available as far as possible to the whole branch. The consultant, who daily visits factories in the organizations, is naturally the man to collect all relevant data and to pass them on to his training organization.

6. Advice. In order to make such data on trade-training as widely known as possible, the consultant will pass on this information after its approval by his training organization to the other factories in his area.

7. Supervision. Supervision is not the only important part of a consultant's job, but it must receive its due share of attention. The consultant must satisfy himself that the conditions of the contract are being adhered to. Moreover, it is the task of the training organization to see that the grants are being used in a proper manner. The training organization entrusts this work to the consultant.

8. Planning. The consultant is becoming more and more involved in drawing up lists of teaching aids required, planning courses and setting examination papers

9. Examinations. The preparation of examinations is an integral part of the work of the training organizations,

a large part of which is the consultant's responsibility.

Given the many activities of the consultant and the many different branches of industry and trade concerned, it is obviously very difficult to give a picture which is applicable to all organizations active in this field. The extent, for example, to which the consultants are connected with administration, instruction and examinations may vary from one training organization to another. It is, however, true to say that the consultant is concerned in varying degrees with the nine above-mentioned points.

Two of the above points - namely the instruction side of the consultant's work and the specialization of consultants in special trades - are very important.

Instructing

As stated, it is the consultant's task to instruct, where necessary, the apprentice-instructors in the correct teaching methods.

Recently the question has also arisen in several training organizations whether the job of instruction can be extended to include individual and group instruction of the apprentices.

In attempting to answer this question it must be borne in mind that the direct training of the apprentices is undoubtedly the primary task of the factories, and this means that the latter are expected to see that their apprentice-instructors are, and remain, capable of performing this work,

with the help, where necessary, of the training organization.

It sometimes happens, that the training programme demands that the apprentice becomes proficient in certain skills for the practice of which the factories have no facilities. In such cases the consultant can take over this work - although, in fact, it is the responsibility of the factories concerned - especially where this part of the practical training cannot be made part of the general and occupational training given at the technical schools. In some cases it may also happen that the instructor falls short of the standards required. In such cases, when it is impossible or not yet possible to remedy this deficiency on the part of the instructor, the consultant may find it necessary to take over the instruction of the apprentices himself. If this is the case, it must be done only after consultation with the factory and the instructor, and in such a manner that the prestige of the latter is not prejudiced. Moreover, the apprentice-instructor should be involved as far as possible in the instruction so that he can assume responsibility for it as soon as possible.

Finally, it is known that in certain groups of factories, technical development is very rapid, and every effort must be made to introduce these developments during the course of training. Here, too, the consultant can offer a helping hand, needless to say, only under the same conditions as mentioned in the last paragraph.

In connection with the above it should be noted that,

especially in the case of trade training for which the technical schools have no expert instructor, the school authorities may approach the training organization with the request that a consultant give several lessons per week. There is no objection to this happening in special cases.

Specialization

In the training organizations for branches of trade and industry involving several different crafts, it is impossible for every consultant to have the detailed knowledge needed to exercise proper supervision over all the training under the jurisdiction of the organization. In such cases, it is necessary that specialist consultants be available. It is not necessary that complete control always be put in the hands of the specialist consultant. When the craft or crafts for which a specialist consultant is required are not very different from the "normal" trades, then the work can be carried out by the "normal" consultant, with the specialist consultant carrying out checks at regular intervals.

It sometimes happens that the craft or crafts belong to a certain branch of industry or trade but differ to such an extent from "normal" crafts that supervision must be undertaken by a specialist.

This question will arise only in certain branches. It must be borne in mind, however, that in certain cases only the specialist consultant will have the necessary know-

ledge to see that the training is carried out properly and to judge whether the training is of the standard required.

Consultants' Functions

In the following section a list of consultant functions are given.

1. Information and Stimulation.
2. Organization.
3. Administration.
4. Instruction.
5. Collection of Data.
6. Advice.
7. Supervision.
8. Planning.
9. Examinations.

For every function dealt with there are a number of necessary contacts and activities required of the consultants.

The contacts are listed in the left hand column, the required activities are listed in the right hand column.

Description	Activities
1. Information and Stimulation	
Contact with:	
- own training organization - employers and workers organizations - labour exchanges - local career guidance offices - parents and schools	- individual talks - group discussions - correspondence - lectures

Description	Activities
2. Organization	
Contact with:	
- local employers and workers - organizations - labour exchanges - heads and teachers of technical schools - apprentice-instructors - local committees	- individual talks - group discussions - correspondence - conduct discussions - draft and edit proposals - draw up programmes - act as secretary at discussions and on examination committees
3. Administration	
Contact with:	
- own training organization - technical schools - works and factories - local organizations - parents	- correspondence - preparation of contracts - organization of examinations - systematic processing of information - draw up reports
4. Instruction	
Contact with:	
a. apprentices	a. in connection with apprentices: 1. individual instruction 2. specialized instruction to groups 3. assess work done and conscientiousness
b. apprentice-instructors	b. in connection with instructors: 1. individual discussion with apprentice-instructors 2. group discussions with apprentice-instructors 3. draw up reports 4. organize and lead excursions