UNIONIZATION OF PROFESSIONAL ENGINEERS

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UNIVERSITY OF BRITISH COLUMBIA

JUNE 29, 1973
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Department of Commerce and Business Administration

The University of British Columbia
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Date July 9, 1973
This thesis studies the possibilities for greater development of unions for professional engineers in Canada. The analysis of the paper serves the purpose of supporting or reflecting the initial belief that more widespread participation in union activities is likely for engineers. The method of investigation is to analyze all relevant factors through use of published material, unpublished material, interviews and conference data.

The general conclusion is that greater involvement in union activities are likely. Throughout the paper it is clear that factors which inhibit union formation are becoming less prevalent in Canada while the need for engineering unions is growing. A new type of "professional union" is then discussed with original contributions in the areas of union functions, procedural details, union structure and the company side of unionization.
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ACKNOWLEDGEMENTS

I would like to offer my sincere thanks to Dr. G. Walter for his invaluable time and effort. The cooperation of the B. C. Association of Professional Engineers is also much appreciated.
CHAPTER ONE
INTRODUCTION

This paper is a systems analysis of the possibilities of widespread unionization of Canadian professional engineers. The thesis of the paper is that Canadian professional engineers shall organize to a wider extent in the future for the purpose of collective bargaining. A thorough analysis of the environmental factors, parties of interest, interaction processes and results produces the conclusion that development of engineering unions is probable in Canada. The Craig-Dunlop model of the Canadian industrial relations system provides an excellent basis for detailed analysis because the relationships of the factors studied are more easily understood through use of this model. Figure One is the Craig-Dunlop model which also served as a basis for the task force study into Canadian industrial relations.
A schematic presentation of the Canadian industrial relations system

Environmental Factors
- Ecological System
- Economic System
- Political System
- Social & Cultural System
- Constitutional Systems
- Legal System

Parties of Interest
- Enterprises
- Employee Organizations
- "Dependent-Contractor" Organizations
- Employer Organizations
- Legal Counsel & Consultants
- Government
- The Public Interest

Interaction Processes
- The Labour Market
- Personnel Administration
- Collective Bargaining
- Labour Standards Legislation
- Terms and Conditions of Work

Results
- Work Stoppages and/or

Basic flow of influence

Reverse flow of influence

FIGURE ONE

The chapters are arranged to enhance discussion in a systems manner and by referring back to the Dunlop Model it is possible to discover which elements are environmental factors, parties of interest, interaction processes, or results. Conclusions of the paper should provide additional information to the body of the paper because a final chapter must predict the effects of the findings. If professional engineers do form unions on a wider scale then some aspects of these unions may well be different from blue-collar unions such as the form and procedures of professional collective bargaining units.

A. Justification

Rationale for studying unionization of Canadian
professional engineers is based on growing numbers and increasing influence of engineers and their professional colleagues. Walton (1961) justifies a study of this nature with the following logic, "The size and growth of the engineering technical segment of the work force gives the student of industrial relations sufficient reason for studying the experiences of collective bargaining among these employees. Even greater significance may be attached to a study of the engineering group when one considers it as a part of the white-collar area (professional and technical workers, managers, officials and proprietors, clerical and sales workers) since that area now exceeds in number the blue-collar area."  

Strauss (1963) further states, "Under a system of large-scale commercial and industrial organizations all those who occupy important positions will gradually come within professional associations or at least under their influence."  

These arguments for research into unionization of professional engineers are appropriate in Canada at the present time. Increasing acceptance of collective bargaining by the engineering facet of the white-collar sector may reflect upon trends for other professionals as well as changing attitudes on behalf of society as a whole. Engineers and professional colleagues are unique however in that they are increasing in numbers and influence more quickly than other work groups, as evidence in later
chapters clearly illustrates. Engineering unions constitute the main focus of this paper but applications to other professionals and society in general are noted in the discussion.

B. Goal

One goal of this paper is to indicate future possibilities for unionization by studying various factors and their degrees of influence on professional engineers. Probable future outcomes for engineering unionism must be calculated after exposure to opinions and facts from both sides of the argument. Conclusions of the paper also set a further goal which is to present a detailed treatment of how an engineering union would function and what issues it would likely be concerned with. Methods of reaching this end include a review of the literature which is addressed to collective bargaining in many periodicals, and books combined with unwritten sources, such as interviews and conferences, to formulate conclusions with the greatest amount of input possible. United States experience and literature is valuable because some conditions, similar to those existing in Canada today existed for engineers in the U.S. many years ago, and the engineers of the two countries are of an apparently similar nature. The plan of the paper is intended to aid in accomplishing a thorough treatment of the subject by organizing material in a logical manner for analysis.
C. Plan of the Paper

The layout of the paper is planned to enhance discussion of the probability of widespread unionization of Canadian professional engineers. Topics include past developments, the current situation, attitudes of engineers, and finally predictions and suggestions for the future. Relevant labour statutes, the nature of engineers, behavioural influences, as well as factors favouring and opposing organization for collective bargaining are all discussed in detail. Chapters have been arranged so that earlier segments of the study build a foundation for deeper analysis in later chapters. A brief overview of the entire paper is included as part of the introduction to illustrate all factors which oppose change, or enhance unionization possibilities. There is no discussion of relative merits of arguments at this point because the specific aim of the section is to introduce all the relevant factors which are within the realm of this study.

Chapter Two deals with engineers' work roles along with the nature of professional engineers. This building chapter offers a good reference point to start understanding values and needs of engineers as well as the complexity of the term "engineer." George Strauss offers a model which illustrates work roles of engineers to help the reader understand engineers' duties in organizations. Movements in engineering work roles may stress different components
of engineering skills and each alteration of the work role has different potential effects on union possibilities. Strauss' model is useful throughout the paper to illustrate how such factors as bureaucracy or professional treatment affect organization of engineers.

Needs, values and characteristics of professional engineers are also introduced at a very early stage to provide insight into engineers' behaviour. While these needs and values are dealt with in detail in the social chapter, they must be considered at an earlier time because they influence engineers' attitudes at all times. Teachers are also discussed in chapter two because they are the closest comparison group to engineers in terms of past experience and present status, therefore they constitute a valuable reference group for later discussion.

Organizing and organization of engineers is the subject of the next section. Reasons for union growth in general, including economic, political, industrial relations, and sociological factors are presented. After a macro-view of union growth has been fully explained, the focus moves to reasons for white-collar union growth. Bain contributes to issues such as trade union aspects, recognition by employers, public policy and aspects of the work situation to introduce discussion on white-collar unionism. Following reasons for union growth, actual growth figures concerning the total labour force, white-collar workers, professionals,
and engineers are presented. These figures illustrate the great potential white-collar area which is available for organization if the previously mentioned forces for union development are favourable.

Activities, goals and influence of professional associations are essential factors in the development of engineering unions. Past practices and activities of engineers' associations are presented in conjunction with specific type of associations in Canada. If widespread organization for collective bargaining were to occur, the role of associations may alter drastically and so might their importance. This is especially true if separate bodies are formed for the purpose of collective bargaining.

Specific reasons for growth and viability of engineers' unions merit a separate chapter. This chapter delves with great detail into the arguments which favour unionization of engineers. Salaries, the labour market, the trade union movement, attitudes toward unionism, and professional treatment are a few elements which have positive implications for collective bargaining. Sources and impact of forces which encourage union formation are expanded upon in this section to analyze how great the effects shall be on engineers' behaviour.

Labour law has played a major role concerning unionization of professional engineers in Canada. Labour statutes serve
as a vehicle to illustrate the dogmatic stands of most engineering associations in the past to reject collective bargaining. Until very recently there were very few provinces where engineers were allowed to bargain legally but due to changes it is now possible for engineers in Saskatchewan, Manitoba, Ontario, New Brunswick, and Quebec (as well as federal civil servants) to form certified bargaining units. Development and use of informal bargaining is the only strategy available in other provinces, therefore labour statutes effectively prevent a nation-wide movement towards unionization. Federal labour law of 1947-48 served as a model for provincial labour acts and the history of this law is traced in the chapter. Of course, Labour Relations Boards are also important influences on any unionization attempt because of their role in interpreting the law and the use of past practice to help determine which units will be legally certified. Thus the boards also will be discussed in Chapter Five.

Chapter Six explores a wide range of social issues concerning unionization. Specific needs and values of engineers aid in determining targets which unions must satisfy. The basic value system of engineers' is critical to organization because unionization can only be successful if these values and needs are given top priority. Conversion of predispositions into action is relevant for union
organizers as well as company recruiters. Environmental factors and specific elements in engineers' backgrounds may affect the attitudes and future behaviour of professional engineers toward collective bargaining. Influence of group size is an appropriate issue for engineers because of the shift in their employment to large organizations. The implications of group size are therefore also presented in this section.

Pressures which inhibit union formation are included in Chapter Seven for analysis in detail. Factors inhibiting union formation include the traditional philosophy of engineers, the professional viewpoint, management links, fear of uniformity, and management practice. The actual degree to which inhibiting forces reduce the probability of union formation is central to this paper and the discussion aims at estimating this factor in Canada at the present.

The final chapter includes conclusions on unionization probabilities, organizing strategies, issues for union organizers, management aspects of unionization, and future prospects. Issues such as salaries, seniority, fringe benefits, communication and autonomy are discussed in detail. Much of the conclusion is devoted to greater satisfaction for engineers with or without unions and in some instances both employer and employee may achieve greater satisfaction simultaneously. The outlook for the future is a result of detailed analysis of the body of the paper as well as
extrapolation by the author.

D. A. General Overview

At this point it is valuable to give the reader a
general feel for the area concerning professional engineers.
The purpose of this section is not to discuss probability
of unionization but rather to illustrate the great number
of forces which might ultimately affect the behaviour of
engineers. A general overview of the situation helps erect
a foundation on which the rest of the paper can be built.
Detailed analysis in following chapters draws from topics
presented here but first one can see just how various
elements relate to unionization.

The table presented in this section is an illustration
of forces, NOT their magnitude nor future influence. In
studying engineers it is easiest to begin with the present
situation as follows:

**OVERALL FORCES ACTING ON ENGINEERS**

<table>
<thead>
<tr>
<th>Forces which are conductive to union formation</th>
<th>Forces which inhibit union formation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. B.C., Ontario, and Quebec situations.</td>
<td>1. Association philosophy.</td>
</tr>
<tr>
<td>2. Growth of bureaucracy.</td>
<td>2. Incompatibility.</td>
</tr>
<tr>
<td>5. Labour market.</td>
<td>5. Militancy.</td>
</tr>
<tr>
<td>6. Mobility.</td>
<td>6. Identification with management.</td>
</tr>
<tr>
<td>7. New society attitudes.</td>
<td>7. Upward mobility.</td>
</tr>
<tr>
<td>12. Federal civil servants.</td>
<td></td>
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</tbody>
</table>

TABLE ONE
Forces presented in this diagram were discovered through evidence and viewpoints of many sources which will appear throughout the essay. This starting point is useful for review and relating the specific subjects as they arise in the body of the paper. The points are arranged in roughly the same order as they are discussed in the paper so that Table One may be used as a reference for review of which factors have been presented. The division of factors is meant solely for simplicity and it is noted that most of the elements in Table One may be either conducive or inhibitory to union formation depending on the specific situation. (ie. personal treatment may be unacceptable in some companies and excellent in others.)
CHAPTER TWO
PROFESSIONAL ENGINEERS IN THE
CANADIAN INDUSTRIAL RELATIONS SYSTEM

Chapter two establishes a foundation for following sections by introducing important fundamental information in regard to engineers. The Strauss Model illustrates work roles of engineers and this diagram is very useful in explaining how different influences such as bureaucracy and traditional beliefs of engineers alter union possibilities. The effects of developments such as poor labour markets, unprofessional treatment, new attitudes in society, and engineers codes of behaviour may all be illustrated in terms of the Strauss Model, so it is a valuable tool for analysis. Introduction of the Strauss Model also helps reveal the unique nature of engineers in terms of the complexity of work roles and demands.

Engineers' needs and values are additional basic elements which influence attitudes towards unionization and their propensity to unionize. Presentation of the nature of engineers is critical to any analysis of engineers' future actions, therefore a general outline is presented in the systems chapter but further refinement appears in the social aspects section. At this early point in the paper, facets of teachers' situation are also introduced because teachers are the most comparable
reference group for engineers. All of the information in this chapter is critical in later sections because of its fundamental nature which affects the amount of influence held by forces in engineers' environments.

A. The Strauss Model

George Strauss (1963) offers a typology of work roles within which the engineers' unique work role is easily and fruitfully discussed. Through comparison of such dimensions as craftsmanship, control, training, and responsibility, Strauss derives a model which represents work roles of engineers. These role relationships are illustrated in Figure Two below:

THE STRAUSS MODEL OF WORK ROLES

It would be erroneous however, to consider an "engineer" to be a pure work category in itself. Engineers participate in work roles which demand skills of workers and managers as well as professional capabilities. Each engineering position requires a different mix of skills and the Strauss Model illustrates the competing role demands which are placed on engineers. Examples of manager segments of the engineer's work role include high personal responsibility, a desire to get ahead, control over subordinates and confidential status. (Strauss, 1963). All of these traits are necessary to manage effectively in any organization. Worker facets of the engineer role are evidenced by desires for greater security, taking orders from a boss, distinct job duties, and the pursuance of overtime pay and increased fringe benefits. (Strauss, 1963). Finally, the professional or role facet for engineers includes self-direction, high ideals in the sciences, identification with the group, and a desire for interaction with colleagues. Different engineering jobs require different combinations of skills with the result that engineers must alter their work roles as projects change over time. It is imperative that engineers possess a flexible outlook as well as a broad set of skills if task requirements are to be filled effectively. Problems arise if engineers have difficulty in changing orientation such as shifting from a scientific role to a managerial role.
A. 1. Unions and the Strauss Model

Attempts of engineers to gain recognition as full professionals in spite of the worker and manager aspects of their role requirements is an important issue in this paper. Evidence is presented in the law section, the social section, and in the pressures against union formation section to support the outstanding importance of full professional status to engineers.

The Strauss Model can be roughly divided to coincide with unionized and non-unionized workers in the rest of the workplace. This split in the diagram separates workers who are more likely to unionize from those who are not. This is important for engineers because many engineers are in jobs which are appropriate for unionization and the diagram is useful later to see shifts toward or away from the union section.

A DIAGRAM SHOWING THE MOST LIKELY AREAS FOR UNIONIZED VS. NON-UNIONIZED WORKERS IN THE STRAUSS MODEL

EXECUTIVES

LESS LIKELY TO BE UNIONIZED

MORE LIKELY TO UNIONIZE

SCIENTISTS AND PROFESSIONALS

WORKERS

FIGURE THREE
This is not a division which represents unionized versus non-unionized workers, rather it indicates which work roles are most likely to enhance the chances of collective bargaining. The diagram in Figure Three presents the engineering enigma because engineering role requirements are distributed throughout the whole space and many engineers no doubt face role requirements in the area which is more likely to be organized for collective bargaining. This paper shall study the engineers' situation to discover where engineers are concentrated on the diagram at present as well as analyzing future shifts in concentration. If a large portion of engineers are moving towards the unionized section then it is critical to discover behavioural implications of such a shift. This diagram is of further value in illustrating effects of forces which push and pull engineers into and away from situations which are appropriate for unionization.

B. Dilemma of Professionals

Engineers have exerted continuous attempts to have the term "professional engineer" reflect a pure professional status. Full documentation of these efforts are presented throughout the paper with particular emphasis in the law, social, and pressures against unionization chapters. Herein arises a dilemma. The term "professional engineer" includes self-employed engineers, paid engineers hired in a professional capacity, and paid engineers hired in a non-professional
capacity. (Goldenberg, 1968). Professional engineers fulfill jobs which fall anywhere between blue-collar positions to managerial roles and the non-professional work roles are becoming more dominant in Canada. Carr-Saunders and Wilson (1933) describe the breadth of engineering tasks: "There are innumerable small graduations in skill, knowledge and experience from the lowest levels to the leaders of the profession."3 Strauss (1963) also states, "It would be a great mistake to think of engineers as a homongeneous class."4

The term "professional engineer" may wrongly imply a great variety of skills or job content in light of this evidence. The result of this situation can be shown in the Strauss Model in the following manner in Figure Four:

DISPERSION OF ENGINEERS WORK ROLES

![DISPERSION OF ENGINEERS WORK ROLES Diagram]

FIGURE FOUR
Thus upon reflection, the general desire for full "professional" status may well be inappropriate for large portions of the engineering labour force. A great number of engineers experience work situations which most likely would be unionized if any other worker held that job. Rejection of collective bargaining is not an appropriate response if unacceptable aspects at the work place could be improved by a union. If a shift in concentration pushes more engineering positions towards the unionizable sector of the diagram (as shown in Figure Five), then many engineers and some provincial governments may have to alter their stances on unionization.

For example:

**GREATER STRESS ON WORKER ROLE**

![Diagram](image)

**FIGURE FIVE**

There is evidence to show that pressures are forcing engineers into work roles which enhance the probability of unionization on a wider scale in Canada and this evidence
is presented later in the paper. A goal of this paper is to analyze the strength and permanence of this shift in addition to the forces which cause it. Probability of engineering unionization in Canada will be based on the degree of concentration of engineers in roles which they perceive as unprofessional and unacceptable, and continuing movements toward emphasis on worker roles in the organization enhance this probability greatly.

C. Nature of a Professional

The term "professional" stands for a specific set of characteristics and values. Strauss (1963) aids in defining professional with a simple yet comprehensive set of requirements:

(1) Expertise - specialized knowledge and skills.

(2) Autonomy.

(3) Commitment to a calling - identification with members of the profession not the company, cosmopolitan orientation rather than local (see social chapter.)

(4) A feeling of responsibility to society to maintain performance standards or work-including a code of ethics and a code of discipline.5

A group of professionals must possess all of these characteristics to be truly classed in the professional category. All four aspects of the definition should be remembered throughout the analysis to conclude if engineers are really professionals, or what portion of engineers really demonstrate these traits. It is critical
to determine if engineers are professionals faced by non-professional work roles or if very few of these workers have true claims to professional status.

The nature of a professional is indicative of his desired role in the industrial relations system. This is important because engineers strive for specific needs and values and also because the final goal of the movement to professionalize engineers is to ultimately have all engineers exhibit these traits. Many engineers exhibit general characteristics that are thought to be "typical" of most professionals and these would illustrate members of the professional category in the Strauss Model.

C. (1) Needs and Values

Prandy (1965) and Strauss (1963) present certain needs which characterize professionals. Engineers' needs include autonomy, completion, challenge, professional skill, learning, and professional recognition. (Strauss, 1963). Needs exhibited by most professionals are higher order ones in terms of the Maslow hierarchy because they lead to self-actualization, therefore these needs differ from typical blue-collar needs of security and interpersonal relationships so that professionals can be segregated from blue-collar workers in terms of needs. A major problem associated with a group such as engineers involves placement of workers who have professional needs into blue-collar jobs where changes to self-actualize are non-existent.
Professionals also possess a unique system of values which distinguishes them from other workers. Specific values such as freedom, dedication to work, and individualism are characteristic of professionals who place high importance on scientific ideals. Profession values generally tend to separate engineers from blue-collar workers and management because of their idealistic nature. Specific values of professionals are presented in detail in "Social Aspects" in Chapter Five.

D. An Overview of the Roles, Needs and Values of Professionals

Professionals possess roles, needs and values which are completely separate from management or worker traits in these areas. White-collar segments of the work force fill a role between that of a manager and a worker and white-collar workers to add breadth to the work system. Prior to the emergence of white-collar workers the work force was polarized with management at one extreme and workers at the opposite end. (Strauss, 1963). Whereas work situations formerly consisted of those who gave orders and those who took them, professionals have filled a gap in work roles, values and needs.

The influence of white-collar workers in the Canadian industrial relations system and numbers of white-collar workers have grown greatly over the past few decades. Goldenberg (1968) states, "White-collar
workers in Canada are the fastest growing work sector, as this segment grew from 15.2% in 1901 to 38.6% in the 1961 worker total. Professionals are a sub-group of white-collar workers who in turn grew much more quickly than the white-collar average. With rapid growth of white-collar workers it is evident that such attention must be paid to needs and values which are important to white-collar employees on the job. Bureaucracy opposes virtually all values and needs mentioned yet it is becoming more dominant as a method of administration as large organizations become more evident. (Bain, 1970).

D. Teachers

Teachers constitute an occupation group which has some meaningful comparability to engineers. They have similar training and job market situations as well as many professional needs and values like those of engineers. Experiences of teachers in unionization could prove to be important to engineers because of these similarities.

E. (1) Teacher Similarities

Teachers exhibit many specific similarities to engineers as seen by Nault (1969). These similarities include:

(1) Teachers formerly faced economic injustice with traditionally lower levels of pay than other professions (any many trades as well.) Unionization has changed this problem through collective action however and raised the salaries to an average of $7,124 in 1970 from $1,965 in
1950. Much of this raise is due to a more military stance at the collective bargaining table, as Section E (II) illustrates. Engineers are not really as poorly paid as the teachers were but they do have salary problems including relatively lower salaries in comparison to self-employed engineers as well as peaking of salaries at an early stage in the work life. (Goldenberg, 1968).

(2) Teachers subscribe to bosses and they often experience rigid community control over their personal lives. (Nault, 1969). This situation contradicts needs of autonomy and challenge which are similar values to engineers. "One can parallel the percentage of engineers who now work for organization (95%) to teachers who include 99% paid employees."7

(3) Nault states that teachers are upward mobile like engineers, because teachers look to such areas as department heads and principals as well as appointed positions on school boards. Teachers also face fewer opportunities for advancement today much like engineers in large organizations.

(4) Teachers are expected to join associations immediately upon entry into the job market as do most engineers. These associations are provincial such as engineers associations and many activities are similar except for collective bargaining.
(5) Moonlighting occurs in both occupations with outside interests such as papers pursued by both. Engineers consult to gain more money whereas teachers tutor pupils to supplement their income.

(6) Teachers face increased bureaucratization and larger work organization which present similar problems to those of engineers. (Nault, 1969).

(7) Teachers face archaic personnel practices in many schools. For example unilateralism, and concentration of decision-making power are common practices in teaching and these practices are becoming more prevalent in engineering as bureaucratization increases. Nault also presents sovereignty, patronizing and paternalism as teacher problems at the work place which make unionization more attractive.

(8) There is a fear of power erosion in schools. Administrators expect a loss of power where collective bargaining exists and the threat of militancy occurs. This means less co-operation may occur between teachers and their bosses with the result that teachers may identify less with upper levels of the profession. Anxiety over loss of power may be too great because collective bargaining has not altered power bases for management and teachers to any huge degree.

(9) Teaching is going through the process of professionalization as is engineering. Teachers are
making progress in gaining professional recognition in spite of the use of collective bargaining. (Nault, 1969). This is an extremely important parallel because of the impact of professional status on professional engineers' behaviour toward unionization.

(10) Teachers are also a very heterogeneous group in knowledge, skills and job content. They teach different subjects at different levels and may have ended up as teachers as a result of many different paths through the university curriculum. Similarly engineers constitute a heterogeneous group and they may take various different courses to attain engineering skills.

(11) "Age distributions of engineers and teachers also show great similarity which could effect unionization."

AGE DISTRIBUTION OF ENGINEERS AND TEACHERS

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Engineers</th>
<th>Teachers</th>
</tr>
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<tbody>
<tr>
<td>Total</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>-24</td>
<td>7.42</td>
<td>4.75</td>
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<tr>
<td>25-29</td>
<td>17.28</td>
<td>12.96</td>
</tr>
<tr>
<td>30-34</td>
<td>34.28</td>
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<td>35-44</td>
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</tr>
<tr>
<td>55-64</td>
<td>1.75</td>
<td>3.42</td>
</tr>
</tbody>
</table>

TABLE TWO

E. (II) Teacher Militancy and Professional Militancy In General

Acceptance of collective bargaining by teachers reflects some general trends in Canadian industrial relations. Social protest has come to a new perspective and Canadian society now sees a new etiquette of social protest according to Goldenberg (1968) and Nault (1969). Civil disobedience through exercise of group power is now
accepted by society as appropriate action in unjust situations, whereas previously this general approval was not present. A new climate has evolved in labour relations to support collective action and the federal government has played a leading role in allowing all workers, even white-collar employers, to join for the purpose of collective bargaining. Workers are gradually gaining an image of competency and valuable donators which was not present in past times. Workers are also increasingly seen as people with rights in the work organization rather than subordinates who take orders eight hours a day without questioning anything. Even the "most" professional workers have been influenced by this trend, so have teachers. Evidence for professional involvement includes a strike by doctors in Saskatchewan in 1963, a strike by policemen in Quebec in 1970, and a strike by postal workers in Canada in 1968.

Democratic trends of the last decade also affect general acceptance of militancy by workers. Employees now demand the right to participate in decisions which influence them or else they take strong action. Workers' dignity and human treatment of employees are much in focus in the newspaper and everyday news as these are issues which lead to collective action.

E. (III) Teachers Pattern

Development of teacher unions has resulted from these
general influences as well as the specifics of their situation. A pattern which led to teacher action took a form which is similar to the steps that engineers have followed so far in their development.

At first, teachers formed associations with similar goals to present engineering associations. Status of the profession and communication with colleagues were typical activities of teacher groups and these associations also exhibit similar segmentation to engineers with federal groups and provincial boundaries. In 1930 a change in goals came about in teacher associations. The economic position of teachers and their position in the schools was given more emphasis as the associations took a more "union-like" stance. Result of the shift in emphasis was bargaining over economic issues and attempts to obtain higher pay raises than before. Since adoption of the new stance teachers have become more militant and closer to trade-unions in some respects.

Result of the change can be seen today as Nault (1969) shows objectives of teacher associations today:

1. Improvement of teachers' salaries and working conditions.
2. Establishment of a code of ethics and a system of discipline.
3. Acquisition of a more influential position in the provincial education power structure.
Alberta and New Brunswick are the only two provinces where teachers can legally strike. Other teachers are forced to use pressure tactics such as mass resignations, publicity, and study sessions instead of the total militancy involved in a strike. A good example of the use of publicity is the campaign of the British Columbia Teachers Federation against the Social Credit government in August, 1972. Teachers across Canada will continue to use collective bargaining as a pressure against management to upgrade their position because implementation of blue-collar tactics to face management is a reflection on the situation which is forcing the teacher more and more into a blue-collar work situation.

SUMMARY

This chapter has shown the complex requirements and job skills which are part of the engineers' role in organizations. Engineers frequently do not perform work normally associated with a pure professional, rather they are required to perform worker and manager functions as well. The Strauss Model illustrates roles of engineers in the system with relation to other workers and this model can be used to show how pressures and influences affect engineers in relation to unionization. The dilemma of the engineer is burgeoning. While striving for full professional status, engineers find themselves being
pushed more and more into a blue-collar role. Needs and values of engineers were touched on to point out differences between engineers and other workers.

Teachers are a good comparison group for engineers because they have many similar characteristics and their past experiences have paralleled engineering experience, except for the notable area of collective bargaining. Teachers will be used as a reference group throughout the paper to verify issues or show how engineering unionism could develop. Teachers are generally thought to be at a similar professional status to engineers or slightly ahead of engineers but they have accepted collective bargaining in spite of professional values which oppose it.
CHAPTER THREE

NATURE OF ORGANIZATION AND ORGANIZING

A. Reasons for General Union Growth

Certain factors help explain movements in numbers of unionized workers in Canada. Blum (1968) breaks down the factors which influence union organization into four general areas, including economic, sociological, political, and industrial relations factors. Within each topic there are specific facets which effect union membership and these elements will be discussed in detail for all four areas. It must be realized that movements in union membership cannot be fully explained by these factors but hopefully some indication of trends can be derived. The value of beginning with general union growth is that it gives a macro perspective from which to commence before the focus centres on details of the engineering sector.

(1) Economic Factors

Blum (1968) offers economic factors such as the business cycle to explain union growth. The state of business is a key area which dictates if conditions are appropriate for organization. During boom times, consumers, employers, and employees are all relatively satisfied because demand and profits are high while unemployment is minimal. Companies can afford significant pay raises and job security is not an issue for most workers, therefore
union formation is not required to enhance monetary needs nor to protect job security. Poor business conditions have opposite consequences since profits and job security diminish as the business cycle falls. Under stressful conditions which are experienced in poor business times a union is more likely to form and grow as a means to combat the severe tension of rising unemployment (see the social chapter.)

Prices are frequently used to explain union movements in the same way as business cycles, however the relationship between prices and union impetus is not so clear as effects of business conditions. A price change may originate from many sources which means that results of new prices are uncertain. For example, a rise in prices may bring higher profits, more employment, and increased wages but the same raise may also lead to lower profits and a smaller share of the market. Price movements may result in a variety of responses from the market and uncertainty of pricing strategy is fairly high. For instance, lower prices may attract a larger market share, greater profit and increased job security, but a cut in price may also be an attempt to minimize losses. Prices often do not bring the desired results because expectations based on price movements are vague at best unless the firm enjoys a monopoly position in market. Other factors such as marketing strategies combined with price changes further complicates
the area.

(2) Political Factors

Blum presents political factors as another determinant of union growth. Legislation is able to encourage or discourage union size through manipulation of regulations. Rules involving union formation can be altered to stimulate union membership but they may also be tightened to restrict organization. For example, to encourage union formation the government may establish new laws to allow all workers, including professionals, to unionize, and certification procedures can be simplified. If the law protects union rights by preventing employer interference with organizing, then unions are likely to develop and grow. Garbarino (1971) supports this claim through a study of unionization of professors in which he found that the law was the predominant factor in unionizing. Where the law fostered union formation it was almost inevitable that professors would unionize.

Judicial interpretation in regard to union formation is another political factor which affects union possibilities. If the judiciary allows ambiguities in the law to work for unions then union growth is more likely. Also, if the judiciary relaxes evidence requirements for appropriateness then more certified units should develop in Canada. Through swift resolution concerning decisions regarding exclusion of certain employees from the unit, it is further possible to encourage unionization.
Great importance of favourable public policy toward unionism is evident in Canada. Most union growth in Canada has occurred where labour law is sympathetic to union formation, or where resistance of employers is minimal. (Goldenberg, 1968). There are examples of favourable policy and its affects throughout the paper (eg. university professors, Quebec engineers, federal civil servants) and this area may override others in importance basically because of the severe setbacks that unfavourable political policies have on unionization. (Blum, Estey, Kuhn, Wildman, and Troy, 1971).

(3) The Industrial Relations System

Blum argues that the industrial relations system includes many elements which effect union development to a significant degree. A liberal stance toward unionism combined with existence of voluntary recognition of bargaining units insures collective bargaining for engineers in spite of unfavourable law. The role of sympathetic management is illustrated by Quebec and United Kingdom experiences where management has played a strong role in fostering union formation. Management tactics are available to discourage union membership through implementation of such actions as firing union-organizers or waging a strong campaign against organization.

Existing trade unions influence potential union members through their pattern of administration and
structure. Desires of non-organized workers to join unions are enhanced through demonstration of a fair administration which protects interests of all union members. Internal operation of the unit should exhibit no favouritism to any group of members and a good collective bargaining relationship with the employer is desirable for some potential units (especially professionals). Potential union members may be further discouraged by unethical behaviour or poor public images of competing unions.

Organizational techniques are far different for white-collar units than for blue-collar workers because of the unique values of white-collar workers and their different goals from blue-collar workers. A good example of the difference between these workers is the white-collar stance which opposes uniformity and conformity whereas most blue-collar unions seek equal benefits with the stress on seniority.

Work environments within the industrial relations system, the technological and marketing structures, as well as the strategic position of the firm in the industry bring differing implications for union growth. If a company faces disaster as a result of a strike or large wage increase, then a hard battle is more likely to be fought against organization. On the other hand a company with little competition or excess demand could pay higher wages with no ill effects. Proximity of unionized
workers within the work environment is also relevant to unionization. (Bain, 1970). It is more probable that employees will organize when another group of nearby workers has unionized with considerable benefits. (Indik and Goldstein, 1963). Visible returns and solutions to common problems encourage non-unionized workers to think about bargaining collectively.

D. Sociological Factors

Blum also studies sociological factors of groups which concern their development into formal units. Informal groups emerge prior to formal groups and the stimulus for formalizing a particular group is often some danger to stability or security of the informal group. For example, in the case of a union the impetus to formalize could be wage cutting or unjust discipline which endangers security of the informal group. The formative period is determined by four long-term and two short-term trends:

1. Long-term
   (a) Employees strategic position in the technological or market structure.
   (b) Workers belief they will remain workers.
   (c) Effect of community institutions.
   (d) Prevailing community attitudes.

II. Short-term
   (a) Developments in the labour market.
   (b) Fundamental unrest in workers.
Short-term trends can often be linked with long-term developments. For example, fundamental unrest in workers can be tied to community attitudes or a loss of worker importance in the technological structure as well as from increased autonomation which leads to erosion of individual importance in the organization. Developments in the labour market are associated with employees' strategic position in technological and market structures as well as community institutions. Long-term factors result from more basic elements such as scientific achievements affecting technology, government policy, and emergency of permanent attitudes in society whereas short-term factors result from more temporary influences.

These trends can easily be applied to teachers to show why they have unionized. Teachers experienced less control over their position in schools over time because they were less and less able to make autonomous decisions regarding their work. (Nault, 1969). There was also a fundamental belief that schoolboards and bureaucracy intended to dictate rules for conduct at the school as well as rules pertaining to behaviour during after-work hours. New attitudes toward collective bargaining have resulted from little autonomy, decreasing possibility for vertical mobility, and an unimportant role in decision-making regarding teaching. This combination of short and long-term influences was strong enough to convince teachers
that collective bargaining was the only tactic which would help them effectively.

E. Overview of Factors

At present the general pressures for union growth are favourable in Canada. Unemployment is relatively high, worker security is low, bureaucracy and large institutions are increasing, and community attitudes are positive toward collective bargaining. (Boyd, 1971, Bain, 1970, Bairstow, 1968). These tensions increase the probability of organization because workers seek more security and greater influence in important decisions effecting themselves. The legal aspects chapter illustrates a growing role that public policy can play and is playing for unionization. (Goldenberg, 1968, Garbarino, 1971). Favourable laws protect organization rights for potential unit members while they limit employer tactics against organization. Community attitudes, employer acceptance, and labour market conditions are strong examples of forces for unionization in Canada which indicate that union growth is possible and perhaps even likely in Canada.

F. Growth of White-Collar Unions

George Bain (1969) offers a more specific set of forces which effect growth of white-collar unionism. Bain presents such factors as demographic characteristics, recognition by employers, the economic position of the company, public policy, aspects of the work situations,
and trade union images. White-collar union possibilities are increased if these influences signal that union organization is appropriate under unacceptable circumstances.

Bain (1969) stresses aspects of trade unions such as public image, recruitment policies and union structure which effect white-collar outlooks on unionism. An unfavourable public image may imply a tendency to use militancy in bargaining or it may reflect on unequal treatment to unit members, both of which oppose engineers' values. An image of co-operation with the employer and community for mutual benefit attracts white-collar employees to a great extent. Union structure is another determinant of white-collar unionization because a fair, democratic union structure is critical to white-collar workers, whereas an undemocratic one is repulsive. Special recruitment techniques for professionals must be studied because hard sell bitter campaigns against employers are not compatible with engineering values. Potential unions must have an image, recruitment policy, and structure which are as compatible as possible with white-collar values or involvement of this sector is unlikely.

Bain (1970) presents union recognition by employers as an important influence involved in white-collar unionization. Voluntary recognition is a significant positive factor for union development as is evidenced in Quebec and Bain also cites studies done in Britain.
(McCormick-mining, Blackburn-banking, and various studies on retail clerks) to support the importance of voluntary recognition. This type of bargaining relationship is of considerable interest in Canada because white-collar workers are restrained from forming bargaining units in many provinces. Voluntary bargaining presents an opportunity to maintain co-operation and a spirit of friendship in collective bargaining rather than forcing adversary relations.

Government policy is another critical factor in the opinion of Bain (1969). Government policy has tremendous effect on white-collar unionism through neutralization or containment of anti-union tactics on the part of employers as well as making white-collar certification available to more employees. Unionization is most significant in Saskatchewan and Quebec where public policy fosters organization more than other areas in Canada. (Goldenberg, 1968). Bain offers some alternatives to increase the role of public policy in white-collar unionism:

(1) Force the union to demonstrate a majority only amongst those voting, not those eligible.
(2) Relax the requirements for pre-signed members before a vote.
(3) Speed up the recognition process.
(4) Give unions more access for exchange with employees to give the union an equal opportunity with the
employer.

All of these suggestions increase the likelihood of union development by making the certification procedure more easy and less time consuming. These new procedures would combat employer resistance and if the initial groups met with success then others may also follow.

G. Engineers and White-Collar Unionization in Canada

(1) Growth of the White-Collar Work Force

White-collar areas have grown tremendously during recent decades. (Kleingartner, 1968) Increases in numbers commenced at the turn of the century but the greatest surge occurred after 1931. "In 1901 white-collar workers comprised 15.2% of the Canadian labour force whereas this figure has risen to 24.4% in 1931 and 38.6% in 1961."9 White-collar growth has been greater than most sectors except for service workers. The following table illustrates the dramatic rise in white-collar workers:

<table>
<thead>
<tr>
<th>GROUP</th>
<th>1931</th>
<th>1941</th>
<th>1951</th>
<th>1961</th>
<th>1971</th>
<th>1931-</th>
<th>1951-</th>
<th>1961-</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Workers</td>
<td>3,922</td>
<td>4,196</td>
<td>5,215</td>
<td>6,342</td>
<td>8,771</td>
<td>61.7</td>
<td>21.6</td>
<td>38.0</td>
</tr>
<tr>
<td>White-collar</td>
<td>958</td>
<td>1,059</td>
<td>1,691</td>
<td>2,447</td>
<td>4,108</td>
<td>155.4</td>
<td>44.7</td>
<td>63.0</td>
</tr>
<tr>
<td>Manual</td>
<td>1,323</td>
<td>1,402</td>
<td>1,964</td>
<td>2,313</td>
<td>2,710</td>
<td>67.2</td>
<td>12.7</td>
<td>17.0</td>
</tr>
<tr>
<td>Service</td>
<td>363</td>
<td>440</td>
<td>446</td>
<td>683</td>
<td>1,090</td>
<td>88.0</td>
<td>53.2</td>
<td>70.0</td>
</tr>
<tr>
<td>Primary</td>
<td>1,275</td>
<td>1,285</td>
<td>1,050</td>
<td>830</td>
<td>790</td>
<td>34.9</td>
<td>-20.9</td>
<td>7.0</td>
</tr>
</tbody>
</table>

** Estimates from Information Canada.

The white-collar sector increased by over 63% between 1961 and 1971 which is far higher than the average (38%) for the whole labour force. The professional segment of the white-collar categories as the following table shows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>958</td>
<td>1,059</td>
<td>1,691</td>
<td>2,447</td>
<td>44.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Managerial</td>
<td>220</td>
<td>226</td>
<td>393</td>
<td>501</td>
<td>59.7</td>
<td>22.5</td>
<td>59.7</td>
<td></td>
</tr>
<tr>
<td>Clerical</td>
<td>261</td>
<td>304</td>
<td>563</td>
<td>819</td>
<td>45.4</td>
<td>41.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial &amp; Commercial</td>
<td>240</td>
<td>247</td>
<td>349</td>
<td>493</td>
<td>41.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Technical Professional</td>
<td>238</td>
<td>282</td>
<td>386</td>
<td>634</td>
<td>79.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td></td>
<td></td>
<td></td>
<td>1,142</td>
<td></td>
<td>166.4</td>
<td>64.5</td>
<td>79.9</td>
</tr>
<tr>
<td>Service</td>
<td></td>
<td></td>
<td></td>
<td>573</td>
<td>996</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transportation</td>
<td></td>
<td></td>
<td></td>
<td>431</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE FOUR**

* Goldenberg, p. 16.

From Statistics Canada - The Professional and Technical category is the closest noncensus labour force category which is comparable to the professional category. No earlier data is available for comparison to the 1971 figure because earlier data did not include laboratory technicians and engineering assistants.

In the professional area architects (69.0%), authors and journalists (80.5%), teachers and college professors, (65.0%), and nurses (75.0%) have led to upsurge to a point professionals constitute over twenty-five percent of all white-collar workers. (Goldenberg, 1968). Limited opportunity for vertical mobility is evidenced by managerial
figures which show the lowest growth rate of all categories and this lack of vertical mobility destroys identification with management and alters engineers' expectations from their jobs. Bureaucratic methods of administration are strong, positive influences for unionization when combined and the trend towards paid employment and rapid growth of engineers raises the probability of organization to a significant degree.

(2) Growth of Engineers

Professional engineers have experienced less spectacular growth than many other professional categories but they still have exhibited large increases. The following table categorizes engineers and their specific rates of increase:

GROWTH OF ENGINEERS*

<table>
<thead>
<tr>
<th>Engineers</th>
<th>1931</th>
<th>1941</th>
<th>1951</th>
<th>1961</th>
<th>1931-61</th>
<th>1951-61**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical</td>
<td>NA</td>
<td>NA</td>
<td>2572</td>
<td>2995</td>
<td></td>
<td>16.4</td>
</tr>
<tr>
<td>Civil</td>
<td>NA</td>
<td>NA</td>
<td>7743</td>
<td>11,877</td>
<td></td>
<td>53.4</td>
</tr>
<tr>
<td>Electrical</td>
<td>3937</td>
<td>4567</td>
<td>6349</td>
<td>8,758</td>
<td>122.5</td>
<td>37.9</td>
</tr>
<tr>
<td>Mechanical &amp;</td>
<td>2859</td>
<td>4518</td>
<td>8328</td>
<td>12,091</td>
<td>322.9</td>
<td>45.2</td>
</tr>
<tr>
<td>Industrial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE FIVE

* Goldenberg, p. 17.

** There is no detailed breakdown at all for 1971, even in a rough form.

While engineers have grown in absolute numbers, they have simultaneously experienced greater involvement in paid employment. Muir (1971) and Goldenberg (1968) found that engineering positions consist of over 95% paid work and
less than 5% self-employment. This movement towards paid employment is consistent with other professional groups such as economists, teachers, nurses, and accountants, (Goldenberg, 1968). The following chapter clearly illustrates the positive implications which growth of engineering numbers and concentration in paid employment have for unionization.

The increase of engineering numbers is tied to the evolution of large, bureaucratic organizations which are becoming more evident in Canada. Bureaucracy and its treatment of workers is a very strong force for union formation as later sections show but the purpose of this segment is basically to provide evidence of this growth and the movement towards paid employment.

(3) Degree of Unionization of Engineers

Most employed professionals already engage in some form of collective action despite resistance to formal collective bargaining. Goldenberg (1968) states, "Although it has long been an accepted practice for professionals to engage in some form of collective economic action, such as fee setting, there has been considerable resistance in the public mind, to the idea of collective bargaining as the term is generally understood." This quote helps illustrate that bargaining activities of professionals may fall anywhere between informal consultation to full collective bargaining, depending on the group and its
circumstances.

Although engineers are legally able to form bargaining units in Ontario, New Brunswick, Quebec, Manitoba and Saskatchewan, the only significant organization has taken place in Quebec (50%) and in the federal civil service. (Goldenberg, 1968). Professional engineers in other provinces must rely on voluntary relationships with employers to participate in collective bargaining. Goldenberg (1968) presents Ontario as a prime example to support the feasibility and viability of voluntary relationships because one-tenth of that province's engineers are active in this form of unit. One specific purpose of this paper is to study possibilities for future unionization, as well as alternatives which may evolve, and informal bargaining could be one strong possibility for future actions of engineers. Presently in Canada there is little collective bargaining done by engineers and in many instances the real "bargaining agent" is the professional association.

(4) Professional Associations

Professional associations influence all Canadian professional engineers to some degree and the role of the association in a new bargaining unit is a critical problem which must be dealt with. The functions of the association will alter drastically if widespread unionization of engineers develops and associations may play a far different role in the future.
In one sense engineers are totally organized because virtually every engineer in Canada belongs to a professional association which is either provincial in scope (British Columbia Professional Engineers Association) or wider in jurisdiction such as the Engineering Institute of Canada. There is an association in every province, and two of the more influential bodies in Canadian engineering are The Association of Professional Engineers of Ontario and The Federation of Professional Engineers in Quebec. (Goldenberg, 1968).

Associations do not participate in collective bargaining but they often seek relations with companies on behalf of engineers. Engineers associations do not seek adversary styles of bargaining, rather they engage in communications which set a goal of helping both engineers, and often the company. Existence of associations may lead to granting of time off for conferences or leaves of absence for engineers to return to university to upgrade skills. Associations also strive to obtain other benefits such as research rights and rights to publish scientific findings, in other words there are attempts to persuade employers to grant privileges to engineers. (Hall, 1972).

Strauss (1963) presents some specific purpose that associations are meant to serve. These goals are completely different from the goals of blue-collar unions because they really seek to satisfy needs in a professional sense
more than in monetary terms. Purposes of professional associations do not include the pursuance of increased wages nor greater fringe benefits, rather they are idealistic in nature. These purposes include:

(1) Social fraternization.
(2) Occupational identification.
(3) Raising the status of the profession.
(4) Self-regulation.

It is apparent from these purposes that the typical professional association is a special, ideal type of group. There is a "spirit" in this type of organization which is strongly tied to tradition and idealistic values. In the case of professional engineers this spirit is directly opposed to collective bargaining with the result that Bairstow, Strauss, Goldenberg, and most other observers feel collective bargaining should be done by a completely different body if it is done at all. Within the basic purposes of professional associations there can be many specific forms as the following section illustrates.

(5) Forms of Associations

Professional associations may serve many functions and Strauss (1963) also presents a variety of categories in this area. While all associations serve the four purposes which were previously mentioned they may have completely different orientations. Strauss has categorized associations in the following way:

(1) Learned society.
(2) Technical society.
(3) Personal-achievement oriented.
(4) Sounding boards.
(5) Fully certified units.

Engineering associations in Canada cover the full spectrum of categories but the vast majority fall into the first four areas. Advancement of knowledge is a primary goal of the learned society and virtually all engineering associations stress this aim. Advancement of knowledge is important to status of the profession because it separates professionals from blue-collar workers. All professional associations are learned societies to some extent whereas blue-collar unions do not stress this aspect in general. Technical society and personal achievement functions also foster occupational identification while attempting to raise the status of the profession. The first three orientations are common to virtually all professional associations because they are inherent in the term "professional." Professional needs and values are the very reason for existence of professional associations, therefore the first three functions must serve these unique needs and values. Traditionally, the role of professional associations has served the first three areas as Jean-Real Cardin (1961) states, "The role of the professional association is to endow the profession, as already described, of some representative
and administrative organizations capable of representing it amongst other professions and toward the entire community. It also has to manage the profession for the best interest of its members and the public in general by the recruitment of members and control of their activity."

On the other hand Muir (1971) believes that this traditional stand of associations must change to serve the last two functions if engineers are to obtain maximum benefit from these alliances.

The final two types of organizations are unique in orientation and less dominant in Canada. Sounding board functions are gaining popularity with Canadian professional engineers as new problems of bureaucracy emerge. This approach utilizes non-bargaining groups of engineers, including those in management, to attempt improvements in communication between engineers and management. A primary aim of this approach is to resolve problems before they severely hamper management-engineer relationships and affect performance of engineers.

The incidence of fully certified engineering units involves only a small portion of engineers because there are eleven active engineering units in Canada. (Carson, 1973). There are units such as the Northern Electric Employees Association, the General Electric Engineers Group, Canadian National Telecommunications, Professional Engineers' Group, and the Ontario Civil Service Professional
Engineers' Group but these units effect only a small portion of Canadian engineers. A push for unionization and changes in relevant laws and public policy could alter the Canadian situation so that bargaining units become more common.

(6) A. General Activities

Engineering associations have traditionally concerned themselves with activities outside the realm of collective bargaining. This stance is derived from professional values and a philosophy which condemns collective bargaining as appropriate behaviour. Types of associations and their purposes have been discussed in general so a more detailed analysis of association activities can now be presented.

Engineering associations normally conduct seminars and conferences either in conjunction with employers or outside the work place. These events serve two purposes, first they upgrade skills and maintain excellence in engineering knowledge, and secondly, they reinforce professional values and foster identification with colleagues. Group cohesion is maintained through contact with fellow engineers who also stress professional values. In addition to educational experiences at seminars and conferences, it is not unusual for associations to conduct their own research or to join with universities to upgrade engineering knowledge. (Hall, 1972). Associations sometimes research issues outside the engineering area such as the possibility of collective bargaining for professional engineers.
Unions could play an important role in facilitating seminars, courses at universities, and conferences by actually bargaining for time off to attend such activities. Education could receive a number of hours per week to attend courses or seminars so that a company's engineering staff would be familiar with all new engineering techniques. Maintenance and progression of engineering knowledge is an asset to organizations because direct costs cutting or development of new processes (products). The education aspects of collective bargaining would tie the association and union closely together, at least on this subject but this does not necessarily mean the association and union have to be one body.

Acquisition of new members and regulation of engineering attitudes and behaviour are further activities of associations. Professional associations strive for 100% membership of all engineers in Canada and this has been a virtual success. Names of new engineers are available from universities or companies, therefore recruitment is fairly simple because engineers' whereabouts are easily obtained and also because engineers fully expect to join associations. Control of behaviour and attitudes is a more critical function of professional associations. This role of the normative reference group (see social chapter) reinforces professional conduct and values which are different from blue-collar behaviour. (Kemper, 1968). There is a code of
behaviour which is maintained by group pressure and in many associations resistance to collective bargaining is proper conduct.

Engineers' associations are active lobbyists as well. Influence of legislation has been carried on effectively in the past and exclusion of professional engineers from collective bargaining is a direct result of past lobbying efforts (see legal aspects, Carrothers, 1965). Through lobbying activities associations are able to use group power to influence Canadian law in favour of engineers' desires. The primary goal of all lobbying is to enhance status of the engineering profession while pursuing professional values.

Communication and information exchange is a further activity of the association. Communication reinforces occupational identification through contact with colleagues throughout the profession. Communication also allows scientists to obtain recognition for scientific achievements which enhances possibilities of self-actualization. Associations actually serve as warehouses for information exchange by gathering all incoming data and dispersing it to the correct members. Planning for conferences and contact with fellow engineers in other parts of the country would be very difficult without existence of associations.

Wideman (1971) offers activities which will develop far greater importance in the future than in past times.
These areas include legal advice to association members, employment counselling, publication of member findings, and job placement. All of these activities reflect upon conditions which are forcing engineers to contemplate collective bargaining and association activities may be aimed at lowering dissatisfaction.

B. Conflict

Engineering associations attempt to minimize internal and external conflict to maintain harmonious relations with management and fellow workers. Associations search for resolutions to problems rather than using economic weapons to intimidate employers. Strikes are an "unprofessional" means of influencing management, therefore associations avoid work stoppage at all costs. In spite of disdain for strikes, future developments may see some involvement in strikes, particularly in Quebec. If such an action becomes necessary then some vital answers will be provided to questions such as, how long would engineers support a strike, how would the government react, or would the union receive 100% support?

Militance has traditionally been a source of power for blue-collar unions. Blue-collar negotiators view employers as adversaries in collective bargaining and the strike is the ultimate weapon to be used in unsatisfactory bargaining. Negotiations based on militancy in employer relations is not consistent with professional values
possessed by engineers, this implies that strike threats may not be viable actions in the case of an engineering union and presents a barrier to union effectiveness because some sort of pressure must be available to engineers' negotiators if gains are to be made. (Carrothers, 1965). There may be other weapons available which are more compatible to engineering values but the real bargaining power of other threats may not be very great.

Teachers are a source of information in the conflict area. Teachers hold values similar to those of engineers and they are striving for professional status, as are engineers, yet they have exhibited militancy in relations with employers. There is real evidence in the systems chapter that militancy has resulted in large gains for teachers yet their professionalization drive seems unhindered by this militancy. Changing needs of teachers were recognized by their associations and a more union-like stance towards collective bargaining adopted to meet these problems.

SUMMARY

Forces for unionization of Canadian engineers occur at three separate levels, forces on the general labour force, pressures on white-collar workers and specific pressures which are unique to engineers. This chapter presents the first two areas and leaves the specifics for detailed analysis in another chapter. Blum presents
economic, sociological, industrial relations and political areas for the study of general union growth. Within each area there are more specific factors such as business cycles, employer recognition, and public policy which encourage or inhibit union growth. Through analysis of various elements in Canada, Blum believes that trends in union growth can be explained to a great degree.

Bain offers white-collar factors which are influenced by general forces but are more important for white-collar workers. Bain's variables include trade union image, sociodemographic elements, economic position, employer recognition, and public policy. Some of the factors such as employer recognition and public policy can be facilitators to union formation whereas trade union aspects and the work situation hold negative implications for unionism which must be overcome.

Growth in numbers of professionals in Canada has been phenomenal in recent years. White-collar workers comprise over one-quarter of the labour force and this sector is still increasing rapidly. Professionals are the fastest growing segment of white-collar workers although engineers are not the leaders in professional growth.

Growth in numbers of professionals is phenomenal in recent years, along with the trend to large, bureaucratic organization in Canada. Departmentalization and
segmentation are utilized by large firms to obtain greater efficiency and pools of engineers are required. Increasing size results in bureaucratic methods of administration which may well be promotive to engineering unions.

Professional associations in Canada are one form of organizing which engineers have supported solidly. Associations reinforce professional values and goals while serving many purposes. Associations take the form of learned societies, technical societies, personal-achievement oriented groups, sounding boards or fully certified bargaining units. These groups aid in social fraternizing, occupational identification, self-regulation, and raising the status of the profession. Activities have traditionally been educational or dedicated to raising professional status but some influence on the employer is possible. Conflict has been minimized by engineers and their associations because hostility violates professional conduct. Strikes are not acceptable to engineers yet teachers have similar values and goals to engineers and they have used militancy to great advantage.
CHAPTER FOUR
SPECIFIC FORCES CONDUCIVE TO THE FORMATION
OF ENGINEERING UNIONS

Forces encouraging unionization of Canadian professional engineers have become more prevalent during recent years. Industrial relations scholars and engineers have studied these forces and the result of these investigations are presented in this chapter. Forces conducive to unionization of engineers are unique to that group, therefore the topic is much narrower in scope than previous sections which presented pressures which act upon all workers (including engineers.) All of the forces discussed in this section increase the possibility of union formation but it is essential to discover which influences actually affect behaviour of engineers. These pressures are greatest in British Columbia, Quebec, and Ontario but they are growing elsewhere in Canada. (Muir, 1971).

A. Paid Employment

A growing concentration of Canadian engineers find themselves working for large companies in paid employment. Muir (1971) and Goldenberg (1968) reveal that over 90% of Canada's professional engineers are engaged in paid employment rather than being self-employed. This is a potential catalyst for unionism because of bureaucratic methods of leadership which are used to administer large
sub-groups within organizations. The effects of large groups are documented in the social chapter to show specific connotations for professional engineers.

The growth of Canadian industry has been linked to increasing concentration of large organization to take advantage of specialization and economies of scale. It is becoming necessary to use large scale production, marketing, and transportation to remain competitive at home and abroad. Canadian engineers find that employment in large, bureaucratic organization involves jobs which are routinized and less demanding (and fulfilling) than past work roles. (Muir, 1971). Engineers have been removed from roles in total projects so that many are victims of departmentalization and specialization whereby individual contributions to the process cannot be seen. Bain (1970) illustrates engineers' problems of working in a large company, "The development of specialization within the engineering profession has led to mass training of engineers and the utilization of engineers on almost a production line basis by many large corporations. As a result many engineers are dissatisfied with being one of a faceless mass of engineers with little opportunity for incentive. They are thus turning to collective bargaining as a means of asserting themselves and of having a say in the determination of their salaries and working conditions."12
As engineers are moved towards blue-collar roles and status by specialization, one appropriate means for pursuing engineers' desires is through collective action. (Boyd, 1970). Opportunities for participation in manager and scientist roles are disappearing at the work place, and needs, other than worker needs, are not satisfied through the job. Movement to a blue-collar position is not consistent with needs nor goals of engineers but domination of large, bureaucratic companies means that individual engineers are powerless to combat the situation. (Blum et al., 1971). Pursuance of greater output at lower cost is the only goal which concerns many companies therefore group action is a most effective method to alter the situation.

B. The Labour Market

The labour market also is a positive force for unionization in Canada. A buyer's market in Canada has resulted from a supply of engineers which has far outdistanced demand during the past decade. (Boyd, 1971). This market condition is in direct contrast to previous periods when engineers enjoyed a seller's advantage. Graduating engineers no longer have a wide choice of job offers they once did, and many graduates receive no job offers at all. (Goldenberg, 1968, and Boyd, 1971). One very negative result of the poor job market is the inability of engineers to seek jobs
which meet their personal and professional needs because competition for openings is fierce and job security for working engineers is important. (Blum, 1971).

Mobility has fallen because of poor labour market conditions so that security precautions force engineers to remain at one job rather than quitting work even if the job circumstances are completely unacceptable. Intra-company pirating was once a common practice but today this phenomena is no longer an advantage for engineers because there are qualified, experienced engineers available in job market. Voluntary mobility or carrying out a search for a new position while employed is also more difficult for engineers with the result that threats to move to competitors no longer bring raises (or promotions) for engineers. Job mobility was previously a main strategy for vertical mobility in the hierarchy as well as an alternative to find a more satisfactory employer organization but all the advantages of a heavy demand are not existent any longer. (Boyd, Gross and McKay, 1971, Muir, 1971).

With security becoming an issue, engineers are forced to accept lower levels of need satisfaction whereby they experience violation of some personal and professional values. A glut on the labour market makes it imperative to find and hold a job rather than search for a position that satisfies higher order needs and Dvorak (1963),
Walton (1961), and Hansen (1963) all stress the power of an unfavourable job market to increase engineering acceptance of unionism. Fears involving job security bring engineers closer to a blue-collar stance and increase the likelihood of unionization. (Bain, 1970). Personal power, which is inherent in a buoyant market, decreases, thus increasing attractiveness of power tactics such as those inherent in unionization.

C. Trade Union Movement

The trade union movement is seen as a major pressure toward unionization by Muir (1971), Nault (1969), and Goldenberg (1968). The Canadian Labour Congress (CLC) is staging an overt attempt to organize white-collar workers. In an effort to organize such workers as engineers, the CLC has hired a full time co-ordinator of white-collar organization, Mr. Arthur Kube. Muir (1971) offers the feelings of Bill Dodge, Secretary-Treasurer of the CLC, "We will assault the white-collar area with a full time co-ordinator of white-collar areas with a full time co-ordinator of white-collar organization for the purpose of:

(1) Develop an affiliation between the CLC and professional associations.

(2) Remove professional exclusions from labour relations acts.

(3) Develop "craft-type" unions of professional occupations."
The CLC pursues an ideal situation where white-collar workers will unionize and affiliate with the CLC. Removal of all professional exclusions is a high goal to attain yet Sweden is an excellent example that white-collar workers can be unionized nation-wide. (Kleingartner, 1968). (The estimate from the Vancouver library is that well over 80% of white-collar workers are unionized.)

Ideally, the change in the situation according to the CLC can be seen via the Strauss model in figure six:

**FIGURE SIX**

D. Attitudes Toward Unionism

Muir (1971) and Goldenberg (1968) cite a changing attitude on the part of professionals toward involvement in collective bargaining. This trend is true for society as a whole, as well as white-collar workers and there is evidence to show this in the chapter concerning union growth. Professionals increasingly accept collective
action as an appropriate method to involve white-collar employees in organization decision-making structures. Bain (1960) believes this viewpoint is legitimate and necessary for professionals because the legitimacy and justification of trade unions rests upon a belief in the value of democratic decision-making. Bain (1969) postulates that democracy is a good thing and the only way to maintain democratic circumstances is for workers to form groups which have some voice in decisions. A softening attitude towards the use of collective action is a long-term trend with favourable implications for union possibilities. (See organization chapter). New attitude influences have produced a dramatic revolution in engineering behaviour in many provinces such as B.C. and Ontario (see law chapter) and these influences may also produce further effects elsewhere.

Evidence of the changing attitude is provided by Ontario and British Columbia experiences. Mr. William Hall, managing director of the B.C. Association of Professional Engineers, states that his Association is actively seeking collective bargaining rights and the membership fully supports this goal. It must be noted that in 1966, seventy-five percent of the membership gave written support for changes in the Engineers Act to support collective bargaining. Ontario also exhibits a favourable attitude toward collective bargaining. In
1961 a vote of engineers crushed supporters of collective bargaining but by 1966 the Association of Professional Engineers of Ontario made a key policy change to accept collective bargaining. (Globe and Mail, June 28, 1969). The association altered its opposition to engineering unions in 1966 because some members were experiencing deep frustrations in large, unusually impersonal, institutions, utilities and super corporations. Engineers felt their value was neither recognized nor utilized and salaries were also unacceptable so collective bargaining was the only acceptable alternative. (Globe and Mail, October 22, 1970). The Ontario Association did feel that bargaining should be carried on in an ethical and professional manner without use of the strike weapon.

A major problem of unionization centres on the use of strikes and militancy in conjunction with collective bargaining. Carrothers (1965) states that a major barrier to union development is not the incompatibility of unionism and professionalism but the discovery of a reasonable substitute for the strike. Cain and Seidman (1964) also concur on compatibility of unionization and professionalism but again the difficulty is acquiring group power without economic weapons such as the strike.

E. Professional Treatment

W. Lee Hansen (1963) presents problems of professional treatment faced by engineers, "The nature of discontent
and its growth among professional engineers becomes apparent even after a perusal of the growing body of literature on engineers, and certainly becomes quite clear when the proceedings of various engineering societies are examined. Basically the engineer seems to feel that his treatment is not that which should be accorded a professional worker."¹⁴ A lack of professional treatment for engineers is a positive stimulus toward unionization because individual bargaining is not sufficient to improve conditions. Strauss (1963), Bairstow (1968), Muir (1971) and others have presented needs and values of engineers which require different treatment than blue-collar workers to achieve satisfaction in the organization.

Specific complaints help illustrate deficient areas in professional treatment. Identification with management is one area which is unsatisfactory in large, bureaucratic organization. (Bain, 1970). Engineers feel little sympathy from management with the result that lower status and a damaged self-image are experienced. Identification with management is a basic need for engineers to support their goals of upward mobility and self-perceptions as "special workers." There is also an inadequate amount of recognition of engineers as professionals in the assignment of work which is below professional standards and routinized in many respects. Assignment of blue-collar tasks antagonizes engineers and increases the possibility of blue-collar tactics as a form of retaliation.
Inappropriate means of settling individual problems also enhances union possibilities. It is imperative that engineers perceive themselves as valuable individuals in organization but the methodical blue-collar treatment in settlement of grievances is unacceptable because everyday problem solving and grievance settlement in bureaucratic circumstances follow rules and procedures which have always been used for blue-collar employees. A union could force management to deal with engineering problems more quickly, perhaps through the creation of a new position in the hierarchy. Special attention to engineers grievances may make them feel that their contribution is not trivial nor easily replaced like a blue-collar worker.

Communication also enters into the area of professional treatment. Management should allow engineers to communicate vertically as well as horizontally to meet needs of exchange with colleagues and identification with management. If channels of communication are blocked then engineers must find other ways to communicate or dissatisfaction grows. Strauss (1963) shows that engineers are likely to ignore bureaucratic channels and go straight to the man they wish to speak with. A probable result of ignoring proper channels in a bureaucratic organization is a reprimand or punishment which brings even greater dissatisfaction to engineers.
Regressive management practices push engineers towards role conceptions which are similar to members of the unionized sector. The fault may not be due to management policy so much as the rigid rules of bureaucracy and perceptions of engineers are important because their own beliefs affect behaviour. Bureaucracy pushes management further and further away from engineers as red tape and formal rules envelope the company.

F. Personal Treatment

Large, bureaucratic organizations seldom offer adequate recognition or treatment for the individual. Separate treatment for each engineer (rather than group treatment) is a critical element in the needs of engineers. (Walton, 1961). Bureaucracy dictates that workers should be dealt with in groups to foster efficiency but this type of administration leaves little change for individual treatment. (Bain, 1969).

Broad classification of workers and a lack of job titles prevent engineers from measuring personal worth to the organization. Engineers require reinforcement from management and reports on progress to relieve dissatisfaction and frustration. Perhaps induction procedures or periodic evaluations could minimize dissatisfaction, yet markers to measure personal progress are absent in many organizations. Assignment to monotonous, blue-collar tasks can be offset partially by project rotation and time off for conferences but personal treatment may still
be a source of dissatisfaction.

Adoption of human relations type of leadership could also dispel problems of personal treatment. Although engineers do not want nor need a leader doting over their shoulder, they do require a leader who is aware of engineers' desires for praise and consultation. Bureaucracy tends to provide leaders who are present only during crises whereas engineers seek praise and recognition of individual merit. A joint effort by management and union could seek the most effective leadership style to obtain greater output and satisfaction.

Kleingartner (1968) speaks of bureaucracy as a "reign of rules" where favoritism often affects discipline and promotion far more than merit. A result of the collective action could be procedural safeguards regarding dismissal, merit, promotion, etc., to deal with the reign of rules. Problems of personal treatment are summarized by Bain (1969): "They do not feel they are treated as individuals so they don't react as individuals and they are beginning to think in terms of collective action."15

G. Salaries

Salaries are gaining influence as a positive impetus to collective bargaining. Engineers who are involved in paid employment receive significantly less remuneration than their self-employed counterparts. An unpublished
study by The Department of Manpower and Immigration 1967 revealed that "engineers who are paid employees earn an average income of $12,148 compared to $17,299 average for self-employed engineers." \textsuperscript{16}

Arguments on behalf of paid engineers are based on the fact that self-employed engineers and other professionals have made larger gains in recent years. (Blum et al., 1971). This argument of relative deprivation is shown by Goldenberg (1968) to be a major source of discontent because engineering associations have ignored the situation.

Another facet of the salary problem is comparison of similar jobs in different organization. There are significant variances in salaries for engineers performing similar tasks in competing companies. Engineers are acutely aware of merit as a basis for rewards therefore unequal pay for similar effort and output violates professional values and leads to dissatisfaction. (Strauss, 1969). Existence of an unequal situation is typical of a non-union area where there is no extra-company comparisons required in the salary area. Differences in company situations result in inequities between different companies which are unacceptable to engineers.

"Peaking" is another cause for complaint by paid engineers. J. L. Corneille, president of the Corporation of Engineers Quebec states, "engineers seem to be the victims of a plateau syndrome - they reach a certain
salary and they never make any more. Alternatives such as wage guidelines, adoption of by-laws by members to implement a minimum wage scale or provincial legislation for a province-wide scale for engineers are some alternatives for study."\textsuperscript{17} Engineers in paid employment have expressed dissatisfaction with salary progression in other provinces as well. Paid engineers often reach maximum salary by the age of forty years in spite of the fact that much productive work life still remains. Strauss (1964), Cain and Seidman (1964), and Goldenberg (1968) all stress the problem of telescoping of salaries for professional engineers. Obsolescence of skills may be one way to justify telescoping but participation in education to update skills is a goal of engineering unions which tends to neutralize this argument.

Telescoping of wages is supported by the following Department of Manpower study:

<table>
<thead>
<tr>
<th>Telescoping of Wages*</th>
<th>Average income</th>
</tr>
</thead>
<tbody>
<tr>
<td>less than 9 years</td>
<td>$ 10,746</td>
</tr>
<tr>
<td>10 - 19</td>
<td>12,695</td>
</tr>
<tr>
<td>20 - 29</td>
<td>12,885</td>
</tr>
<tr>
<td>over 30 years</td>
<td>14,999</td>
</tr>
</tbody>
</table>

TABLE SIX


SUMMARY

Specific forces for the growth of engineers' unions
appear to be increasing in strength. The trade union movement, professional treatment, changing attitudes toward unionism, an unfavourable labour market, personal treatment and salary problems provide justification for a union movement. Professional and personal treatment are symptoms of difficulties which result from bureaucracy because bureaucratic methods inherently require dehumanization and a lack of professional treatment in spite of decreased satisfaction in the company. An improvement in labour market conditions would lessen the probability of organization because alternatives in less bureaucratic organization may be available. Salary problems are not likely to disappear unless some form of action is taken by engineers, either by the professional association or through a union. A softening attitude towards unionism for white-collar workers is growing throughout society and it will flourish as long as bureaucracy is dominant form of administration.

A key to the influence of positive factors is the permanence of these forces. If severe violation of engineers' needs is a long-run state then probability of unionization is very high. The labour market appears to be least permanent of all factors because large, bureaucratic organization are likely to employ even a greater percentage of engineers in the future. Areas of treatment and attitudes toward unionism are least probable to disappear in the short-term. The important
outlook here is how professional engineers perceive their own situation. If they view positive forces as long-term influences then unionization may be the only means of asserting an engineering outlook on management.

Perhaps one quote can sum the area of positive forces very well. Mr. Val Scott, general manager of the Society of Ontario Hydro Professional Engineers and Associates states, "Engineers work in large, usually impersonal, institutes, utilities and super coporations. They are frequently told that they are part of management, but this statement will not stand up under close scrutiny. Just becasue they may supervise a number of subordinates does not mean that they occupy an effective management position relative to their own conditions of employment. Many of them feel that their value is not sufficiently recognized or utilized, nor do they have an influence on working conditions and standards at all commensurate with their professional and educational accomplishments. Salaries are also deteriorating in relation to the rates of pay in society as a whole."
CHAPTER FIVE

LEGAL ASPECTS

Legal aspects are critical determinants in studying probabilities for unionization of Canadian professional engineers. The impact of labour law on the engineers' situation is of great consequence because labour statutes can stifle union development or encourage it through implementation of favourable public policy. It is possible for laws to prevent unionization even where unions are strongly desired and needed by employees. Seventy percent of Canada's professional engineers are presently able to form certified units at one of the following three levels: federal, civil service (provincial) or privately. (Carson, 1973). Not all provinces allow civil engineers to bargain and many provinces don't allow any private engineers to bargain either but all engineers under federal jurisdiction have the right to collective bargaining.

Exclusion of professional engineers from collective bargaining rights is presently a barrier to any major unionization attempt in Canada. If labour regulations in many Canadian provinces are not altered to allow engineers to organize, then the real issue for professional engineers becomes, "Is informal bargaining on a large scale possible or probable, and how would different circumstances alter
that probability?"

Professional engineers are allowed to bargain only in the provinces of Quebec, New Brunswick, Saskatchewan, Ontario, and Manitoba. Other provinces do not allow engineers to unionize for the purpose of collective bargaining because of their confidential status in most cases. There is a possibility that other provinces shall allow engineers to organize but this development is dealt with more closely in the latter stages of the chapter. This chapter includes a history of labour relations laws concerning professional engineers, the role of Labour Relations Boards, pressures which could alter the law, and a detailed discussion of provincial laws.

A. History

Historical developments in labour law reflect engineers' sentiments toward unionism in the past. Carrothers (1965) traces the development of labour legislation concerning engineers to show how present regulations evolved. The basic reasons for federal and provincial exclusions of engineers are revealed through historical basis although some of the provincial laws and federal exclusions have been altered recently.

Approximately 1,100 engineers in Canada were covered by collective agreements following World War II. Negotiations of these pacts took place under jurisdiction
of the Wartime Labour Relations Regulations of 1944, and their expiry date concurred with the end of the war. These wartime contracts provide the major experience for Canadian engineers in the area of collective bargaining, however the significance of the agreements is relatively small because of special wartime circumstances.

Adversary relations which normally exist between employer and employee during collective bargaining was not a major factor in these agreements because the aim of the contracts was to avoid work interruptions at all cost. A Wartime Labour Relations Board was formed to protect the good of the country during wartime by preventing slowdowns or strikes, therefore the philosophy and terms contained in these temporary contracts was meant solely to facilitate production for the war effort. The following developments took place after the war and it is the peace-time laws that are most pertinent to this paper.

Carrothers states that in 1947 the House of Commons drafted a labour code whereby professional engineers were to be covered by collective bargaining provisions. The bill was introduced into the House but it failed to pass and subsequently it was tabled for discussion and possible revision. In 1948 this bill was reintroduced to Parliament with some minor revisions, one of the alterations being that engineers were to be excluded from collective
bargaining rights. This new bill was also delayed prior to being passed on to a standing Committee on Industrial Relations for study in greater detail. The Committee concurred with the decision that engineers should not be allowed to bargain collectively, mainly as a result of pressure exerted by engineers' associations against certification rights. Carrothers says the final decision to exclude engineers was reached because every provincial institute of engineers requested to be excluded from the bargaining area.

When the Federal Bill of 1947-48 was finally passed into law, it excluded professional engineers from collective bargaining. This decision greatly influenced provincial rulings to exclude professional engineers because the federal statute was designed as a model for structuring provincial labour law. Considerable pressure on behalf of provincial engineering associations succeeded in influencing legislation, therefore it is reasonable to assume that equal efforts would have been made at the provincial level to have engineers removed from collective bargaining provisions.

In 1948 it was recognized that a policy change may be required in the future despite strong objections on behalf of associations. There was speculation that the negative position of engineers and their associations
may be unsound as a long-term strategy, so the law was enacted with the idea that future revisions could occur.

Engineers' attitudes and actions may not have been appropriate for all engineers, even at that time. As the system chapter vividly illustrates, engineers are a heterogeneous group in terms of work roles, with the result that their strong, united stand opposing collective bargaining was questionable as a long-term strategy. Surely some engineers faced situations where collective bargaining was required to combat bureaucracy and upgrade working conditions even at that time. In light of the evidence it is clear that actions of the engineers in 1947 were a part of their desparate attempt to reach full professional status rather than a reflection on the needs of all engineers. A more flexible stance would have been appropriate for the long run because availability of collective bargaining rights does not force engineers to become involved with bargaining. The only possible benefits from exclusion lie in the areas of upgrading professional status and image but these gains come at far too high a cost if a significant portion of engineers require collective bargaining rights.

B. Labour Relations Boards

There are twenty-two labour relations boards in Canada which possess much power to influence the situation
regarding engineers and organization. (Carson, 1973). If changes do occur to allow engineers to form bargaining units, then Labour Relations Boards must lead the way. The conservative nature of provincial boards upholds exclusions because extreme changes are not made quickly by these groups. Reasons for this conservative nature are based on a philosophy that unfounded, drastic modifications are often harmful to industrial relations as well as the groups involved. (Oliver, 1973). A major role of Labour Relation Boards is maintenance of peace and balance in the system, thus it is easy to comprehend why much evidence is required to support decisions. The conservative nature of boards is evidenced by reluctance to certify multi-location or multi-employer units even where they have been operating informally for a lengthy period or are clearly appropriate. The small amount of experience and short history of engineering unions is one reason for reluctance to certify engineers unions and create change. (Oliver, 1973).

It appears that Labour Relations Boards would rather rely on voluntary bargaining relationships for engineers than alter the law. Ontario experience is positive evidence that these units can form and function successfully but the real question is how many more bargaining units would form if the law were modified. Many groups of engineers may have met employer resistance to voluntary recognition with
the result that there is no alternative but to accept the situation.

Problems of decertifying existing bargaining units also lend support to employment of voluntary bargaining relationships. Under existing labour laws, a bare majority of 51% can maintain a bargaining unit, but operation of a union by this method is not acceptable to engineers. Much bitter disagreement would result if a bare majority resisted decertification or if a major policy decision affecting all unit members was barely passed. One possible result of feuding members could be a lack of communication or less cooperation on the job, both of which eventually bring unsatisfactory performance. Unit boundaries present more difficulties because there is a problem regarding definition of the term "engineer" (i.e., one who does engineers' work or one who has a degree and does lesser work, etc.) and decisions on management involvement.

C. Provincial Legislation

1. Quebec

Quebec has been the leading province for unionization of professional engineers in Canada. Success or failure of collective bargaining relationships in Quebec could affect labour statutes in other parts of Canada by reinforcing present statutes or pointing to future change. Actual collective bargaining in such areas as Quebec is
the type of evidence which most influences labour relations boards in other Canadian provinces to implement change. Goldenberg (1968) reveals that Quebec is the only area where formal trade union affiliation along with potential use of strikes have been enforced. There are special factors in the Quebec context however, especially the "Quiet Revolution" which developed favourable attitudes toward development of trade unionism. French-Canadians appear to be more prone to bargain collectively and they are more willing to strike than their English counterparts. Scott (1973) also cites nationalism and socialism as two elements which make Quebec different from other provinces. In spite of these differences attitudes in the rest of Canada has shown a tendency to follow similar paths; recently and the limitation of French engineers may be outdated now. (William Hall, 1972).

There are two laws concerning collective bargaining in Quebec, the Syndicates Act contains no precise definition of the term "employee" thus it allows a loophole for management engineers to join the bargaining unit. (Canadian Labour Law Reporter, 1972). On the other hand the Labour Code does define the term "employee" and it does prevent management engineers from joining the bargaining unit. Another basic difference between the two acts is that the Syndicates Act does not force collective bargaining and contracts cannot be made binding unless
the employer agrees to negotiate under the Act. (Goldenberg, 1968). The Labour Code is a more typical piece of labour legislation wherein if the employer doesn't bargain he is considered to be acting in bad faith and if he does bargain the resulting contract is legally binding.

In reality the Labour Code removed collective bargaining from jurisdiction of the Syndicates Act yet this fact has not halted use of the 1924 statute. The Syndicates Act is still utilized to form units of 15 or more members because of its ambiguities regarding management exclusion and seven of the nine engineering units exist under the provisions of this act. (Carson, 1973). There has been no push to discontinue use of the Syndicates Act despite existence of the Labour Code so professional engineers in management ranks belong to units along with employee engineers. (Goldenberg, 1968). Another positive aspect of the Syndicates Act for engineers is that unit members may resign anytime with a penalty of three months dues. (Canadian Labour Law Reporter, 1972).

Use of the Syndicates Act in Quebec allows professional, managerial, and worker orientations to unite in a single bargaining unit. Differing interests and work situations within one unit involves many potential sources of conflict between members. Management-oriented engineers generally pursue dissimilar goals from engineers who perform more
tedious, repetitive work therefore appropriate aims for each group in bargaining may be completely different. For instance, job security, personal freedom and improved communication may be absolutely critical to engineers lower in the hierarchy whereas these demands are meaningless to top level engineers. Union leadership and control is another potential source of dispute because certain key leaders in the union could allow personal orientations to rule their actions at the bargaining table.

Quebec also allows provincial civil servants to organize for the purpose of collective bargaining. The Civil Service Act of 1965 extended provisions of the Labour Code to civil servants so that engineers may unionize if they desire bargaining rights. (Goldenberg, 1968). Quebec legislation further provides full strike powers to engineers which are available only to Saskatchewan engineers and federal engineers.

Experience of engineers in Quebec indicates that employers can foster collective bargaining and encourage unionization. Goldenberg (1968) states that "engineers first formed bargaining units in the public sector because this is where the least employer resistance occurred."19 Garbarino (1971), Bain (1969), Blum (1971) and others have also stressed the argument that facilitating legislation greatly aids in the thrust for unionization. In
Quebec where the law has been a help to organizers, the
greatest degree of unionization of engineers has taken
place.

2. Saskatchewan

Goldenberg (1968) explains that the Trade Union Act
(1944) allowed all professionals in Saskatchewan to form
certified bargaining units. This Act excluded no one from
collective bargaining, even "pure professionals" such as
doctors, dentists, and lawyers could take action under
the Act. One main problem with this liberal legislation
was that it allowed larger groups to hold smaller groups
(i.e. engineers) "captive" in the bargaining unit. To
resolve the situation the Trade Union Act was amended in
1966 to allow professionals to leave the bargaining unit
voluntarily without need of decertification. In 1966
the statute provided four alternatives for professionals:

(a) Join and be part of an industrial employees' union.

(b) The professional can voluntarily withdraw from
an office or employee's union.

(c) Professionals can form a separate union with
members of their specific profession comprising
the unit.

(d) Professionals do not have to organize at all.20

This legislation is ideal in many ways because of the
flexibility it offers. Voluntary separation from the union
is compatible with engineers' values, especially if they
are forced into a unit with non-professionals. If engineers
feel that behaviour of the union violates personal value systems then withdrawal is possible. One major problem with present Saskatchewan legislation is the havoc it can cause in the orderly administration of the bargaining unit. Size of the unit may change significantly within a short time and employee tampering or promotion can induce lay members to quit the unit as bargaining approaches.

(3) Ontario

Ontario law provides a special section for professional engineers which allows bargaining units to consist solely of engineers unless the Board is satisfied that a majority of the engineers want to be in a larger unit. (Canadian Labour Law Reporter, 1972). In spite of the availability of bargaining rights Ontario has no certified units of engineers and in fact voluntary bargaining is present. Goldenberg (1968) estimates that ten percent of Ontario's professional engineers participate in voluntary relationships with employers. Surprisingly these relations did not help amend Ontario labour regulations until recently, and ironically it is possible that successful informal bargaining aided in maintenance of professional exclusions (see section B). Ontario Hydro is the outstanding example of voluntary bargaining as they have a relationship which allows disputes to go to binding arbitration. (Scott, 1973). Continuing existence of voluntary bargaining units is
evidence to prove that changes in the law are unnecessary because employees are already participating in collective bargaining. It can also be argued that emergence of these units reveals a need for new laws because ten percent is a significant level of involvement. Perhaps other employers are using the poor job market as a tool to resist voluntary bargaining by threatening to dismiss unit organizers.

Engineers and other professionals have petitioned the Ontario government to allow collective bargaining rights for professionals with the result that the law has recently been altered. Engineers joined the battle to gain bargaining rights in 1966 when the Association of Professional Engineers of Ontario changed its policy to support collective bargaining. This change in attitude from an opposing stance resulted from conditions faced by Ontario engineers in large, bureaucratic organization. (Globe and Mail, April 18, 1967).

D. British Columbia

The British Columbia Association of Professional Engineers is actively seeking bargaining rights. Mr. William Hall, Managing Director of the Association, says that the B.C. Association submitted a private bill requesting collective bargaining in 1966. This presentation to the B.C. Legislature was backed by seventy-five percent
written support of the membership. B.C. engineers desired amendments in the Engineers Act so an ancillary body separate from the B.C. Professional Association could form for the purpose of collective bargaining. This goal of certified unit status was not attained at the time of introduction and the bill has been in a state of limbo since 1966. Mr. Hall says the Association tried to obtain collective bargaining rights and organize an ancillary body for bargaining to beat trade unions to the punch! "21 Blum (1971) also stressed fears of being dragged into blue-collar unions as an impetus to organize. Legislation concerning only professional engineers is still actively pursued in lieu of changes in the B.C. Labour Relations Act and Mr. Hall believes the New Democratic government may be sympathetic towards engineers. Val Scott (1973) also supports the view that the B.C. environment is conducive to such a change because of the government and because of engineers' attitudes.

E. New Brunswick

New Brunswick allows engineers to bargain, although no units have been formed at this time. The change from previous exclusions was a result of findings of a select committee of the Legislature of New Brunswick (1967). Recommendations of the Committee included the removal of professional exclusions from the Labour Relations Act
and this has been done.

The new law is a typical piece of legislation whereby engineers who are managers or confidential employees may not by included in the unit. Under this law professionals may be placed in a unit with other workers if the Board sees fit but professionals are set apart by skills where the division is appropriate. Under the law it is possible for engineers (or any professional) to apply for removal from a larger unit. The regulations pertaining to provincial civil servants are also similar to those in the Act so that these workers may also form bargaining units.

F. Federal Experience

The Public Service Staff Relations Act of 1967 is the guiding legislation for engineers who are under federal jurisdictions. This act allows all employees to bargain unless they are in a managerial or confidential capacity. Employees excluded are as follows:

1. Those in positions which are confidential to a Minister, the Governor-General, a judge, the deputy head of a department, or a chief executive officer of a portion of the public service.
2. Engineers involved in executive duties and those responsible in respect to developing and administering government programs.
3. Engineers who have personnel administration duties or those who are involved in bargaining for the employer.
4. Engineers who have dealings with grievances as part of their duty.
The largest single bargaining unit of Canadian professional engineers is the Professional Institute (engineers and land surveyors) which bargains with the Treasury Board of Canada. This unit was organized in 1968 with a membership of one thousand, three hundred and seventy engineers. (Collective Bargaining Review, Vol. 11, 1969). The initial agreement with the federal government included a three year agreement on wages and working conditions which was settled at the bargaining table. Salaries and sick benefits were key issues for engineers and they dealt mainly with these areas in the first contract. Tables 7 and 8 present the most important terms of the agreement.

**SALARIES OF FEDERAL ENGINEERS***

<table>
<thead>
<tr>
<th>Starting Date</th>
<th>Base (en-2)</th>
<th>Top (en-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 1, 1967</td>
<td>$8,312</td>
<td>$16,055</td>
</tr>
<tr>
<td>July 1, 1968</td>
<td>8,894</td>
<td>17,179</td>
</tr>
<tr>
<td>July 1, 1969</td>
<td>9,385</td>
<td>18,124</td>
</tr>
</tbody>
</table>


**ILLNESS BENEFITS OF FEDERAL ENGINEERS**

<table>
<thead>
<tr>
<th>Years</th>
<th>Days sick leave allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under 2</td>
<td>30</td>
</tr>
<tr>
<td>8 - 11</td>
<td>165</td>
</tr>
<tr>
<td>over 20</td>
<td>300</td>
</tr>
</tbody>
</table>

The next agreement was a two year pact which was settled in the arbitration stage. One thousand, seven hundred and sixty engineers are members in the unit which is covered by the contract which is a four hundred member increase since 1968. General terms of the agreement are reviewed in Table 9.

**HIGHLIGHTS OF 1970 AGREEMENT** *

<table>
<thead>
<tr>
<th>Date</th>
<th>Base (en-2)</th>
<th>Top (en-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>July 6, 1970</td>
<td>$ 9,606</td>
<td>$ 19,211 (6% increase)</td>
</tr>
<tr>
<td>July 5, 1971</td>
<td>10,086</td>
<td>20,175 (5% increase)</td>
</tr>
</tbody>
</table>

TABLE 9

The issue of overtime work was also discussed, with the solution that time and a half rates are paid for all hours worked in excess of two hours after regular time (except for field workers.) A field survey allowance was raised to $110 per month from the previous $100 as a further fringe benefit for engineers.

The current contract between the Treasury Board and professional engineers indicates that federal engineers are profiting from their involvement in collective bargaining. The federal group made larger gains and dealt with more issues in the agreement which may reflect upon valuable experience gained during the first two contracts. The overtime issue was addressed in greater detail with the result that time and a half rates are paid during the
first eight hours of overtime and double time is paid after that. Premium pay rates are also in effect during paid holidays and standby pay is increased to a six dollar minimum for any length of time. Table 10 shows the monetary gains in the current contract.

<table>
<thead>
<tr>
<th>MONETARY TERMS OF CURRENT AGREEMENT *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
</tr>
<tr>
<td>Average increase</td>
</tr>
<tr>
<td>EG - 1</td>
</tr>
<tr>
<td>EG - 8</td>
</tr>
<tr>
<td>EG - 11</td>
</tr>
<tr>
<td>Retroactive payment of $270 paid to cover July 3, 1972- Nov. 5, 1972</td>
</tr>
</tbody>
</table>

TABLE 10


The contracts reached by federal engineers are important because of their demonstration effect and influence on engineers in other sectors. If federal engineers meet with success in the future then possibilities for widespread organization of engineers are enhanced. Federal engineers have made excellent gains in this time and future implications for government policy and greater organization are favourable for union development.

SUMMARY

This section studies history of the law, role of labour relations boards, and specific provincial situations. Engineers have legal bargaining rights only in Quebec, Saskatchewan, Ontario, New Brunswick and Manitoba but
voluntary bargaining is possible in other provinces. Reasons for present provincial exclusions can be traced to actions of engineering associations in 1947 when they successfully influenced federal labour law. Goals of enhancing professional recognition and status have been major factors in the campaign to prevent engineers from gaining collective bargaining rights. The conservative nature of labour relations boards (and opposition from engineers associations) is another significant force opposing unionization because these boards are very reluctant to make changes which greatly affect the industrial relations system.

Legal aspects may be a key in facilitating unionization of engineers also. Future developments may see the law play a positive role in aiding organization if changes allow engineers to form certified units. Labour law greatly affects probability and possibility of widespread unionization of engineers and there is evidence that legal barriers will not be so great in the future. Virtually no collective bargaining is existent in British Columbia, Alberta, Manitoba, Saskatchewan, New Brunswick, Newfoundland, Nova Scotia, and Prince Edward Island, although laws do allow bargaining in some of these areas. (Goldenberg, 1968). All federal engineers are allowed to bargain unless excluded for a specific reason and the federal group is important because of its size and value as a model group for other engineers.

The key issues in the legal area include definition
and determination of bargaining units for engineers, security clauses, management exclusion clauses, ease of entry and exit, and procedural details. If labour laws are altered to reflect favourable public policy toward union development then the likelihood of professional unions is enhanced. For example, engineers could be allowed to form separate units with different goals from their blue-collar counterparts and exclusion boundaries can be placed relatively high in the organization hierarchy. Voluntary participation in the union is desirable along with legal assurance of fair voting procedures (ie, possible government investigation if not fair.) Security of union organizers and indeed the union itself must be assured and enforced right from the beginning. The procedural facets of organizing are very important and they shall be dealt with at length in the final chapter.
CHAPTER SIX
SOCIAL ASPECTS

Social aspects are relevant factors in studying the likelihood of unionization of Canadian professional engineers. Such issues as effects of group size, reference group influences, and engineers' traits are valuable aids in analyzing behaviour of engineers toward unionization. Social aspects which are reviewed in this chapter refer to sociological and psychological issues which affect the formation (or non-formation) of engineering unions. This approach differs from a typical labour relations analysis but the value of focussing on these variables is evident for both union organizers and company officials. Social issues are not objective, concrete variables such as labour statutes, labour market data, or growth figures but they are vital to a complete understanding of all influences which affect union probability. A prime contribution of this chapter lies in its implications for organization strategies and possible changes in the engineers' roles in the industrial relations system.

A. Nature of Professional Engineers

Engineers, as a group, espouse a particular set of values and traits which reinforce their position as professionals. These characteristics are inherent in (or sought by most) engineers with strong support and leadership from the professional associations. Unique
values and traits of engineers are fundamental components for understanding behaviour of individuals and groups in relation to any decision, including unionization. Every individual engineer could not be expected to possess all the "desirable" attributes but as a group these characteristics are apparent and more importantly, they are critical in studying the possibilities for organization.

Freedom to pursue an individual role in the organization is a fundamental part of each engineers' value system. (Strauss, 1964). This desire for individual autonomy presents both barriers and possibilities for unionization. Blue-collar unions do not stress personal freedom and individuality because these values are not relevant to most blue-collar categories in which the same work is done by each person in his work grouping. For example, all workers classed as janitors have similar work roles and job descriptions which require little flexibility, therefore equal treatment in pay and fringe benefits is appropriate. Engineers desire "equal treatment for all" in a different sense. They want equal opportunity to follow an individual role in the organization while developing at one's own rate. Goals of an engineering union include attainment of more personal freedom for each engineer to utilize his unique capabilities while developing at his own pace. Large, bureaucratic organizations tend to lessen personal freedom (see section on size) with the result that engineering jobs
may be categorized or dealt out in a way which violates engineering values. Rules play an increasingly important role in lessening personal freedom as bureaucracy develops and they eliminate individualism in organizations.

Once the degree of personal freedom reaches critically low levels then unionization becomes more probable as the group exerts pressure to maintain individual opportunity in the organization. Estimation and measurement of what level of personal freedom is required to spur unionization is difficult, if not impossible, but at some point engineers perceive themselves as becoming blue-collar employees with stifling work roles. (Blem et al., 1971).

Blum (1964) and Strauss (1963) show that communication with colleagues and management is another desirable situation for professional engineers. This trait reinforces professional values while serving educational purposes as well. As bureaucratization takes effect in large organizations there is less opportunity to communicate with fellow engineers with dissatisfaction resulting from this lack of exchange. Union priorities include establishment of better communication with management as well as breaking down some blockages in communications between engineers. Benefits of improved information exchange are received by management through better work and by engineers through satisfaction of personal and professional needs.

Diversity in the work role is also sought by engineers.
They are dedicated employees who will work long hours to achieve scientific ends if the job is interesting and challenging. (Strauss, 1964). Tasks which motivate engineers are disappearing in large, bureaucratic organizations with decreased initiative on the part of engineers being a result. Job enrichment or job rotation are two possibilities to motivate engineers but the probability of study in the area is minimal without pressure from a union. Emergence of assembly line types of work roles in organization push engineers toward unionism because the result is an engineering group who are really glorified blue-collar employees. Diversity is a limited quantity in highly specialized organizations so other areas may be needed to compensate for this necessary evil (ie. shorter work week, time off for conferences, etc.)

Strauss (1963) also stresses opportunities for personal and professional growth as sources of satisfaction for most engineers. This trait is also pertinent to unionization because of the impersonal nature of bureaucratic organizations. Maintenance or increase of professional opportunities to grow must be fostered by a union to serve its membership effectively. As performance of engineers peaks at mid-career they often require project rotation or greater freedom to use self-reliance in order to remain productive. If a company does not recognize that age affects performance and motivation, then valuable experience is wasted and work
quality often falls below its potential. Perhaps a union could open new areas for personal and professional growth outside the organization by arranging for conferences and publication of findings. Prestige in a company's engineering department may help draw other brilliant workers to the organization but this prestige is limited under bureaucratic conditions.

Status consistency is also required by professional engineers. The extent to which jobs measure up to expectations of engineers has effects on motivation and satisfaction in the company. Goffman (1957) presents status consistency as the extent to which individual ranks are expected to go together and communicate consistent status to the individual and others. Goffman (1957) further states that status consistency is inversely related to preference for change in power distribution. In other words, people whose income and education are consistent with their occupational rank experience high status consistency. Workers who are unable to rise in the organization but aspire to upward mobility must seek changes to reduce status inconsistency. Engineers face a situation where they are unable to rise in the organization and an increasing percentage of engineers are faced with blue-collar working conditions. Unprofessional treatment and other positive forces are becoming more and more dominant to a point where engineers may have to seek a
change, via political or union activity, to reduce status inconsistency.

Engineers demand a fair chance to attain a status which is perceived as equitable in the organization and community. If outputs are not met by appropriate intrinsic and extrinsic rewards then unionization may be one way to enhance rewards. Input-output ratios may be unacceptable in bureaucratic organization where engineers find themselves coming closer and closer to a blue-collar role. Intrinsic returns especially may be less than professional expectations which means that unionization may be the appropriate strategy to deal with the situation.

B. Local or Cosmopolitan

A "professional role" implies certain beliefs and needs for engineers but within these basic similarities engineers' may possess different characters. The local or cosmopolitan question for engineers is of particular importance to unionization. If a group of engineers tends to be more local in nature this implies different attitudes toward the job, company, and science which may all effect the formation of a union.

The "local" engineer is less committed to broad professional goals and more oriented towards immediate peer groups and the employer organization. (Gouldner, 1957). Cosmopolitans on the other hand are less loyal to the employer and more committed to professional skills and
values. It is generally accepted that most professionals tend to be cosmopolitans, and in the case of engineers where the stress on gaining professional status is so great, this must surely be the case. A union or company must recognize particular orientations of its engineers as well as the specific values this outlook implies.

Gouldner (1957) presents three methods of determining if an engineer is local or cosmopolitan. Loyalty to the organization, commitment to professional skills and values, and reference group orientations are variables which aid in determining an engineers' orientation. More loyal employees are likely to be locals, as are individuals who are less committed to professional values. It may be useful for the company and union organizer to determine group characteristics by analyzing these three categories.

Orientation of a group of engineers is also critical in determining what type of union they would join (if he would join at all.) Cosmopolitans would require a unit which stresses scientific values rather than monetary items. Communication, research publication and personal freedom are excellent examples of priority for a cosmopolitan oriented union. A difficulty with organizing cosmopolitans is that their tenacious dedication to professional values brings severe disapproval to unionization.

Locals devote more attention to the company and project lesser dedication to scientific ideals. Locals are often
more loyal to the employer and more upward mobile in orientation than cosmopolitans. Locals are consequently less devoted to values which condemn unions with more worry attached to raising profits than meeting scientific ends. The following table highlights differences between the two philosophies very well:

A COMPARISON OF LOCAL AND COSMOPOLITAN IDEALS *

<table>
<thead>
<tr>
<th>Cosmopolitan</th>
<th>Local</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Furthering knowledge.</td>
<td>1. Making money.</td>
</tr>
<tr>
<td>2. Research as an end to itself.</td>
<td>2. Research - a means to an end.</td>
</tr>
<tr>
<td>4. The bench.</td>
<td>4. The desk.</td>
</tr>
<tr>
<td>5. Research results belong to the scientific community; should disseminated.</td>
<td>5. Findings belong to the company and are guarded.</td>
</tr>
<tr>
<td>7. Evaluated by peers through free discussion in scientific journals.</td>
<td>7. Evaluated by boss.</td>
</tr>
<tr>
<td>10. Decisions by groups.</td>
<td>10. Decisions by higher-ups.</td>
</tr>
<tr>
<td>11. All findings subject to criticism and are never final.</td>
<td>11. Bosses decisions are final.</td>
</tr>
</tbody>
</table>

TABLE 11
Locals are classically the likely candidates for unionization because their orientation focusses on the company rather than on the whole area of engineering. (Gouldner, 1957). Locals tend to be more business-like with more awareness of rewards in terms of money and fringe benefits and locals are also more security conscious and less confident of making it on their own, in contrast to cosmopolitans. The labour market does not work for locals in the same way as it does for cosmopolitans because cosmopolitans are more adaptable and have a more flexible orientation which is useful in many organization. Locals are not as likely to seek satisfaction via educational leaves nor improved communication with colleagues as cosmopolitans because intrinsic rewards are not so meaningful as extrinsic returns.

Cosmopolitans would organize for completely different reasons than locals. Whereas locals would unionize because of threats to their job security, cosmopolitans are more likely to organize because of a violation of professional values. Locals are less concerned with professional treatment, autonomy and prestige but cosmopolitans suffer severe stress if these needs and values are continually violated. If stress reaches critical levels then unionization of engineers is more probable for both locals and cosmopolitans.
but the source of stress may be completely different.

C. Predispositions Toward Unionization

Another issue of concern in studying unionization is predisposition to strike and organize. Predispositions toward action and ultimate behaviour are not always consistent but some traits of a worker may help predict his acceptance of a union. Factors such as age, sex, origin, political affiliation or religion may help predict possibilities of organizing a particular group of employees.

Stephen Cole (1969) studied the conversion of predisposition into action for teachers' strikes. He found that nonteaching statutes such as age, religion, family origin, etc., could influence the predisposition to strike. Specifically a person is more likely to strike if he obtains social support from colleagues and there are no cross pressures in the group.

Results of this study are important to show general applicability of the area and also because teachers are a good comparison group for engineers. Using a sample of 900 teachers to study the factors Cole obtained the following results:

(1) Teachers under thirty years of age are more likely to support a strike than older teachers.

(2) As age rises support for strikes falls.

(3) Working class origin teachers are more likely to strike than teachers from other origins.

(4) Men are more likely to strike than women.
(5) Behaviour during a strike is visibly affected by others' behaviour, i.e. support of friend, colleague, means conversion of predisposition to action is more likely.

(6) Women in schools with more men are more likely to strike than women in schools with few male teachers.

(7) If local leadership is ineffective it is less probable that predisposition to strike will be converted to action.

Cole's study reveals to unions that group characteristics and ties can be useful gauges for showing predispositions to organize. Perhaps odds of a successful organization campaign could be significantly increased by first studying group characteristics.

If these results are applicable at all to engineers then the implications for a union are great. The union would look for engineers who are local in nature, young, from a working class origin, who work in poorly run organizations and with friends already in unions. The optimal situation would be to find all these traits exhibited by a group of engineers in one organization but this is unlikely.

Indik and Goldstein (1963) also studied backgrounds of engineers to see the effects and predictability of such information. The basic question was whether factors in a workers background were reliable in predicting sympathy towards unionism or rejection of it. For example, does less education indicate greater union sympathy, or does lower
socio-economic origin, or beliefs of one's parents, etc., reflect on union acceptance? This study discovered that union and non-union backgrounds have little effect on engineers' behaviour. Rather it is the degree of satisfaction which is critical (i.e., intrinsic rewards such as interpersonal relations, attitude of the company, adequacy of facilities, and extrinsic rewards.) Conclusions of the investigation include finding that engineers are more likely to organize at one site where all engineers have common problems and where other unions in the same company have been effective in dealing with similar problems.

Perhaps some of the factors such as age and leadership and working class origin are most relevant for engineers, but this is doubtful in light of the last study. It appears that treatment of engineers and success of groups in near proximity are very important however.

D. Reference Group Theory

Reference group theory provides further information on the possibilities of unionizing engineers. (Kemper, 1968). Normative, comparison, and audience group theory may all play some role in resistance or acceptance of engineers' unions. Normative groups provide a guide to action by explicitly setting norms and by espousing particular values. The actor is expected to comply with these values either willingly or unwillingly although he may find it
necessary to act contrary to the rules on occasion. Kemper says this type of group is important for maintenance and control of group members as well as support of its activities and the stronger the commitment to these values means the stronger the group is as a whole. In Canada, engineering associations are basically normative groups and their control and maintenance of values against collective bargaining has severely hindered unionization of engineers. Rebel engineers in favour of a union must be very firm in belief or they will not speak against the group and its values. This helps explain why engineering associations have been so successful in combating legislation which would allow engineers to unionize in spite of a need for unions on the part of many engineers. Mr. William Hall of the B. C. Professional Association of Engineers feels the common stand is changing however and soon acceptance of collective bargaining may be a value of associations.

Comparison groups are also pertinent to unionization of engineers. These groups provide actors with a frame of reference to facilitate judgement. For example the comparison group can also be a legitimator group to help rationalize behaviour. The actor rationalizes that others behave like himself so this line of behaviour must be correct. This example is easily applied to engineers who point at fellow professionals who are resisting unions although this logic is becoming less meaningful as time passes. This type of
group also fits into the Indik and Goldstein (1963) study where unions in the same company can have great influence on engineers if they deal with similar problems effectively.

E. Group Size

Group size is relevant to unionization because of the trend towards employment in large organizations faced by many engineers. Larger pools of engineers and increasing size of that department is common in large companies.

Large groups bring about a need to administer in a bureaucratic way for efficiency to be achieved. Bain (1969) shows that the organization tends to emphasize the office rather than the individual as the organization grows. People tend to be treated as members of groups and not as individual workers as size increases. Promotion is more apt to be determined by formal rules rather than personal considerations and sentiments of managers therefore standardized working conditions are inevitable. (Bain, 1970).

As has been argued previously, these aspects of larger organizations and groups invariably contradict needs and values of engineers which are required to meet lower level needs let alone self-actualization. Growth of organizations may thus be a great force towards unionization of engineers as they combat force with force and size with size.

United States studies have shown a positive relationship between greater size and unionization. Studies done by the Bureau of Labor Statistics, Sherill Cleland (1955),
Frederic Myers (1956), and Steele and MacIntyre (1959) all support this view as well as studies in Norway, Sweden, Japan and Austria.

Development of teamwork becomes a difficulty for a growing organization. Collaboration is easier if workers separate and read one another's papers but this may present problems of supervision and control. Also it is hard to put many brilliant men onto one team as a department does so problems may arise here. One effective solution may be to unite locals and cosmopolitans in one group to combine practical and scientific skills. Problems of teamwork in the bureaucratic organization or unions may develop to improve conditions in the work place.

SUMMARY

Specific needs of engineers include autonomy, completion, challenge, professional skill, learning and professional recognition. (Strauss, 1963). Many of these needs are ignored or opposed by forces in large organizations with dissatisfaction resulting. A union could study engineers in the employer organization to determine what needs have to be concentrated on in an organization campaign. Modern organizations are increasingly reducing opportunities for freedom, learning, completion, and challenge because of any overwhelming drive for efficiency and large-scale division of work. Use of professional skills and recognition of engineers is also lacking in
large bureaucratic companies to a point where engineers are disappointed with their opportunities to contribute to the employer organization as well as chances for intrinsic rewards. An engineers' union could focus on these problem areas and seek satisfactory changes at the bargaining table.

Values and needs of engineers can be used to prevent unionization by the employer. Blum (1964) presents many ways that a company can combat organization effectively. Implementation of certain strategies at critical points in time can stave off group discontent and stifle an organization campaign. For example more personal freedom could be granted to engineers or an improvement of vertical communication could be utilized. Also arrangements for educational seminars or time off for conferences in other cities are possibilities to enhance engineers' satisfaction with jobs. These strategies and strategies which a union may follow will be presented in greater detail in the final chapter.

The local or cosmopolitan question is also a key to future unionization. Cosmopolitans are being forced into a local role in the organization which increases dissatisfaction amongst engineers and makes unionization more likely. Ability of organization to make their engineers feel like scientists and not just tools of management will be important in this area. It would
appear that organization are forcing the values of locals on all engineers without regard for the consequences. If the situation comes too close to blue-collar conditions or cosmopolitan values are severely violated then unionization is more probable.

Attitudes toward unionization and factors such as age, sex, work origin or political affiliation may also hinder or help unionization. Backgrounds of new engineers entering the work place in large numbers could greatly influence the acceptance of engineers' unions. As more engineers from working class backgrounds enter the work place there may be changes in attitudes towards collective bargaining although it is more likely that common problems for all engineers in one company could be the stimulus for organization. Growing size of organizations and use of pools of engineers have positive implications for unions also. Administration by bureaucracy to gain efficiency means that organizations meet engineers' needs less and less and in fact many needs and values are violated. The trend toward larger organization is evident in Canada as is the use of bureaucracy in management.
CHAPTER SEVEN
FORCES INHIBITING UNIONIZATION

The forces inhibiting unionization of professional engineers are critical inputs for this systems analysis because of the influence on engineers attitudes and behaviour. Negative elements reduce the probability of unionization of professional engineers and help maintain the status quo. Many of these factors have already been dealt with briefly but further discussion of the relative merits of each argument from an engineering standpoint is useful. Negative aspects of unionism have traditionally dominated in the case of Canadian professional engineers, but drastic changes in their work situation negate many arguments which oppose collective bargaining.

Resistance toward unionism is basically philosophical and subjective in nature whereas positive arguments tend to be more objective and concrete. Goldenberg (1968) states, "The opposition to collective bargaining for professionals has been argued mainly in terms of status, professional ethics, public service, and the protection of individualism." It is the strength and authenticity of these arguments that this chapter hopes to deal with.

A. Traditional Philosophy

One major force combating unionization is the traditional engineering philosophy which condemns collective bargaining.
(Goldenberg, 1968). Some typical engineering views are illustrated through the following quotes: "Now, whether it is better to have Engineers-in-Training in a trade union is another point of controversy. Our stand is definite - they should not be in any union." Seidman and Cain (1964) state, "Professionalsim is an individual thing. One must stand on his own merits and be given freedom for individual actions. Professionalism is not based on standardization as is unionism. Unionism emphasizes prestige and professional standing. A true professional should not rely on a union to bargain for him. He is lowering his status. He should get paid what he is worth, rather than some base pay for hours put in." These stands ignore situations experienced presently by engineers where standardization, a lack of prestige, unprofessional tasks, and rewards based on seniority are becoming facts of life. (Bain, 1970).

There is a growing number of professional engineers in Canada who discount the traditional stand on collective bargaining. (Muir, 1971, Cain and Seidman, 1964). Evidence to support the claim that traditional sentiments are weakening is well shown by Quebec unions and Ontario experience in informal bargaining. The B.C. Professional Engineers Association is also an excellent example of a body of engineers which not only accepts collective bargaining, but also sees it as a necessary development
for engineers. (William Hall, 1972). The term "professional" once meant condemnation of collective action but recent developments in society attitudes have altered this situation. Today, such Canadian professionals as doctors, policemen, and teachers have entered the realm of collective bargaining.

In spite of changes in the work environment, the traditional belief that unionism is evil still exists and in some cases it is a strong force. A radical change in attitude on the part of many engineers would be required to weaken the outdated attitude that collective bargaining and professionalism are opposites.

B. Professional Viewpoint

Negative aspects from a professional viewpoint is another argument which condemns collective bargaining. In Goldenberg's (1968) view this argument is centred on issues such as creativity and lower work standards. Opponents of unionism state that the professional viewpoint of engineers would be damaged or severely limited if unions existed. Discouragement of engineering thinking and creativity is supported with blue-collar examples where workers toil in shallow, meaningless tasks. Another facet of this argument is possible group control over individual output through sanctions on over-producers (as well as slackers) to force uniformity onto the engineering group. A division of loyalty between the
employer and employee groups is a real fear of supporters of this argument.

This reasoning ignores situations which exist for engineers in bureaucratic organization. In reality one of the greatest forces pushing engineers toward unionization is destruction of the professional viewpoint by large, bureaucratic organization. (Hansen, 1963). Creativity and freedom are stifled along with changes for self-actualization. Loyalty to the company is decreased by bureaucracy simply because of the manner in which workers are treated in such an organization. (Bain, 1969). Engineers are treated more like cogs in a machine than the valuable individuals which they strive to be. In fact many engineers perform tasks which are no more creative nor more challenging than blue-collar jobs.

C. Management Links

A traditional tie to management is another force opposing unionization of engineers. (Strauss, 1963). In past times engineers have supported and identified with management, yet they have recognized management perogatives as necessary elements in the work place. Engineers identify with management because they are upward mobile in the organization and many expect future promotion. (Blum et al, 1971). There is also a belief that management will use merit as a measure of performance rather than simple rules such as seniority. Proponents
of this view believe that a union of engineers would lead to a loss of management rights in areas of promotion, transfer, and work assignment which would not be a desirable development. There is also a feeling that engineers would be less likely candidates for promotion after organization because management would be the adversary not the ally.

Management link arguments are often inappropriate for engineers employed in large, bureaucratic organizations. Rules and set procedures are followed to reach decisions on promotion and transfer in bureaucratic companies, therefore little weight is given to merit. (Bain, 1970). Fewer and fewer higher level jobs are available to engineers because competition is greater and bureaucratic methods of management allow a few managers to administer many workers. It is also tenuous to argue that engineers and management are close allies under bureaucratic circumstances because of the methods used to administer engineers.

Confidential status is valuable in meeting personal and professional needs of engineers but this privileged status may be lost if unionization occurs. Loss of confidential status implies that union members would not be allowed to work on many key projects because divulgence of secrets would be an overwhelming bargaining tool. If participation in challenging projects was one result of
an engineering union, then fewer opportunities for engineers to self-actualize and meet other personal needs would be a severe disadvantage to unionizing. On the other hand a loss of confidential status may force companies to promote more engineers to work on secret projects and upward mobility could feasibly increase. Also there is typically less and less opportunity to work on challenging, key projects in large bureaucratic organizations.

D. Fear of Uniformity

Uniformity and conformity in organization roles oppose engineers' values yet they are definitely associated with normal use of the word "union". In spite of the fact that many engineering jobs are moving precisely in this direction, professional engineers don't want to recognize the possibility that engineers would perform that type of work. Uniformity and conformity in work roles are "unprofessional" therefore union formation is inhibited by the belief that emergence of a union could speed up the trend toward uniformity through groupings for pay and job classification. Blue-collar unions are examples which support this argument which ties uniformity and conformity to union formation. Individual freedom and differences are critical items in the engineers' need hierarchy and trade unionism is viewed as restricting in these areas because of the uniformity which is present in typical blue-collar unions. Uniformity in pay rates
is another highly unacceptable trait of blue-collar unions which is not compatible with engineers' desires, but these traits may be overcome (as teachers unions have shown.)

E. Management Practice

A growing ability of management to appease engineers and prevent union development through utilization of certain practices opposes engineering unionism. Management can learn tactics through communication with other companies or from handling of other professionals in the organization. Bain (1970) and Walton (1961) have offered various methods of combating unionization:

1. Bain (1970) and Walton (1961) suggest that salary administration can be used to lessen probability of organization. Salaries may be raised to higher levels than pay in unionized firms or else a competitive level can be maintained. Timing of wage hikes is important because increases in pay at times of increasing dissatisfaction may appease engineers. Also timing of raises may coincide with gains in unionized companies or implementation of salary hikes may also be used to stay one jump ahead of unionized engineers. Profit sharing is another useful strategy because bonuses are paid near Christmas or at other critical times when dissatisfaction may be minimized.

There is an additional alternative in the salary area and that is to reinforce loyalty by paying loyal
workers more money than their colleagues, (Bain, 1970) and a decision to use of merit to determine salary changes is both motivating and satisfying for engineers if the company has the means and inclination to do this.

(2) Another method of combating union formation and simultaneously increasing organization efficiency is encouragement of vertical and horizontal communication. (Strauss, 1963). Existing channels may be unblocked or new channels for information flow can be opened because better communication between colleagues and management would present strong opposition for a union organizer.

A sense of loyalty and personal value to the organization is raised through better communication and identification with management is a further force which vertical communication reinforces to reduce probability of union formation. Engineers also need contact with colleagues to satisfy personal and professional needs while increasing engineering effectiveness in the organization.

(3) Just and swift settlements of grievances is a third useful alternative for management. (Kleingartner, 1968). Arrival at a fair settlement in dealing with engineers' problems should be accomplished in a short period to satisfy engineers' desires and values while promoting organization efficiency. By ignoring difficulties and grievances presented by engineers, the company may reduce feelings of self worth held by engineers and make them
feel like blue-collar employees.

(4) Recognition of individual differences between engineers is a fourth method to impede union formation. (Hansen, 1963). Unhappiness in large, bureaucratic organization is a direct result of the loss of a sense of individuality on the part of engineers. Values and needs illustrated in the social chapter clearly demonstrate the importance of individuality to professional engineers. Bureaucratic organizations tend to place engineers in assembly line roles and the resulting loss of personal differences is discouraging and unacceptable. Perhaps companies can appoint engineers with administrative qualities to administer other engineers and show the members of the staff that their individual contribution is recognized.

(5) Fostering of continual identification with management and provisions for job security are further alternatives which merit consideration. It is especially important to maintain engineers' identification with management rather than allowing professional scientists to feel like ordinary workers with no special status. Communication and special treatment above blue-collar standards are two ways to accomplish this goal.

(6) Strategic use of promotion and transfer allow companies to influence key figures in the organization of a union and successful tacts can stifle union activity
before it starts. (Bain, 1970). Companies may find ways to fire engineers who are sympathetic to unionism or promote valuable contributors to management ranks. Dismissal of engineers in a buyer's market is a harsh form of discipline because other companies are not likely to hire a union sympathizer when there is a wide choice of engineers in the job market. This strategy may be the most effective and least costly of all but rule by fear is one way to force good workers to search for a new employer.

F. Other Arguments

Goldenberg (1968) presents the fact that arguments opposing engineering unions are psychological and traditional in nature. These arguments may be summed into two general categories:

(1) Unions are unneeded.

(2) There will be harmful effects from unions.

The first argument is blind to changing conditions in engineer's work situations and labour market for professional engineers. Unions are clearly appropriate for a considerable number of engineers because collective action is virtually the only means of changing their situation.

The second view is the more critical one. Rather than stating that unions are not required, this argument presents the notion that unionization in its blue-collar form could cause serious problems for engineers. Such difficulties could include a division of loyalty, lower
morale, reliance on seniority in decision-making and increasing uniformity. A union must address itself to answering this argument and lessening the inappropriate features of a typical blue-collar unit.

SUMMARY

Factors opposing engineering unionization are based on long established attitudes which are traditional for the profession. Many negative arguments are outdated because they fail to recognize changing conditions which are faced everyday by paid engineers. Traditional philosophy, management links, professional viewpoint, etc. have all been reinforced by the group as strong deterrents for unionism through past behaviour. Traditional belief that collective bargaining is not compatible with professionalism has been a prime reason for the present state of non-organization in Canada. This stand is disputed by most scholars and observers of the engineers' situation. (Bain, Goldenberg, Carrothers, etc). A good example of this stand comes from Russel (1954), "It has generally been accepted by the vast majority of membership that unionism and professionalism are not compatible. This viewpoint is in no way, slighting to trade unions. Trade unions are for the trades, but not for the professions. This is the official attitude of The Council of The Association." 25

These arguments give some indication of the barriers
faced by union organizers. Some factors such as the traditional attitude and professional viewpoint are changing (see law chapter) but others are still powerful influences in Canada.
CHAPTER EIGHT

CONCLUSIONS AND INSIGHTS

The result of this systems analysis is a confirmation of the thesis that professional engineers in Canada are likely to unionize on a greater scale in the future. The influences in the engineers' system indicate that the pressures toward union formation are becoming more and more dominant for a large portion of the engineering work force. The findings of this study are summarized well by the feelings of Seymour Fogelson (1969), an engineer with a masters degree, "I don't like, of course to be put in the same category as blue-collar workers. I think some association has to be established to give engineers something like a union." These sentiments, which their speakers concede conflict with long-held principles of independence and professionalism on the part of engineers, are typical of a growing vocalness from a bitter segment of the so-called silent majority."

The conclusion of this paper is that engineers will organize on a wider scale but as Peter Carson (1973) says, they will do it reluctantly. Positive forces in Canada are very great now and they continue to grow in influence every day. Traditional arguments which oppose unions are fast becoming inappropriate for a large portion of professional engineers because professionals are not able to satisfy their unique needs through the job. Goldenberg and Strauss are key sources to
illustrate the erosion of individual initiative and dignity which is taking place for engineers and Muir (1971) presents these reasons and other legitimate forces which indicate engineers should form unions. Bain (1969) also supports unionization of engineers through his belief that democracy is less complete if groups of professionals are not represented in the firm as well as outside it. In fact there is no inconsistency between the status of professional engineers and use of collective action when one discovers the terms under which many professional engineers work. Blum (1971) also support this claim that unions are the most effective means to re-establish self-respect and professional standing.

There is evidence throughout the paper to prove that stimuli which enhance union possibilities are reaching levels which force engineers to act out of frustration. In past years large, bureaucratic organization were not as dominant as today, therefore traditional attitudes were easily reinforced by professional associations, but today an entirely new situation exists. Whereas positive forces for organization were not previously widespread enough to effect engineers' behaviour, they have increased to a point where many arguments against unionism are negated. Prior to widespread unionization of engineers, some critical problems must be dealt with to make unionism more compatible with engineers' values. If a new type of union emerges without many blue-collar
"evils" then likelihood of unionization is enhanced to a far greater extent. With the goal of increased compatibility in mind this chapter offers alternatives for engineering unions through analysis of key issues.

A. The Law

As a prelude to widespread unionization of engineers, laws in many provinces must be altered to omit professional exclusions. Present restrictions in labour law do not facilitate a major movement towards collective bargaining in Canada. Since the Federal legislation of 1947-48 was enacted with future revisions in mind there is a strong possibility that engineers could lobby to have the laws amended. British Columbia is a good example of an association which currently seeks changes to parallel Saskatchewan, Manitoba, Ontario, New Brunswick and Quebec situations where engineers are allowed to bargain collectively. It is a definite possibility that other provincial associations will follow more powerful groups to push for organization rights in their respective provinces. Attitudes of society and professionals continue to view collective bargaining as a legitimate vehicle for worker participation in the work place and hopefully the law will soon reflect society's attitudes.

Peter Carson (1973) believes that the law should allow engineers to form their own bargaining units,
place management exclusions at a high point in the organization hierarchy, provide for individual choice to join or withdraw from the unit, and relations should be achieved without strikes. These goals are very compatible with the findings of the rest of the paper in regard to engineers' values and needs. It would be appropriate to require a very large majority vote to gain certification if the law did not provide for voluntary withdrawal, because engineers are extremely adverse to rule by bare majority. Separate units for management engineers are not necessary if the exclusion point is placed sufficiently high. For example, all engineers may be eligible except those who direct other engineers and those who work in personnel functions. The role of the labour relations boards would be mainly procedural to ensure that engineers are given a fair opportunity to form their own unit with a democratic vote. The boards would also play a very important role in decisions pertaining to eligibility and maintenance of individual rights.

Following discussion in this chapter rests on the assumption that labour laws will be altered to allow all professional engineers to organize. Labour law is the ultimate barrier to unionism in that it can be used effectively as a weapon by employers even if all engineers seek bargaining privileges. As positive forces render negative aspects inappropriate in large bureaucracies
the only weapon available to halt union formation is through strict adherence to the law. The effect of favourable public policy is presented in the paper as it applies to engineers and other professional workers.

Following sections help analyze what new policies may emerge and much of the discussion is meant to discover new approaches to white-collar bargaining or "professional" unions.

B. Union Strategies and Goals

Wideman (1971) states that a change in attitude towards collective bargaining has taken place in society, and he says, "Undesirable as it may appear to many engineers, the fact is today's democracy is a system of pressure groups. In the past engineers were individually recognized and individual action was often sufficient to deal with an unsatisfactory situation. This is no longer the case. Unprofessional though it may seem, it appears that the only remedy available today is the formation of an organization for the specific purpose of promoting the employed professional engineers' economic interests." 27

Organization should do far more than promote pure economic interests for professional engineers because violation of other values aside from salary issues, is the source of much of the impetus for unionization.
A union could satisfy engineers best by concentrating on intrinsic rewards as well as monetary items.

The new "professional union" is more likely to be an ancillary body than the professional association itself. Professional unions will require new leaders who are capable administrators and bargainers rather than men with pure professional orientations. There is a good possibility that the association and union would merge in the long run because of unhealthy competition for loyalty and the existence of many common goals (as well economies of space and manpower.) It is also possible that unions may start out being affiliated with associations while not actually being a part of the professional association. This would be most probable where associations push heavily for union rights and where associations recognize that their future existence depends on support of the new union.

(1) Individualism

Evidence has been presented throughout the paper to illustrate how bureaucracy has destroyed individualism for engineers. Unionization is greatly aided through non-recognition of individual value to the organization because engineers place a high value on personal worth and engineering unions would attempt to rectify this situation to some degree through bargaining. One method is to seek reward based on merit which would force the organization to recognize individual input, with the result
that higher rewards would indicate greater value to the company. Rewards based on merit do not prevent departmentalization nor specialization in organization of tasks, therefore it is possible that job roles may still limit talents and inputs of the engineers to some extent.

There are many procedural difficulties in facilitating individual rewards but the situation is not impossible. One possibility is to utilize periodic reviews of the engineer's performance. This may be accomplished through monthly meetings between superior and subordinate to mutually assess outcomes and goals. Another method may involve colleagues and peer appraisal. Peer appraisal seems to be compatible with both engineering values and individualism, therefore it may be an ideal solution to the problem of equitable returns.

Individualism in the unit also means that engineers must be able to decide for themselves if they want to join and be part of an engineering alliance. Perhaps a 70-80% vote in favour of organizing should be a pre-requisite to prevent many unhappy individuals from being stuck in a unit. Democratic practices such as election of leaders and the use of peer evaluation is also possible to protect individual rights. An agency shop is imperative to facilitate voluntary membership in the professional union and to ensure union security.
as well.

Another useful alternative to increase individual recognition is through different styles of leadership. Perhaps an engineers' union could bargain for leaders who provide science-oriented leadership rather than normal bureaucratic styles which are directive in nature. Contact with leaders who are knowledgeable and who merit their jobs increases ties to management, allows individuals to measure progress through praise or punishment, and at the same time increases feelings of self-worth. The professional union would have little control over leaders, aside from pressuring management to promote engineers on the basis of merit.

(2) Salary Determination

Engineers seek different goals than blue-collar desires for general increases and categorization of jobs. Engineers also pursue an equitable system of reward whereby returns are based on one's worth rather than some uniform rate of pay. It is far more important to gain fair rewards than hugh increments, in other words engineers require an equity system of reward rather than an equality system such as blue-collar workers generally have. In some cases the increment for paid engineers may be very large to obtain equity but this may not be true in all cases. If ideal conditions existed in organizations engineers would have returns based on
effort, productivity, and skill input to complete the task and all individual wages would be revealed to prevent speculation and unhappiness due to rumours. Perhaps the goal of engineers is best seen through use of Adams' theory on inequity. Adams' theory states that equity exists when:

\[
\frac{\text{Outcomes for Others}}{\text{Inputs by Others}} = \frac{\text{Outcomes to Person}}{\text{Inputs by Person}}
\]

Implementation of safeguards to preserve equity in the system and protect those who are unfairly rewarded is also desirable. An appraisal system is appropriate to protect justice in the system through periodically review of rewards and merit. Some organizations have already implemented a review system with success but engineers' values would be more satisfied if the right to appeal was made available to all engineers. The right of redress is really a chance to challenge the administration on an issue to insure just treatment. Individual engineers should be allowed to participate in their own appraisal by discussing work goals and work accomplishment with the supervisor.

If an engineer still feels justice has not been served after appraisal steps are concluded, then further steps to appeal decisions should exist. Practical problems of deriving a formula for determining outputs and inputs would be the greatest barrier to an equity reward system because comparability between jobs is required in the
formula. Engineers work on totally different projects with various skill requirements so fair comparisons of effort are very difficult. Perhaps a work procedure committee or an engineering council could be given specific duties in the area to develop a fair formula and ensure just administration of it.

Engineers would initially try to raise levels of pay to prevent falling behind the general work force while striving for rewards which are consistent with their education, ability, and service. The problem of telescoping must be corrected to motivate experienced engineers and recognize greater worth to the organization. The professional union may bargain for greater benefits for mature engineers who offer valuable experience but this scheme must be based on merit. Overtime payment could be a new issue because many engineers on salary receive no overtime pay although some engineers are allowed to take time-off to compensate. In the future engineers may be paid at premium rates for overtime or have a choice of time-off instead of pay. Use of scheduled overtime is also a possibility to distribute extra pay more fairly throughout the engineering group.

(3) Job Security

Job security has become a relevant issue for Canadian professional engineers. Unionism could clearly strengthen this area through collective bargaining
through tradeoffs for lesser benefits in other areas or formulae for pay cuts are alternatives to increase job security.

If a company requires less engineers then the lay-off system must be fair with just methods of release. An elected engineering council and management could review skills and performance to mutually decide which engineers are least deserving of jobs. Professional lay-offs are not based on pur seniority as in the blue-collar case because organizations strive to keep more valuable engineers. This method of lay-off is a great motivator in the poor labour market which presently exists in Canada and it also conforms with engineers' values. There would be great incentive for the individual to upgrade his skills if lay-offs were based on personal worth therefore organizations would have a built in resistance to skill obsolescence. Senior engineers could not slack like senior blue-collar workers and skill upgrading would be forced upon older engineers to the benefit of the company.

Walton (1961) suggests three further alternatives for lay-offs which may be considered by a union. These choices include lay-offs by a rating system, man-to-man comparison (similar to previous suggestion), and seniority on an inter-company basis. The first two possibilities are congruent with engineers' values more than the third one because merit is the basis for rating the engineers.
There are practical difficulties in constructing rating systems and evaluating individuals but these barriers are far from insurmountable.

Another method of increasing job security is to arrange for all engineers to take a slight cut in pay rather than have a fellow engineer released. This alternative would help companies by retaining valuable workers while simultaneously preventing the condition of labour market oversupply. Each engineer probably would receive a very slight drop in pay of far less than five percent but the benefits in group cohesion are great. Blum (1970) supports this notion of work sharing as one method of avoiding unemployment and increasing worker solidarity at a relatively low cost.

Clauses pertaining to automation are also goals for bargaining in some cases. There could be obligations for the company to make new jobs for those displaced by automation or some special monetary benefits may be given to those who are laid off. (Blum, 1970). Professional unions and associations would not oppose technological advances but they would demand assistance to those who lose jobs and programs to facilitate re-employment. (Blum, 1970).

The union specific duties and commitments to engineers' security through the use of employment
counselling and job placement activities. (Blum, 1970),
It is possible for local units to communicate on a
national scale to ensure that engineers are aware of jobs
right across Canada. The professional union could also
go further than this by bargaining for clauses which
require the employer to help the engineers relocate
through contact with other employers.

(4) Development of Engineers

Education could be one of the most important
bargaining areas to increase engineers' satisfaction.
Issues concerning education may be used to lessen dis­
satisfaction on the job while increasing intrinsic rewards.
An engineering union could demand "X" hours per week for
education purposes to prevent obsolescence of skills
while allowing contact with fellow professionals.
Perhaps an arrangement is possible whereby a nearby
university becomes involved in arranging weekly seminars
and instruction. Another alternative is use of association
personnel to help update knowledge through gathering
and dispersing of new techniques or theories in engineering.
Educational leaves of absence for one year or longer
provide an additional bargaining issue of concern for
all engineers.

Leaves of absence would assure the individual engineer
that his place in the organization would be saved while
he gained extensive educational benefits. Attendance at
engineering conferences and night classes might be fully financed by companies or at least part of the cost shared. Increased education programs ensure that engineers with experience can stay abreast with scientific developments and apply them to the organization (while overcoming the problem of skill obsolescence.) Cost-saving processes and more efficient production methods are probable dividends for the company if continuing education of engineers is facilitated. The upgrading of skills also "cosmopolitans" workers to make them more useful for other companies in case of unemployment. Continuing education also lessens needs in other areas because it meets such needs as contact with colleagues, increased perception of personal worth, and professional status.

(5) Fringe Benefits

Fringe benefits such as pension plans and vacations are other issues to be dealt with. Wideman (1971) offers many areas which unions must study as potential bargaining issues. These benefits include life insurance, pension funds, disability income, sickness income, hospital coverage, household insurance, professional liability insurance, and unemployment benefits.

There is a lack of fringe benefits in many organizations because engineers are salaried workers who are not as secure as blue-collar employees but engineers are paid fairly high rates compared to most blue-collar workers,
therefore engineers have not pushed for additional gains. Fringe benefits are of greater concern to blue-collar workers because extrinsic rewards such as guards against injuries and physical belongings are critical to these workers.

Pension schemes with voluntary involvement are necessary for engineers. Poor job markets result in less mobility for engineers therefore much of an engineer's career is likely to be spent with one organization. Longer job spans mean that a pension fund can be developed and administered whereas constant turnover of personnel creates great problems. Various options for engineer payment can be modelled after blue-collar formulae so that engineers can put up to "X" percent of their income into the pension fund. Cooperation with other unions in the organization can give benefits to gain a large, stable pension fund with high returns. It is also desirable that the pension fund be portable so the engineer can take it to his next job.

Vacation time could be increased for engineers or timing of vacations could be negotiated. For example, engineers may be allowed to take holidays after projects are completed, or, if the project takes more than one year, then vacation time can be accumulated. After-hours use of lab facilities is another fringe benefit which meets professional needs. If the engineer is not
being challenged on the job then experiments of his own could help to reduce dissatisfaction. Rights to publish results of experiments is another attractive situation for engineers.

(6) Communication

The role of communication has been stressed throughout the paper. Improvement of vertical and horizontal communication is a primary concern for an engineering union. Union power may force more vertical exchange to take place because management would be more aware of engineers and their values. Union negotiations could also facilitate horizontal communication through less adherence to formal channels of communication. Perhaps engineers could be physically close to one another so consultation is easier and group cohesion is increased because administration by bureaucracy tends to stifle communication for the cause of efficiency, but bureaucratic rules may lead to lower production due to dissatisfaction on the part of engineers. Management must communicate with union representatives on critical issues and perhaps this is the greatest value of unionizing. Regular meetings with management by union representatives seems to be one appropriate way to impress engineers' views on higher levels of the hierarchy.

Through periodic appraisals of engineers' work the union could force management to communicate with engineers.
Channels of communication may be unblocked and new ones may be opened for greater efficiency in the organization. Possibly an engineers could go directly to the person he needs to consult with unless the problem is a major one.

Rise of strict hierarchal rules and existence of red tape often result in great difficulties in solving minor problems.

(7) Conflict Resolution

Resolution of conflict is one area where engineering unions are very likely to diverge from their blue-collar counterparts. The militant conflict style of blue-collar unions is oriented to strikes and severe economic threats which are entirely unacceptable to engineers. Val Scott (1973) points out there has never been a strike by engineers in Canada and John Oliver (1973) questions the effectiveness of such a strike anyway because engineering projects are long-term efforts which are easily delayed for lengthy periods. Slowdowns, mass resignations, and workshops are alternative strategies to apply pressure on the employer but these tactics also violate engineers' behavioural standards. There are further alternatives available to engineers however and these are most likely to be used.

Bain (1969) suggests that compulsory, binding arbitration may be agreed upon to resolve disputes. A third party may be agreed upon to hand down a binding award so that strikes are avoided. Perhaps mediation
and conciliation stages are possible to settle disputes as well because most provincial labour relations acts provide conciliation machinery.

Shrum (1970) suggests a more lengthy set of steps for engineers to resolve disputes. First of all the employer and the union would try to work things out by themselves as in any collective bargaining situation and perhaps they may even agree on mediation and arbitration on their own. If the first step brought no agreement then a fact-finding body could be appointed by a commission to get the two parties together. If this second stage also failed then the conflict may be referred to the legislature with or without recommendations from the commission. All of these steps would have time limits but Shrum would not hurry the procedure so the parties could cool off. This procedure appears to be acceptable to both engineers and companies so some form of this dispute method could well appear in the future.

Val Scott (1973) offers another method of dispute settlement for engineers called the "Final Offer Selection." (Columbian, April 4, 1973, p.21). "The basic principle is that if two sides in a dispute are unable to resolve their differences, a mutually acceptable 'selector' or selection officer would have the power to choose between the final offers presented by both sides."28 This type of mechanism would call for bargaining to start six months
before the expiry date of the contract and as each item is settled it is removed from the agenda. Prior to two months before the expiry date the selector is introduced to hear positions on the outstanding items remaining on the agenda. Following an attempt at mediation by the selector the remaining items are then put to the final offer whereby the selector accepts one offer or the other and does not have to justify his decision. This method eliminates strikes and lockouts which are in violation with engineers' values and wishes.

The "One-or-the-Other" criterion is also supported in Donald Brown's Task Force study into interset arbitration. This model seeks to overcome the central fault with tripartite arbitration by stimulating the parties to adopt realistic positions. Brown states, "The aim is to stimulate a conflict-choice situation as would be created by a threat to strike and thereby make the main decision processes pre-arbitral negotiations."²⁹ Of course there is no right to strike or lockout under this model and either party is free to invoke arbitration. The model is designed to force concession and compromise because each party must examine its expected opportunity cost of arbitration. The main objections to the model are that intra-organizational conflicts facing negotiators may lead to implementing arbitration in order to avoid taking responsibility of making difficult decisions or
else both sides may adopt unrealistic stands. (Brown, 1968). The first problem may be overcome by making sure that responsibility is placed solely in the hands of the negotiators, so they cannot shirk responsibility. The second problem is avoided by institutionally providing for appeal to another third party.

(8) Special Professional Issues

There are many special professional issues which shall be negotiated by engineering unions. Individual merit is an issue of interest. This element has already been reviewed in the salary section but individualism is important in other areas as well. Merit is also important in lay-offs, promotions, and leadership of engineers in general.

Improvement of working conditions for professional engineers combined with greater status of the profession are likely topics of discussion with management. It would be reasonable for company and union to cooperate for mutual benefit in work quality and image. It is imperative that professional performance and standards be kept at high levels rather than falling into a satisficing situation.

Styles of leadership may be questioned by a union. Strauss (1963) directs the question as to which style of leadership is appropriate for engineer, laissez-faire, dominating, or supportive. Bureaucracy provides leaders
who are not human relations oriented at all, rather they are dominating in nature. Engineers require supervision which is based on scientific knowledge combined with frequent interaction to aid the engineer in measuring individual worth and status in the organization. An ideal leader for an engineering group is one who guides rather than directs as well as one who is capable of both praise and punishment.

A study done by Frank Andrews and George Farris provides insight into the leadership of engineers. They found that scientists did not want leaders who were skilled in human relations or administration rather these employees desire leaders who are critically evaluative, who can influence work goals, who are available and competent in current procedures, and who know the technical details of the subordinates work. A good leader can alter the climate in the group and inspire high achievement while guarding his subordinates from exterior forces. Effective leaders also keep their hand in by conducting research themselves or taking part in current scientific work. It is also important that the leader be given only a few groups to supervise so he may be sufficiently close to the work. If supervisors are unable to restrict themselves to a few groups then Andrews and Farris state that subordinates should be granted more freedom to effect decisions.

The surprising result is that a good engineering leader
may be a poor administrator and cool towards his subordinates, yet he may be very effective. These results imply that the engineering union must push for promotion which is based solely on competence, not seniority, for the satisfaction of engineers and the good of the company.

C. Style of Organization

Organizing strategy of an engineering union would not follow a hard-sell, bitter campaign style. An effective means of stimulating unionization is to convince engineers they are falling into blue-collar roles in which a union is absolutely necessary to maintain engineers' status and need-satisfaction. Comparison groups such as doctors and teachers are available to illustrate that professionalism is not destroyed not limited by unionization. In fact as Peter Carson (1973) of the B. C. Association of Professional Engineers says, the challenge is to sell a different style of collective bargaining.

Evidence throughout the paper has offered the opinion that collective bargaining and professionalism are NOT incompatible. Many sources including Goldenberg (1968) and Carrothers (1965) reject the incompatibility argument as irrelevant. An excerpt from the Globe and Mail in 1967 reveals the general attitude toward this situation, "Although some members of the professions (engineers included) are not much pleased by the prospect of being trade unionists, the move is overdue. For too long now
the word professional, once honored, has been confused with the word mercenary. When knighthood is for sale, surely bargaining is permissible. 

It is very difficult to determine if professional unions should be an extension of the association or a separate entity altogether. The findings of this paper suggest that the union should be separate from the engineering association for the initial period at least. (Goldenberg, 1968). The physical requirements of a new union are sufficient that new offices and storage spaces must be located even if the association wishes to take part in collective bargaining. Separation of the two entities would cause less disruption in the association and it would allow the more enthusiastic engineers to lead the new union with the help of outside consultants. A dichotomy of engineers is not really desirable in the long run, however, and it may be suitable to combine the union and association into a new sort of organization where the two philosophies can co-exist. There could be participative and non-participative members in the "collective bargaining division" and full active membership in the "association" facit. Combination of the two units would prevent raiding and offer economies of scale through use of dues and secretarial pools etc. It seems that unions and associations would both be more viable in the long term if a compromise could be struck.
Implementation of a campaign based on logic and hard facts would aid the cause of unionization. Engineers would be more receptive to a logical display of evidence which proves inequities and injustices inherent in work situations than they would be to an emotional appeal. Structure of the new union must insure fair treatment for all members, with no favoritism allowed for. All members should have the right to be heard and bare majority rule is not acceptable on major issues. Perhaps the union constitution could require eighty or ninety percent agreement on all decisions to decide policies for the unit. Individualism and equity are critical features in union structure.

D. Company Side

Prevention of union formation has previously been reviewed in the paper and this is really the company side of unionization. An ideal situation for companies occurs when they can prevent union formation at minimal cost. Problems of bureaucracy are of primary importance if unionization of engineers is to be blocked because problems concerning professional treatment, communication, personal treatment and poor styles of leadership are sources of dissatisfaction for engineers. Companies must discover a way to impress on engineers that they are individuals in the organization and not just an employee number. Engineers have to perceive themselves as valuable members within
organization who contribute a significant input to the process.

Employers could also use education to stifle organization of professional engineers. Education on the job, educational leaves of absence, and paid time off for attendance at seminars and conferences are good policies for meeting professional needs. Not only do these policies satisfy needs of engineers in a professional sense but they also update skills and prevent obsolescence of skills. Knowledge in all scientific areas is advancing very quickly and, as a result, graduates of twenty years ago require exposure to new ideas so they can contribute a fair share to the organization.

Organizations could also improve communication at little cost. Engineers need to exchange information and receive encouragement from higher levels of the hierarchy to identify with management. Better communication with managers and fellow scientists ensures that engineers feel they are valuable to the organization because each engineer sees himself receiving different treatment from blue-collar workers. Easier communication also helps efficiency because it prevents duplication of work and aids in problem-solving.

Employers can actually go outside the organization to prevent organization. Support of engineers' associations and their ideals is an effective way to halt unionization.
Funds could be given to the association for pamphlets and seminars which oppose collective bargaining. Organizations could also combat changes in labour laws. Lobbying is one way to prevent new labour regulations and this tactic also can be done in conjunction with associations. Recruitment of new engineers could also hinder organization in that companies could seek out cosmopolitans or workers with outlooks who would be less liable to support collective bargaining under any circumstances. Companies may study factors in engineers' backgrounds to find which elements indicate anti-unionism specifically for the purpose of locating sympathetic engineers.

Security could also be raised by companies at little cost. Organizations could enforce pay cuts rather than laying off engineers in periods where losses are incurred. Along with this security companies could ensure vertical mobility for engineers with increased amounts of work on confidential projects.

If the company cannot prevent unionization then it must adapt to new circumstances. Adaptation to a new unit requires certain changes to deal with the unions. For example, bargaining strategies and goals must be discussed, day to day administration of the contract is imperative and the company must locate personnel to carry out these functions. Grievance procedures are liable to become more
costly and more formal if a union forms because specific rules and steps for dispute settlement will emerge. Perhaps a position in the hierarchy will be created to deal with engineers' grievances and ensure fair governing of the contract. It is also probable that companies may form an alliance to deal with engineers because there are economies to be derived and also group power may be greater. Eventually it is possible that groups of employers may bargain with many units to give all engineers similar contracts.

PROSPECTS

The future hold some dramatic changes for professional engineers in Canada. It is highly probable that union formation will occur on a larger scale with British Columbia and Ontario leading the way. If alternations to the law are effected in British Columbia and elsewhere then a good portion of Canada's engineers are likely to join professional unions. Ancillary bodies for collective bargaining should be structures which are separate from professional associations in the first stages of development, then the two may unite later.

Unions are likely to be a long-term phenomenon because the trend towards large, bureaucratic organizations will not diminish in Canada, in fact it could well increase. Positive forces will continue to grow and negative attitudes are disappearing as time passes. The future for unionization
of professional engineers will be very bright if the first few unions adhere to engineering values in bargaining and in structure. These unions will have a different orientation than blue-collar units and hopefully effective leaders will emerge who recognize engineers' needs and values as well as having talents to hold together the unit and bargain as well.
FOOTNOTES

1. Walton, Richard E., *The Impact of the Professional Engineering Union*, Division of Research, Graduate School of Business Administration, Harvard University, Boston, Massachusetts, 1961, p. 4.


7. Ibid., p. 262.

8. Ibid., p. 264.


10. Ibid., p. 1.


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63. Strauss, George, *Classwork for Course in Business Administration* 190, Winter, 1967, University of California, School of Business Administration.

64. Toronto Globe and Mail.

65. Walter, Gordon, *College Faculty Commitment to the American Federation of Teachers: A Proposed Study*, 1968.
