AUTHORITY AND TECHNOLOGY

REGIONAL ECONOMIC EXPANSION
EXPANSION ÉCONOMIQUE RÉGIONALE

AUTHORITY AND TECHNOLOGY

Peter Sinclair

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FOREWORD

This publication is one of a series prepared under contract by the Industrial Relations Centre of McGill University for the Department of Manpower and Immigration's Experimental Projects Branch which was transferred to the Social and Human Analysis Branch of the Department of Regional Economic Expansion in July 1968.

The study includes a detailed review of the literature. It also provides a list of major organizational variables which social scientists have identified as affecting success and performance, and an analysis of how the variables affect behaviour. Suggestions are made about the provision of a theoretical abstraction of the variables to make them applicable in diverse organizational contexts.

The results of the study are intended for:

1. Classifying employment opportunities as a basis for prescribing compatible jobs for different types of people.
2. Classifying the behaviour required for survival and success in various job settings.
3. Identifying and classifying the variables now operating in educational and resocializing institutions.
4. Specifying models for social systems in training centres.

The study was expected to clarify partially some questions relating to talent development, occupational allocation, adaptability of workers, training of workers, worker satisfactions and performance.

Dr. W.A. Westley of the Industrial Relations Centre, McGill University, directed the study. He was assisted by research assistants under whose authorship their individual reports are published.

Mr. J.M. Saulnier of the Experimental Projects Branch was responsible for the administration of the contract and the preparation of the material for printing.

INTRODUCTION

As I understand their intentions, the Experimental Projects Branch is primarily interested in three questions:

1) How do we re-train workers who have some work experience?

2) How do we train those willing to work but who are without training?

3) How do we train those who have little sense of control over their fate and who see little or no pay-off for themselves in acquiring training?

Moreover, the temporal context of the questions requires a future orientation, rather than a present orientation. That is to say, what are the learning and training implications of our contemporary industrial-technological culture? I suggest five problems relevant to the questions above. They are:

1) An increased demand for higher work skills.

2) An increased demand for higher flexibility of work skills. The common experience of the professional, that his training on completion is already obsolete, and; that his work life is continuously exposed to obsolescence from the creative inventions of new theories, new explanations, and new technologies, will be the common fate of all of us in the future.

3) An increased demand for workers of all kinds prepared not only intellectually, but psychologically, to move to the changing centres

of resources and markets. People faced with technological obsolescence of their work skills will have to relocate. And many workers, miners, for example, are notoriously reluctant to undergo re-training; they recognize that a whole way of life is at stake.

4) An increased demand for fewer hours worked per worker. This shifts the questions from work skills to leisure skills, and the kinds of learning and training most conducive to their acquisition. We should not make the easy assumption that the two sets of skills (and therefore, the learning experiences) are congruent, or automatically made complementary by some invisible bond.

5) A continuous expansion of real per capita income, with the consequent economic and political demand that the nation participate both in the receipt and spending of that income, if both the economy and the policy are to be stable. Stable economic growth requires that we learn to participate in spending through involvement in the norms governing consumption. And political stability requires a deep sense of the legitimacy of the social order once that involvement is aroused. Apathy has its uses, but since we are committing ourselves to its reduction, we must see that the energy released through involvement is given expression that accords with the need for consensus. However, consensus simply cannot be manipulated in the long run: consensus is the outcome of meeting the hopes and longings of men. It is because these are met that men make the investments of themselves in other men, an interaction without which there could be no complex society. Nor is political stability likely to survive without these investments.

Taken together, then, the five propositions suggest some immediate goals for the Experimental Projects Branch. Corporations engaged in providing learning experiences must emphasize:

1) the future over the present

2) work careers over jobs

3) involvement in consumption norms and community processes.

Both my report and the others may seem to the reader arid and barren, a review of technical literature that is fragmented and very often concerned with the esoteric. Possibly. But if the Experimental Projects Branch is to avoid getting trapped within the confines of social engineering, it will have to come to grips with the questions posed by the literature cited in these reports.

Why do I single out social engineering as if it were a dirty word? Let me be quite frank. There is nothing wrong with social engineering so long as we agree there is very little evidence to show what it accomplishes! The rehabilitation results of our prisons, mental hospitals and mental health clinics strongly suggest they deal, not in technologies (where results are more or less repeatable on demand) but in ideologies. Not surprisingly, the organizations themselves present a picture of a variety of ideologies engaged in a species of zero sum games. There is simply no evidence to support any therapeutic claim that:

1) the therapy makes any difference as early as one year after release;

2) the therapy shows the conditions under which it succeeds or fails, including the kinds of people it succeeds and fails with;

3) the therapy provides a milieu that is congenial to a client who is committed to rehabilitation values, and sees some pay-off for himself in the learning provided by the therapy. On the contrary, role relations between professionals are characterized by resentment, and wherever possible, by avoidance.

To the skeptical reader, may I say personally that I came to the Industrial Relations Centre from a hospital unit specializing in the emotional disturbances of adolescents. As I became more involved in the problems I have outlined, I felt at first there was something "wrong" with me. Conversations with others soon convinced me they were having similar problems; I concluded there was something "wrong" with our unit. Since then, as I have studied other institutes, I see the problem is universal. I would recommend to such a reader Section II of my report, especially pages 21 to 26, 27 to 33, and 46 to 49.

I have already mentioned three goals a learning corporation should emphasize. On the basis of my experience with a mental hospital, I suggest two more goals be added.

4) Guarantee a job. Without such a guarantee, the effect on a trainee is disastrous, and the feedback to the next group of trainees of your failure is swift.

5) Emphasize control over fate. Even where a job is guaranteed and provided, a trainee without such a sense is likely to quit. I draw the attention of the reader specifically to the findings of Seeman on the relation of alienation to learning among a variety of "people-processing" institutions

(pages 78-81). Though I am not a psychologist, I have prepared an Appendix on Learning Theory. If it seems highly theoretical and abstract, I make a plea for your attention for these reasons:

- Behaviour that is delinquent is too often explained away as "malicious, negativistic, hedonistic, and non-utilitarian". A game theory approach suggests the worth of exploring the rational element in this behaviour, and seeing how the social structure contributes to the pay-offs in this game. Such an approach has, I think, revolutionary implications for a rehabilitation program; not the least of which is a heightened respect for the person.

- The tendency to avoid failure as a motivation force now appears to me to be a powerful explanation of the behaviour of those with a low sense of control over fate. The task is to apply the model in a context of changing values.

- The relationship between values and skills is well-founded in industrial sociology (pages 11-21, and 37-43 of this report), but the idea of changing values through manipulation of tasks is revolutionary. If it can be done, clearly we have a powerful contribution to changing attitudes toward control over fate.

The Experimental Projects Branch and the Corporations have a glorious opportunity, not only to improve the lot of the worker now, but more important, to generate and test models of learning, and of value change, which are the stuff out of which our futures will be built.

Industrial Relations Centre
McGill University
Montreal

Peter Sinclair
August, 1967

AUTHORITY AND TECHNOLOGY

SECTION I

Years of education are associated with satisfaction and mental health, and years of education seem to be determined by family background. This suggests a reinforcing process at work. Do years of education provide work skills or skills in relation to people or both? Fulfilling normative expectations of work groups, whose interests at least are not opposed to society's, leads to occupational and emotional well-being. This is the theme of this paper: to understand the process and consequences we shall explore the social relationship between men and women in a variety of institutional settings. This relationship - or rather these relationships - involve us in a discussion of power, influence, sanctions (rewards and punishments), legitimacy and identification - to mention some of the more important dimensions of social relationships. Since we are limiting ourselves to an analysis of institutional behaviour, we have at one level the individual and his expectations and resources, and at another level, a social system with its strong appearance of normatively regulated patterns of interaction. We must bridge these levels.

Parsons (60,1958) states clearly the task we have before us:

> Institutions are generalized patterns of norms which define categories of prescribed, permitted and prohibited behaviour in social relationships

> for people in interaction with each other as members of their society and its various sub-systems and groups. They are always conditional patterns in some sense. If you occupy a certain status in a social group or relationship, and if certain types of situations arise, you are expected to behave in certain ways with respect to the prescribed, permitted or prohibited. Institutions as such incorporate what I have called 'value content', that is legitimate directionality of behaviour. But they also do more than this. They relativize rights and obligations to status in the social system, and to the structure of the situation in which persons of a given status are placed, and they define and legitimate sanctions, that is, types of consequences of the action of an individual 'intentionally' (which need not mean consciously or deliberately) imposed by the actions of others in reaction to the person's own. Sanctions, of course, being conditional, may be anticipated and hence, within limits, may control behaviour through motivating the avoidance of negative and the securing of positive sanctions.

The bridging between individual and social system is embedded in the notion that "expectations of one person become sanctions for another." People learn to anticipate the sanctions awaiting their behaviour and to modify their behaviour in accordance with another's expectations. Normative behaviour is taken to be central (in this paper) to the study of social relationships in institutional settings. Yet empirical demonstration of this framework is weak at best.

The remainder of this section attempts to spell out the theoretical requirements of the research we need; it will help us evaluate the findings we do have and point to gaps we must contend with. The skeptic

may well argue that the studies demonstrate 1) consent in varying degrees and 2) a weakly-held attachment to a pattern of events that has existed over time. Demonstration of normative behaviour, however, requires the presence not only of behavioural uniformity, but of a sanctioning expectation of rightness. Moreover, there is a set of factors leading to the appearance of a standard, and a set of factors leading to the establishment of a standard as a sanction (Breton 13,1963; Coleman 16,1966).

French and Raven (28,1959) reviewed a large variety of literature on power; they enumerate five distinct sources, or bases relevant to a social relationship. They think of the power of one person (0) over another person (P) as the maximum resultant energy of two forces set up by any possible act of 0: that is (a) the force 0 can bring to bear on any system; (b) the resisting force exercised by P. 0's power over P depends on P's perception that 0:

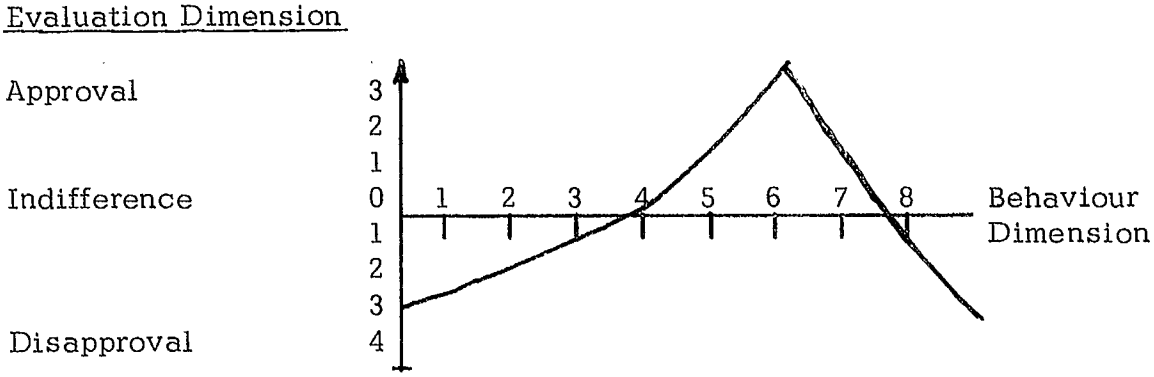
1. has the ability to mediate <u>rewards</u> for him
2. has the ability to mediate <u>punishments</u> for him
3. has the <u>legitimate</u> right to prescribe behaviour for him
4. has some special knowledge or <u>experience</u>
5. is someone he <u>identifies</u> or desires to identify with.

We shall utilize the French and Raven scheme of power to order empirical findings. Firstly, however, a word of warning to the reader. We have not been able to uncover a single study demonstrating legitimacy; and insofar as there is some evidence of its use, it is not a favoured

technique (Kahn et al. 45,1964; Rosenberg and Pearlin 63,1962). This point will be examined at length in the body of the paper and appendix. There is a general conviction among behavioural students that an institution (family, business firm, army) cannot long survive without members attributing legitimacy to it. By legitimacy, we mean that the member thinks and feels that there is something right and proper about the behaviour of the institution. Hence, behind any successful overthrow of a social system is the implication that legitimacy either never had been granted, or has lately been withdrawn. There is something gratuitous about according legitimacy - like a love affair - and for that reason, it is difficult to demonstrate. Indeed, without the powerful resources of reward, punishment, expertness and identification, legitimacy may never arise, and even after it is established, it may very quickly evaporate into these types of authority. Thus, as Weber noted, charisma is likely to become routinized.

Since much of our concern in this paper is with organizational effectiveness, we need to face clearly the relation between it and normative behaviour. Thus, if a supervisor is expected to control the activities of a work group, the expectation does not tell us about 1) the degree of control and 2) the strength of feelings about control. Jackson (43,1965,303) proposes a schema for dealing with these questions which he calls a Return Potential Curve.

RETURN POTENTIAL CURVE



Suppose the behaviour dimension represents the number of times an individual could speak in an hour's session of a discussion group. The evaluation dimension tells us how the group feels about the number of times an individual might speak. Knowing these two dimensions tells us how the group will reward and punish. We can infer that an individual will be punished for speaking less than four times and more than seven times, with an optimum reward for speaking six times. The range of tolerable behaviour lies, therefore, between four and seven. The definition of normative behaviour is encompassed by the entire return potential curve. The amplitude of the curve (the vertical height between any point on the curve and a trend line drawn through the curve) measures the felt intensity of the norm by members of the group. But this conceals whether or not the members taken individually are in agreement; there may be a high dispersion of their attitudes indicating low crystallization. Common-sense suggests that we would expect to find that high crystallization would lead to organizational effectiveness. But high crystallization is compatible with varying degrees of intensity. Jackson's Return Potential Curve suggests a typology for the analysis of normative behaviour.

Crystallization	Felt Intensity		
	HI	MED.	LO
HI	powerful normative behaviour		apathy
MED.			
LO	1) disintegration 2) pre-condition of normative behaviour		1) normlessness

Clearly, then, a supervisory style can have very different effects depending on 1) the age of the group and 2) the composition of the group as they affect crystallization and intensity. Hence, an established group with low crystallization is likely to be in a state of disintegration or normlessness.

Members of an organization not only have statuses (education, occupation, income, ethnicity, sex and so on) but their rankings on each status may be congruent (that is, they hang together), or incongruent (they are mixed like the upward mobile immigrant, or the downward mobile WASP). Status congruent groups are more likely to have high crystallization than status incongruent groups. The latter may also have to tolerate a wide range of behaviour if it is to survive, generating behaviour irrelevant to, and even incompatible with effectiveness. Intensity may be either high or low, the former leading to high anxiety and conflict, the latter to anomie and normlessness. Outside laboratory conditions, however, it is rare to find a study analyzing normative behaviour as critically as the Jackson model requires. Status congruence is studied in detail in Section III.

Normative behaviour exists in an environment. The most profitable empirical approach we have found is the relationship between the technology available to an organization and its social structure (Woodward 80,1958). Furthermore, the relationship between the technology available and worker satisfaction is also striking (Blauner 9,1964; Kornhauser 46,1965; Turner and Lawrence 76,1965). Section II explores this theme in depth.

For the convenience of the reader, detailed examination of evidence for any proposition or set of propositions is put in an appendix. Nevertheless, the reader should be warned that the empirical meaning of a concept is often less than he is likely to read into it. We have, as yet, not got very far beyond common-sense notions of organizational behaviour. Furthermore, as the research indicates, many common-sense notions are probably quite sterile in suggesting formulations of theory.

Finally, although the literature has been canvassed broadly, the variety of organizations that has been studied is small. If one cares to think of the hundreds of job classifications as bricks and if one uses these bricks to build a wall, then the present state of organizational theory and research is very much like a man's knowledge of a brick wall where he has trained a powerful telescope on a few bricks. The knowledge that we have of those few bricks is very detailed; how far we are entitled to go in generalizing about the shape, form, colour and texture of the other bricks is largely speculation. Efforts at typology construction (Blau-Scott, Etzioni),

common-sensical as they appear, simply do not stand up to research. Clearly, our greatest need is for phenomenological studies of the varieties of work experience (see Section V).

We can conclude, therefore, that a general theory of control systems (normatively regulated patterns) that would specify and identify empirically differences among organizations is not possible at present. Secondly, the notion that among effective organizations one should find a theoretical congruity between goals, technology, task complexity and the administrative system is not demonstrable. Nonetheless, we agree with March and Simon (52, 1958) that a scientifically valid description of an organization "designates so far as possible for each person in the organization what decisions that person makes and the influence to which he is subject in making each of these decisions."

SUMMARY AXIOM

Authority or Power is not an attribute of individuals: it is a social relationship. Within the institutional setting imposed by organizations, the study of power is primarily a problem in compliance - the communicating of a decision and the granting, or withholding of consent. A major parameter in any equation of power is the availability of technology. Rewards, punishments, legitimacy, expertness, identification are available means of inducing consent.

APPENDIX TO SECTION I

French and Raven (28, 1959) attempt to deduce the consequences of power given the conception that the power of a social agent (0) over a person (P) in a given system (a) "is equal to the maximum resultant force of two forces set up by any possible act of 0" when the parameters are: (1) the force 0 can bring to bear on system a, and (2) the resisting force exercised by P: that is, the power of $0/P(a) = (f_{a,x} - f_{\overline{a,x}})^{max.}$ where x indicates the direction of change. French and Raven enumerate five distinct sources, or bases of power relevant to a social relationship:

1) P's perception that 0 has the ability to mediate <u>rewards</u> for him.

2) P's perception that 0 has the ability to mediate <u>punishments</u> for him.

3) P's perception that 0 has the <u>legitimate</u> right to prescribe behaviour for him.

4) P's perception that he identifies or desires to <u>identify</u> with 0.

5) P's perception that 0 has some special knowledge or <u>expertness</u>.

Their review of a variety of literature suggests six hypotheses:

1) The stronger the basis of power, the greater the power.

2) The size of the range of power varies greatly, and is broadest in the case of power based on identity.

3) Any attempt to utilize power outside the range of power tends to reduce power.

4) Punishment reduces the attraction of P toward 0 and produces resistance.

5) The more legitimate the punishment, the less resistance and resentment there is to it.

6) A new state of a system produced by reward or punishment will be highly dependent on 0: and the more observable P's conformity, the more dependent the state. The new state is usually dependent (at least at the beginning) on power based on legitimacy, identification and expertness. But the level of observability has no effect on the degree of dependence.

SECTION II

We said that normative behaviour exists in an environment, and that the most profitable approach we have found for relating an organization to its social structure is technology.

For the immediate benefit of the reader, my thesis is: The form of technology determines the administrative structure, and task differentiation of work, and through these factors, satisfaction. The principle variables in technology are 1) routinization and 2) mechanization. It is through the implementing of these factors, that the worker experiences such autonomy as he is aware of.

So far as the administrative system is concerned, I begin to think we talk too glibly as though there is only one administrative system. There is one for the production system; another for the white collar workers and a third bridging these two. Our concern will be with the production system and explaining variations in it.

In business corporations of any size, we may assume white collar administrative structures are roughly of the same degree of bureaucratization, and maybe ignored at this stage of analysis.

An organization that is concerned with effectiveness must make its administrative structure and its technology congruent. The kind of group interdependence we admire in the printers' unions is just not

compatible with mass production. Alternatively, an organization concerned with conflict should first examine the congruence of its technology and administrative system, including communication.

Woodward (80) finds that if one organizes the concept of technological complexity around the historical evolution of production from unit (craft printing) to mass (automobile) to process (oil refining, chemical), the following relations with administrative structure hold as technological complexity increases.

1) levels of authority (+)

2) ratio of managerial and supervisory personnel to non-supervisory personnel (+)

3) span of control (chief executive) (+)
span of control (middle management) (-)

4) committee management (+)

5) ratio of unskilled to skilled workers (-)

6) ratio of industrial workers to staff (-)

7) ratio of hourly paid workers to first line supervisors (Ω)

The sample includes 100 firms about evenly divided among the three types.

Woodward's work makes a beginning at clarifying several seemingly perplexing findings on bureaucracy. When grouped around her technology variable, the findings are shown not to be inconsistent, but to be about various degrees of technology. Weber (79,1958,pp.196-197) emphasizes six elements in the delineation of bureaucracy: 1) stable

jurisdictions, 2) official duties, 3) authority, 4) hierarchy, 5) files, and 6) stability of work and status.

Woodward argues (illustratively only) that the organization exists to solve two problems: 1) technical, the co-ordination of tasks and identification of authority; 2) social, building a network of relations. In unit production the short work cycle and the visibility of group interdependence enable the organization to put together the two purposes. Firms producing varied products, i.e. furniture, clothing, electronic, telecommunications and scientific instruments have similar organizational structures, because their technologies are similar. In process production, because the technical purpose is built directly into the plant design, organizational planning can concentrate on building the network of relations appropriate to people. In mass production, she argues, the organizational purposes are in conflict, with the technical taking precedence over the social (pp.127-153). Woodward's group interdependence is a measure of what we mean by interaction rate.

March and Simon (52,1958), Crozier (18,1964), Gouldner (32,1954), Dalton (19,1959) find conflict central to the organization structures they study and not surprisingly, since they are all examples of mass production technology systems.

Stinchcombe (71,1959) in a study of the construction industry (a unit production technology system) finds only the elements of stable jurisdiction, official duties and authority in the administrative structure. He

WOODWARD

		UNIT	MASS	PROCESS	SHAPE
Levels of authority	median	3	4	6	
o/o Costs - Wages	average	26-50	26-50 (but < unit)	$12\frac{1}{2}$-25	
Managerial, supervisory personnel	A/P Small	1:22	1.14	1.8	
Non-supervisory personnel	Medium	1.37	1.15	1.7	
	Large	1.25	1.18	1.7	
		1.23=4%	1.16=7%	1.8=12%	
Span control chief executive	2-3	4	Data not given	10	
middle management					
Committee management - % TOT	$12\frac{1}{2}$%	(3/24)	32% (10/31)	80% (20/25)	
Management structure pyramid		broad base short		narrow base long	
Employment of graduates (58)			Data vague		
Direct/indirect workers (skilled)		9	4	1	
Indirect workers/staff		8	$5\frac{1}{2}$	2	
Hourly paid workers/1st line supers.	6	14-20-27-30 / 22	37-44-56 / 50	18-11 / 12	
Alienation of hourly workers		Lo	Hi	Lo	

argues that the professionalization of the labour force serves the same function as bureaucratic administration in mass production industries. Stinchcombe and Woodward seem to be referring to the same phenomena.

The special role of maintenance departments, in both mass production and process systems, sheds more light on this question. Being on a maintenance staff appears to be one way of getting free of machine pacing. In mass production systems where maintenance is separate, it does not lead to conflict, while in process production it does. If Woodward is correct in arguing that among mass production organizations, technical co-ordination takes precedence over social relations, then in such industries, where a skill gap exists between production and maintenance workers, conflict between them can be controlled bureaucratically. Crozier's (18,1964) study of a cigarette producing factory (mass production) showed that maintenance workers acted to keep production workers ignorant of machines (to the point of stealing a blue-print).

Crozier suggests that as uncertainty is removed from a role, it can be successfully bureaucratized. Crozier showed also that maintenance workers enjoyed the highest prestige. This suggests the hypothesis that occupational prestige is related to the degree of uncertainty contained within a job. We shall develop this theme later in the section.

What is the process by which these differences could come about? Woodward argues that marketing, development and research, and

production are basic aspects of any technological system; but one or the other takes precedence as a critical function; development and research in unit; production in mass and marketing in process production. She finds that among firms showing above average success, the status systems recognize and reflect the appropriate critical function. Hence, we would argue that where maintenance was treated as a separate entity in the process, we would expect to find status differences entering into the relationship between maintenance and other departments generating conflicts which could not be solved bureaucratically. Maintenance in process must not be permitted to be separate, to pursue its own ends. In mass production, where the highest status is accorded production (and by inference maintenance is the most critical function) a separate maintenance department is congruent with the status distance and we would not expect conflict, and if it does occur, it can be handled bureaucratically.

This further suggests that compelling interaction between departments at different status levels is likely to lead, not to cohesiveness, but to conflict. Woodward found that the poorest relations among workers were in a mass production system, where research and development were forced to interact through shop design with production (the dominant status group). As further evidence of the relevance of technology for delineating status systems, Woodward finds that resistance to change appears more likely among the elite group (pp.194-195) and if connected with the demand to get something out of change, i.e. either reduced effort, higher wages, or

a favourable re-distribution of power. Furthermore, the elite status groups do not hesitate to make their feelings known to the top. Given the re-assurances they seek; their resistance to change evaporates.

Turner and Lawrence (76,1965) present an elaborate analysis of the relationship between work skill, autonomy and satisfaction (see the appendix for a complete discussion of their methodology). If normative patterns are to influence member behaviour, attendance would appear to be necessary; the study shows a high correlation between attendance and worker task skill, including degrees of responsibility and autonomy. On the other hand, the connection between overall task attributes and satisfactions is not clear; of 13 attributes, only three: optional interaction off the job, knowledge and skill, time span of discretion, correlate positively with satisfaction. Both high and low responsibility lead to satisfaction. However, worker perception of their opportunity to contribute (which does not correlate with the author's purely technological description of opportunity to contribute) does correlate with job satisfaction. Attempts to show that workers are deceiving themselves were not fruitful, since variations in stress and anxiety (which we would expect to associate with self-deception) did not correlate with the index of task attributes. However, the expected relationship between satisfaction and task attributes does hold for town workers as opposed to city workers.

Blauner (9,1964) has found that both unit and process production workers experience high satisfaction on and off the job; mass production

workers experience low job satisfaction and though their life satisfaction is higher, the predicted differences between skills holds. Since we would expect higher task attribute scores among unit and process production workers, this association between worker skill, technological complexity and satisfaction is to be expected. In a detailed study of Detroit auto workers, Kornhauser (46,1965) finds a similar relationship, i.e. high level skills lead to mental health; and the more a worker feels his abilities are being used the greater his mental health. Mental health was rated on an index score computed using six factors: 1) freedom from anxiety, 2) self-esteem, 3) trust and acceptance, 4) sociability, 5) overall satisfaction with life, 6) morale. These relations held in the two age groups: 20-29 and 40-49.

Kornhauser also found that among a comparable group of small-town factory workers living outside Detroit, mental health was higher for every skill classification. Even though his sample is limited to mass production workers. Kornhauser's work is consistent with our expectations that skill, responsibility and autonomy lead to mental health and satisfaction.

Turner and Lawrence list 47 jobs in 11 manufacturing industries. However, they do not correlate the task attributes with Woodward's technological complexity, so we cannot (strictly) say that the industry and the worker index of complexity correlate. But, an intuitive response to the job descriptions suggests that mass production workers score lowest in

task complexity. Finally, they show a strong negative relation between mechanization and task complexity but not sufficient to differentiate mass production and process production.

Turner and Lawrence speculated about, and test, the curious finding among city workers, that task complexity does not lead to job satisfaction. They argued that city workers seek economic advantage and avoid task complexity, which they see as something to be avoided. Kornhauser's data would not support such an interpretation of city worker behaviour, though we have noted that city workers enjoy less overall satisfaction (job and life) than town workers.

As far as the manufacturing industry is concerned, present research indicates a schema for looking at relations between technological complexity of the organization, task complexity of the worker, bureaucratic administration and worker satisfaction:

1) Unit, machine-tending, mass and process are forms of production systems on a continuum of technological complexity.

2) Technological complexity tends to:
   a) increase the number of levels of authority
   b) reduce the dependence for labour
   c) increase the ratio of managerial and supervisory personnel to other personnel
   d) increase the span of control for the chief executive
   e) decrease the span of control for middle management
   f) increase the importance of committee management

g) increase the employment of graduates beyond the secondary level
h) reduce the ratio of direct to skilled workers
i) reduce the ratio of industrial workers to staff
j) lead to a curvilinear relation (⌒) with the ratio of hourly paid workers to first line supervisors
k) lead to a curvilinear relation (⌒) with worker satisfaction.

3) Unit production leads to high visibility of group interdependence. Professionalization of labour reduces the dependence on bureaucratic administration.

4) Process production builds technical purpose directly into plant design. Organizational planning can concentrate on building social networks.

5) Mass production and machine tending generate conflict between social and technical roles.

6) Status systems tend to reflect the importance of the critical function in the organization, compelling interaction between departments with unequal status, and they generate conflict not cohesiveness. Elite status groups are most resistant to change (and most vocal about it) unless their interests are protected.

7) Worker task complexity tends to fall from unit to mass, and rise from mass to process production in some industries. Nevertheless, Faunce (25, 1958) shows that workers shifting voluntarily from mass production to process production in the automobile industry, felt they were not able to interact as often with fellow workers, had more contact with the foreman (see 2 (j) above) which is what we would expect, and complained of close supervision. Although wages were higher, it is not clear whether

there was any change in skills. At the time of the study, the workers (all with close to 20 years seniority) had been on the new job for more than a year. They liked the decrease in the amount of materials handling, and reported their jobs were more interesting. Clearly, more studies are needed before we can be sure what automation entails vis-a-vis changing a worker's skills and his sense of on-the-job competence.

8) Worker task complexity tends to lead to job satisfaction and good mental health. But Turner and Lawrence find this to be true only of town workers. Since their study is one of the best we have, the results are puzzling when set against the Kornhauser study.

A MODEL OF TECHNOLOGY FOR NON-INDUSTRIAL ORGANIZATIONS

So far, this account is limited to a discussion of the technology of manufacturing firms where it is relatively well-defined. Can the Woodward classification be stretched to encompass other organizations like prisons, schools, hospitals, public agencies, etc.? Unit production would seem to be the category worth looking at. Woodward argues that the firms in this category are characterized by an emphasis on development and research, rather than marketing and production in the manufacturing cycle. Production is tied to the order book; hence financial planning is short term.

The relationship between the firm and customer is close, more dependent on the selling of an idea than a product. Within the firm, the drawing office serves as a bridge between the development and research group and the production group, and in this bridge role they are resistant to any technological change.

March and Simon (52, 1958) provide a concept which is relevant to building a bridge between manufacturing and non-manufacturing technologies - namely, search. Search is the attempt to define a situation: it is generated by dissatisfaction and regulated by habituation to a situation, including aspiration level and expectation of rewards.

Hence, if a stimulus is of the kind experienced repeatedly in the past, the response to it will ordinarily be highly-routinized. Then we have a 2X2 matrix.

FIGURE 1

Perception of stimuli as	DISSATISFACTION: ANALYZABLE	DISSATISFACTION: UNANALYZABLE
	1	2
Repetitive	Routinization	
Non-Repetitive	4	3 Non-Routinization

The matrix yields a scale of routinization of responses to changing stimuli (and the routinization is dependent on the available technology). Technology is seen here as the process by which inputs are transformed into outputs; accomplished with or without the use of mechanical tools. Both the inputs and outputs may be human. In the economist's language the transformation is called a production function. It requires that each input be identified, and the responsiveness of total output to a unit change of any input is identified. For example, letter P = output of any kind, a = the quantity of some input, b = quantity of another input, and λ , μ are the responsiveness of P to a and b respectively, then:

$$P = a^{\lambda} b^{\mu} \qquad \lambda + \mu = 1; > 1; < 1$$

When we refer to non-manufacturing technology; we do not mean the formula $P = a^{\lambda} b^{\mu}$ as some empirically demonstrable production function, but as a perceived production function. Compare the traditional "psychiatric custodial" unit with the radical psychiatric "milieu" unit. Strictly, neither one has an empirically verifiable technology; but the custodial unit acts as if it does. In terms of the matrix, it acts <u>as if</u> any stimuli (regardless of the

psychological source) is repetitive, and as if its dissatisfaction is analyzable. The milieu unit, on the other hand does not perceive either the stimuli as repetitive, or their dissatisfaction as analyzable. Hence their technology is perceived as non-routinized. Traditional schools behave like custodial hospitals, and experimental schools (Summerhill) like milieu units. We have already noted Crozier's finding that maintenance men created a mystique about their work. Clearly, if one wishes to avoid bureaucratization of roles, one should avoid routinization of one's technology.

Clearly, dissatisfaction may be the outcome of many factors: a change in goals; withdrawal of support from the external environment, i.e. the loss of a government subsidy or the loss of consumer brand loyalty. What we are trying to pinpoint here is the relationship between degree of routinization of technology and organizational structure. When the custodial hospital studied either altered its perception of stimuli from repetitive to non-repetitive (recognizing that patients are different), or altered its perception of its dissatisfaction from being analyzable to unanalyzable, it opened the way to the acceptance of a non-routinized technology. This entailed a reorganization of its administrative structure (which it has not yet realized since medical doctors stubbornly cling to their authority). Stated bluntly; administrative structures and technologies must be made congruent even when worker satisfaction and output may be opposing goals. We are not ready yet to build Utopia!

If we add worker perception of autonomy to routinization of technology, we get the matrix below. It enables us to classify a great many of the relationships we have been studying in this section.

FIGURE 2

Worker Perception of Degree of Work Autonomy	Routinization of Technology	
	High	Low
High	PROCESS	UNIT: MILIEU
Low	MASS; CUSTODIAL	

On the basis of Figure 1, we should say that the construction industry is characterized by relatively low routinization of technology; and on the basis of Figure 2 by high worker perception of the degree of work autonomy. We have the basis of a predictive hypothesis - low routinization of technology and high worker perception of the degree of autonomy are associated with a low degree of hierarchy and low dependence on files. Udy, (77,1959) in his study of non-industrial organizations found that increasing rhythmic integration increases the attention span and therefore the number of hierarchical levels.* This is what we would expect from Woodward's argument.

Stinchcombe (71a,1965,pp.153-164) also finds that there is a close relation between the social structure of an industry to-day and the time when it was founded. Examination of his data suggests that where the

* For a further development, see the appendix where the administrative system is treated mathematically.

relationship is close, technology was, and has, remained routinized. The exceptions suggest non-routinized technologies. We seem to be able to make this statement quite independently of the state of market over time.

The decentralized, multi-divisional management structure is associated with Standard Oil, Du Pont and General Motors as innovators, especially Du Pont. The electrical industry has most readily accepted this structure and the extractive industry the least readily - maintaining a Weberian type bureaucracy. What we need to recognize is that the former firms are not single product producers; hence the degree of technological routinization will vary within each division. And their top management structure is a reflection - not of their tool technology - but of their widespread ownership which results in their perception of stimuli as non-repetitive. In brief, the industry concept is dangerously misleading. We must study plant management and corporate management independently.

COMMUNICATION

March and Simon distinguish between planning and feed-back in their discussion of co-ordination. Co-ordination arises from the considerable interdependence that emerges from specializing programmed activities. If we can say, as March and Simon do, that the greater the process specialization, the greater the interdependencies among organizational sub-units (p.159), then process specialization will be carried furthest in stable environments. They refer to this as standardization of the situation, and

select three devices for comment: (1) transformation of raw materials into more homogeneous semi-manufactured products e.g., ores, coke and flux become pig iron, natural fibers become threads of uniform size, strength and elasticity; (2) interchangeable parts; and (3) buffer inventories. Two types of co-ordination exist: (1) a plan, based on scheduling, established in advance, that determines what tasks will be handled and when, and (2) feedback, based on the transmission of new information, or the need by the two units to agree on the sequence of tasks. Planned co-ordination would seem to depend on routinized technology, but there is no necessary relation between scheduling and hierarchy (though the latter may be important in legitimizing scheduling). Returning to Woodward's manufacturing cycle, we may raise questions about the kind of co-ordination existing between these three functions. For production systems like milieu hospitals for example, we would expect co-ordination by feedback, which taken together with high visibility of group interdependence and professionalization of labour generates the demand for an administrative system with little emphasis on hierarchy and files.

SUPERVISORY STYLE AS A FUNCTION OF PSYCHOLOGICAL DISTANCE: LEADER AND GROUP STATUS CONGRUENCE

Supervisory style has been subjected to considerable examination in the literature; any justification for such emphasis does not need to go beyond the number of references in worker interviews to close supervision, and their dislike of it. In brief, what are the attributes of leadership? Do they hold constant from one social structure to another?

Some superb studies are available (Kahn et al. 45,1964; Fiedler 27,1961), as well as a number of good studies covering a variety of organizations. Fiedler shows that there is a positive relation between group leader psychological distance and group performance:

1) If the leader is psychologically distant from his men, he must mitigate the distance by showing a preference for a member whom he designates as a key man.

2) If the leader is psychologically close to his men, he must increase the distance by not showing a preference for his key man.

3) If the leader is psychologically close to the whole group or psychologically distant from the whole group, performance suffers. These findings are supported for groups as diverse as basketball teams, surveying teams, air crews (before and after combat), tank crews, an open hearth steel shop, and consumer co-operatives.

Fiedler's study makes much sense of the study of industrial work groups (see the appendix for reports of these studies relating performance and supervisory style). Successful performance depends on the leader having informal acceptance if he is to get the ear of subordinates on task matters. Informal acceptance may swamp the communication network with messages irrelevant to task performance. The leader controls the spread of informal acceptance by practising social distance. Too great social distance does not generate enough communication to further task performance.

Fiedler's analysis can be seen as having its roots in group status congruency. Adams (1,1953) in a study of bomber crews showed that although status congruence leads to social performance, only medium status congruence yields high performance. Thus, like psychological distance, status congruence controls the communication flow - too much and the communication is social, too little and there is not enough communication to effect the task. Halpin (37,1954) examines the airplane commander's sense of consideration (friendship, respect, trust and warmth) and its effects on a superior's rating of crew combat performance; and on crew satisfaction with the commander. Both during training and combat, commander consideration and superior's rating correlated negatively; crew satisfaction was positively related during training and combat. The commander's score on initiating structure (degree to which he organizes and defines crew member roles, and creates channels of communications) correlates positively with superior's rating during both training and combat, and positively with crew satisfaction during training, but negatively during combat. Halpin's study is revealing for the effect induced by "danger"; the high cohesiveness of miner's work groups has often been noted. Clearly, the relationship between cohesiveness and congruence may be spurious; it is "danger" which generates the cohesiveness.

In his study of consumer co-operatives, Fiedler shows that if low leader psychological distance is associated with a human relations

approach and informal discussions, it smacks also of a possessive attitude (not having assistants attend board meetings, insistence on being consulted or even minor questions and slow consideration of subordinates for promotion). If leaders practising psychological distance are role-oriented and advocates of regular staff meetings, they reward responsibility with freedom, attendance at board meetings and rapid promotion.

Fiedler shows also that successful leadership depends on having the trust of one's own superior; for without it the leader lacks the power to achieve group goals. Murray and Corenblum (58,1966) show that such hierarchical independence combined with a leader's ability to benefit his subordinates, produces more loyalty toward him by subordinates.

These findings are drawn from a variety of sources; they represent the best we can presently say about the normative-welfare implications of supervisory style. How styles relate to the preceding sub-section on technological complexity has never been investigated. Nonetheless, whatever the setting, successful leaders perceive their roles on the basis of generalized power rather than the consequences of specific prerogatives. Lefton (47,1959) in a study of decision-making in a mental hospital shows that the more routinized the technology (organic treatment vs. psycho-dynamic) the smaller the discrepancies in both role-perception and role behaviour. This study does not prove, but is consistent with the hypothesis that more bureaucratized roles result from routinized technology.

Coser (17,1958) studied behaviour in two hospital wards and found surgical ward nurses (relative to medical ward nurses) were: (1) exercising more initiative; (2) enjoying higher expectations by doctors re their intelligence and foresight, and (3) discussing patient care with doctors more often. If we think of a surgical ward as more routinized technologically, we might think of surgical wards as having clearer role perceptions. The medical ward nurse does seem, however, more dependent on rules and custodial care, and less likely to violate rules even in a crisis. In short, she appears to be more bureaucratized, clearly a violation of the technology-administrative system model.

That technology is not a sufficient consideration of group behaviour should not surprise us. The material on role-set conflict that follows indicates clearly that even where technology is similar, the amount of role conflict varies according to structural differences, i.e. rank, functional dependence, occupational prestige and length of tenure. Furthermore, status congruence (analyzed in Section III) does a great deal to affect attitudes to power with incongruence leading to positions of deviancy and isolation, and in some cases to stress. In short, these elements are not treated in Coser's study, making it difficult for us to evaluate the social structures of the two wards.

Kahn et al. (45,1964) undertake an excellent analysis of the relations between a focal person and his role senders, the former occupying

a managerial position. Although the study includes four different production systems (oil, auto, electronics and machine parts), the analysis does not differentiate role-set conflict according to technological complexity. A detailed account of their study is given in the appendix.

Findings relevant for our study are:

1) Supervisory personnel in general have the following normative expectations about focal persons: rules orientation; supervisory closeness; universalism (as opposed to particularism) as a method of dealing with people; and achievement as a means of promotion (clearly, a bureaucratic orientation). Non-supervisory personnel are less likely to hold such an orientation.

2) The supervisory personnel most likely to subscribe to the bureaucratic orientation are in a low status (blue collar job with long tenure). The supervisory personnel most likely to subscribe to a normative expectation of nurturing subordinates are high status (white collar workers with only moderate tenure).

3) Role-sets which are more bureaucratically oriented make life easier for the focal person. In these role-sets, the focal person experiences less role-set conflict and tension. Conversely, anti-bureaucratic role sets may put pressure on the focal person to break rules. The collision between non-bureaucratic expectations of subordinates, and bureaucratic expectations of superiors, generates role conflict. Another interpretation - for which there is no evidence, for or against - is that members of bureaucratic role-sets believe so strongly

in adhering to rules they do not believe in creating conflict for their supervisors.

4) Where role senders are dependent on the focal person, in the sense that they cannot adequately perform their own jobs without being involved in his activities, they are bureaucratically oriented. This suggests they look for predictability and regularity. This interpretation is further strengthened when we examine the physical proximity of role senders and focal persons. The further they are physically removed in work sections and departments (given any level of dependence) the more bureaucratically oriented are the role senders.

5) The power modes employed by role senders against focal persons depend on the role sender being the status superior, and he uses all of the modes enumerated by French and Raven, with rewards and punishments being the principal ones in terms of their effectiveness. Where the role sender is the status inferior, his attempts at influence are reduced to:
(1) appealing over the head of the focal person, and
(2) withholding information and aid on which the focal person is functionally dependent. How effective this can be is not studied, and reports of it in work situations are usually impressionistic and unsystematic. Nonetheless, subordinates are organizationally impotent in comparison with superiors.

APPENDIX TO SECTION II

A. Alternative Formulations of Technology

1) Udy	Non-industrial organizations
2) Thompson and Bates	
3) Blauner	
4) Turner and Lawrence	Design of a task attribute index

B. A Simple Mathematical Model of Bureaucracy

C. Supervisory Styles

1) Zander et al. (82,1957)	Role relations among professionals
2) Rushing (64,1964)	Role relations among professionals
3) Strauss (72,1964)	Ideology as a legitimating mechanism by a formal leader for a definition of role sets
4) Mullen (57,1966)	Leadership in an insurance company
5) Fiedler (27,1961)	Psychological distance and leadership
6) Murray and Corenblum (58,1966)	Hierarchical independence and leadership
7) Lefton (47,1959)	Technology and role perception
8) Crozier (18,1964)	The Chief Executive perceived as the Chief Justice
9) Baumgartel (6,1957)	Leadership climate and Involvement
10) Kahn and Katz (45a,1953)	Supervisory Style and Productivity
11) Borgatta (11,1954)	Great man Theory of Leadership
12) Schachter (65a,1951)	Influence, Cohesiveness and Productivity
13) Halpin (37,1954)	Leadership and Effectiveness
14) Fiedler (26,1955)	Leadership and Effectiveness
15) Adams (1,1953)	Status Congruence
16) Morse and Reimer (56,1956)	Supervisory Style and Productivity
17) Coser (17,1958)	Technology and Bureaucracy
18) Kahn et al. (45,1964)	Role sets and Supervisory Styles

APPENDIX A

1. Udy (77, 1959), in a study of 82 non-industrial organizations from 44 societies, hypothesizes that technological complexity can be represented by the sum of: (1) the total number of tasks; (2) the maximum number of specialized operators ever performed at once; and (3) the degree of combined effort or rhythmic integration (it bears a positive relation to the number of levels of authority where attention is the intervening variable). By attention, he means simply the limit on the number of different items to which any person can give his attention. He assumes that the existing findings on the span of control can be taken as the measure of the maximum span of attention. Therefore, as technological complexity rises, attention rises and the levels of authority rise in response. In a further paper (20), Udy relates each component of complexity to a variety of administrative variables:

1)	Total number of tasks with	- rationality (+)
		- scope of rewards system (+)
2)	Specialized operations with	- social involvement based on ascriptive element (+)

He further finds that social involvement correlates positively with authority. Social involvement correlates negatively with the scope of the reward system and rationality.

The net result is that the attempt to correlate technological complexity and administration (rationality and authority) is somewhat inconclusive - the relationship may be positive and asymptotic or both. Institutional influences, like social involvement (which attempts to measure the motivation to participate independently of the production situation), and the scope of the rewards of social involvement and ascription rest on either personal loyalty or force. Altogether, I find Udy's operational work unconvincing and therefore I question the usefulness of anthropological findings on non-industrial societies.

2. Thompson and Bates (75,1957) suggest a number of interesting relations, but offer only illustrations of organizations, rather than criteria.

TYPES OF AUTHORITY

Technology	Control Referent	
	Machines	People
Adaptable		Consensus Professional Ethics
Unadaptable	Centralization	

IMPACT OF CHANGE ON RESOURCES MANAGEMENT

Ratio of Mechanization to Professionalization

Technology	High	Low
Adaptable	Properly standardized raw materials - zone of acceptance great	Execution Co-ordination
Unadaptable	Avoidance of technological obsolescence, hence concern for fluidity and reserves. Small basis for human differentiation.	Replacement retraining organizational members.

This work is suggestive only, since the use of a mine, university or hospital for purposes of illustration is too broad to enable us to characterize technology as adaptable or unadaptable for any but a few purposes. The process will have to be spelled out more clearly.

3. In an unsystematic way, Blauner (9,1964) provides a description of the elements in blue collar work which may be useful in building an index of technological complexity:

1)	the work "face"	- whether man or machine controlled
2)	the product	- whether standardized or unique
		- whether the worker engages in a part or in the whole process
3)	responsibility	- whether the work is programmed, or the worker can carry out his own ideas
4)	interaction	- whether it is required by the job, or optional
		- whether on the job, or off the job
5)	attention span	- whether it is close, or the worker can think of other things
6)	physical demands	- heavy or light work
		- noise or quiet
		- uncomfortable or pleasant
7)	supervision	- close or open
8)	tasks	- fractionization vs. variety
		- skilled or unskilled
9)	work environment	- uncertainty in stability of work process
		- ambiguity in taking remedial action

Taken together, these elements define a control system with control over: (1) the worker's physical movements; (2) the worker's physiological nervous system, and (3) the worker's choices about uncertainty and people.

4. Turner and Lawrence (76,1965) present a well-designed theory and test of the relationship between technology and the worker: 47 jobs from eleven industries (manufacturing) were studied and a Requisite Task Attribute

Index computed. The following correlations (all significant at the .002 level) between each attribute and all the others were found: motor variety .57; object variety .50; required interaction .47; optional interaction on the job .49; optional interaction off the job .43; knowledge and skill .48; autonomy .48. The RTA Index represents a weighted total of the six requisite task attributes; one weight for all attributes except Autonomy (2) and Variety (1 for each of object and motor). Limiting ourselves to the correlations between variety and autonomy, we get .52 (motor) and .46 (object). The RTA Index correlates signficantly with attendance; especially the attributes autonomy and responsibility. Since cohesiveness in a work group requires attendance, if normative patterns are to influence member behaviour, we have an important technological feature in group cohesiveness among workers. When controlling for both education and authoritarianism (F-scale) the correlation is maintained. The finding holds also when seniority is controlled. On the other hand, of thirteen correlations between task attributes and job satisfaction, only three (optional interaction off the job; knowledge and skill, time span of discretion) are statistically significant, and three more are in the right direction. The relationship between responsibility and satisfaction is curvilinear with downward concavity; the finding is statistically significant. This is reminiscent of the curvilinear relation between status congruence and performance; that is, responsibility may be a significant dimension in performance. Turner and Lawrence present no evidence for or against such a hypothesis.

ELEMENTS OF BEHAVIOUR (from Homans)

Programmed
Predesigned
Predetermined

Elements
of
Task

"Within prescribed limits certain other behaviour can exist at the discretion of the individual."

	Activities	Interactions	Mental State (sentiments)
Prescribed	Variety Object and Motor	Required Interaction	Knowledge and Skill
Discretionary	Autonomy	Optional Interaction (on or off the job)	Responsibility

EXHIBIT 1.7

Jobs in Sample Ranked by Requisite Task Attribute Index

Job Title	RTA Index Score
Paper Machine Operator	63
Tool and Die Maker	59.4
Loom Repairman	54
Automatic Screw Machine Operator (including setup)	53
Paper Super Calendar Operator (Fine Grades)	52.8
Railroad Sectionman (Maintain Track)	50
Paper Machine Backtender	49
Paper Digester Operator	47.5
Railroad Locomotive Airbrake Repairman	46
Aluminum Extrusion Inspector	44
Aluminum Foil Roller	44
Automatic Screw Machine Operator	42.5
Railroad Blacksmith	42
Generator Armature Winder	41
Aluminum Remelt Furnace Tender	40.9
Aluminum Extrusion Press Operator	39
Telephone Wireman and Pole Climber	37.9
Aluminum Flat Mill Operator	36
Hand Pastry and Roll Maker	35.4
Paper Trimming Machine Operator	35
Textile Tenting Machine Operator	33.2
Bakery Order Filler and Shipper	32
Paper Super Calendar Operator (Coarse Grade)	31
Washing Machine Pump Assembler	30
Multiple Utensil Fabricator	29.1
Railroad Track Rebuilding Crewman	29
Railroad Car Airbrake Repairman	27.7
Cake Oven Operator	26
Extrusion Cut-Off Saw Operator	26
General Warehousemen and Fork Lift Truck Operator	25.9
Can Packer	25.2
Hardware Polisher	25
Tin-Plate Slitting Machine Operator	24
Bread Wrapping Machine Operator	23.6
Foundry Molder	23.3
Warehouse Order Picker	23
Broom Assembly Line Operator	20
Automatic Punch Press Operator	19.2

Job Title	RTA Index Score
Bottling Line Operator	19
Tin-Plate Paint Drying Line Unloader	17.4
Automatic Brush Twisting Machine Operator	17.3
Heavy Hydraulic Press Operator	17
Washing Machine Wringer Assembly Line Operator	15
Automatic Washing Machine Assembly Line Operator	14.8
Plastic Injection Molding Machine Operator	12.8

Source: Turner and Lawrence, p.33

The major theoretical finding is the relevance to the urban/rural dimensions. Here the expected relation between RTA Index and Satisfaction turns up for the rural setting. The finding does not rest, however, upon correlating Protestantism and Ruralism.

Although the relationship between the RTA Index and Pay is negative and statistically not significant, when controlled for urban and rural conditions, the relationship with RTA Index, Pay and Job Satisfaction becomes meaningful (pp.101-102):

1) City workers seek favourable economic exchange (pay) and avoid unfavourable exchange (task complexity) more than town workers.

2) City workers seeking favourable economic exchange and on finding it will report higher job satisfaction than those not finding it; this hypothesis does not hold for town workers.

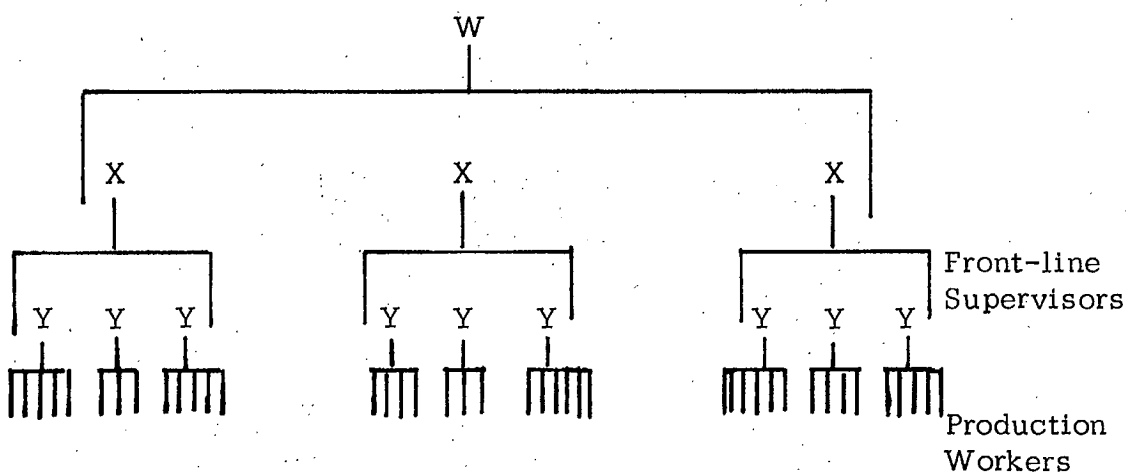
Relevant to these last findings is the statistically significant correlation between job satisfaction and worker Perceived Task Index regardless of the urban/rural difference. Are city workers guilty of distortion? Are they mistaken about their opportunity to contribute? Attempts to locate the explanation in terms of a sub-culture failed - differences between Town and City workers with low RTA scores on symptoms of stress are not significant. Lines that might be profitably explored are the findings that the RTA Index for city workers associates negatively with satisfaction with union, company, work group and foreman. Since the RTA Index and PT Index correlate strongly; we might tentatively assume that the PT Index would associate negatively with the several measures of satisfaction. Since these workers do not appear to express radicalism (foreman and company satisfaction) and they do not appear to score high on stress (compared with town workers), we have a set of findings difficult to explain in terms of the literature on alienation, radicalism and withdrawal.

Clearly, however, the findings are of first rate importance for the subject of technological change, satisfaction and rural needs for autonomy. N-Achievement theory was sufficient to explain the town correlates of RTA, Satisfaction and Pay, but we were required to use exchange theory for an explanation of city correlates. A worthwhile study might be designed to show the relationship, if any, between N-Achievement and avoidance of complex tasks.

One final relationship is worth investigating, the statistically significant negative relation between the RTA Index and either mechanization or capital investment (which we would think correlate positively). This is what we would expect if we confined our attention to: (1) unit production and (2) mass production. The authors do not tell us enough about the technology employed for us to distinguish mass and process production.

APPENDIX B

A simple model of an Administrative System



Span of Control ($\mathcal{S}$) Management - 3

Levels of Authority (λ) - 3

No. of Workers per Front Line Super (6) - 5

A = number of administrative workers

$$= 1 + \mathcal{S} + \mathcal{S}^2 + \mathcal{S}^3 \text{ ---------- } \mathcal{S}^{\lambda-1}$$

$$= \frac{\mathcal{S}^{\lambda} - 1}{\mathcal{S} - 1} = \frac{3^3 - 1}{3-1} = \frac{27-1}{2} = 13$$

P = number of production workers

$$= 6\mathcal{S}^{\lambda} - 1 = 5.3^2 = 45$$

$$\frac{A}{P} = \frac{(\mathcal{S}^{\lambda} - 1)}{\mathcal{S} - 1} \quad \frac{(\quad)}{6\mathcal{S}^{\lambda} - 1} \quad \therefore \quad \frac{A}{P} \text{ ---------- } \frac{1}{6}$$

Clearly the $\frac{A}{P}$ ratio - an index of bureaucratization - depends only on the ratio of workers to front line supervisors. Since we expect it to be relatively

low in mass production systems, we appear to be saying that in the production system, bureaucratization falls with the mass production! I think this entirely plausible. The machine generates the rules and enforces them.

APPENDIX C

1. Zander et al. (82,1957) studied role relations among members of the mental health profession. Like Kahn et al. they ignore the structural differences that interest sociologists grouping together psychiatrists, clinical psychologists and social workers regardless of the type of institution they work in (so long as they have relations with each other). They also disregarded cultural differences between the six cities involved. Nonetheless, their sample is 156, 165 (all with Ph.D.) and 159 respectively for the professions. About one-half of the total sample is derived from a university, a general clinic and a V.A. hospital. The measure of role relations is derived from: (1) perceived relative power to influence; (2) acceptance of relative power to influence; (3) a comparative judgement concerning the resources one person can give to another relative to what he can receive. Strictly speaking, these measures do not necessarily define normative patterns; they may only account for behavioural uniformities which are not seen as binding. In fact, the only clue we have to the presence of a normative pattern is that both the clinical psychologists and social workers tend strongly to say psychiatrists should earn more money, and psychiatrists make the largest contribution to mental health. Among achievement oriented professions, these statements may be taken to represent role relations.

The study is further marred by reporting correlations between two variables without giving the evidence. Nevertheless, ancillary personnel high in power (as they perceive that power) avoid psychiatrists, have little desire to be liked by psychiatrists, do not feel they can get along with psychiatrists, and have little desire for contacts with psychiatrists. On the other hand, high satisfaction in relation with psychiatrists tends to soften these feelings. The theoretical significance of the study is that we have a

2X2 table involving satisfaction and power. They give findings for one cell only (high power and low satisfaction) saying they are strikingly different from the other three cells. The number of contacts between ancillaries and psychiatrists appears also to be relevant dimension judging from the zero order correlations associated with it. Keeping these reservations in mind, we would seem to be able to argue that ancillaries: (1) perceiving the superior to be hindering when they are dependent on him, will try to win his support and help, though they find him non-supportive. In short, "if you can not beat them, join them." (2) Perceiving the superior to be hindering when they are not dependent on him, will try to reduce his influence by avoiding and ignoring him since they view him as non-supportive.

The superior high in power dispenses both instrumental and expressive support to those with whom he has high contact, and experiences high satisfaction. Without such contact the psychiatrist high in power and prestige reports feelings comparable to the auxiliaries high in power.

2. Rushing (64,1964) in a less organized way reports similar findings from a study of a psychiatric unit in a university hospital. Both the Rushing and Zander studies suggest that clinical psychologists express their hostility more directly. Since 28% of the Zander sample of the clinical psychologists are female, we can compare the behaviour of both sexes, holding profession constant. Men appear to need independence more than women, and seem to be more willing to work for it; they are able to admit their encroachment, and desire to reduce the psychiatrist's influence. Where women have high power, they tend to behave like males. Rushing's interviews suggest that social workers and nurses are more likely to use the coping mechanism found in use by subordinates in the Kahn et al. study, i.e. appeal to higher management as a source of influence. Rushing reveals two interesting strategies employed to control the psychiatrist: (1) make testing obligatory for all patients and funneling the operation through the

department secretary, thus avoiding contact. Here we see further evidence of the meaning of Zander's high power to control one's fate; (2) demand from a superior for an explicit definition of duties, so that a norm may be generated to structure out the superior's power. The latter strategy is revealed in all its perfection by Crozier (18,1964) where complete bureaucratization of roles (through application of seniority, equality at any hierarchical level, and outside recruitment) removes any operating room due to uncertainty. Clearly, if the social worker could get the psychiatrist to define her duties as casework (which she defines as her major task), the psychiatrist would lose the leverage effect of uncertainty as to how the social worker is expected to behave.

3. Strauss (72,1964) shows the influence of ideology in relations between psychiatrists and auxiliaries. Among psychiatrists those scoring highest on a social orientation to medicine (which means in addition polarizing mental health along a social vs. psycho-analytic scale) were more supportive of auxiliaries. As a group, these psychiatrists did not stand out as having ideology around which strong feelings were oriented. Clearly, ideology generates normative patterns governing role-set behaviour. So far as treatment services are concerned, ideology of the ward again affects role-set behaviour. On two wards characterized by varying degrees of milieu therapy, the chief of service assumed the role of ideological leader; professional lines were either entirely obliterated, or everyone served both as therapist and as a professional. On three other wards where the chief of service assumed the formal leadership role, the clinical psychologist withdrew from the ward, and the team, on two of them; and in the third ward the whole professional staff felt impotent. The three wards were characterized as the, Psychotherapeutic Authority System, the Medical Authority System and the Unresolved System where the physician controlled the psychiatric chief of service. Ideology serves as a legitimating mechanism

for definitions of role-sets by the formal leader. Where professionals are concerned at least, power flows strongly with the formal leader: subordinates either accommodate themselves, or get out. Accommodation seems to lie in avoiding contact, with or without structural support. Gilbert and Levinson (1957) and Sharaf and Levinson (1957) report similar findings utilizing a scale designed to test custodialism. Their interview data with socially oriented psychiatrists suggest their devotion to milieu treatment may be an ideological screen to escape awareness of deficiencies - they appear to be the least skilled, the most insecure and the most lacking in insight. Among residents, the differences appear to increase with the number of years of residency.

4. Mullen (57,1966) studies three regional offices of a nationally known insurance company. His study is difficult to place entirely in the organization of this paper, but it is thought more useful to the reader to have the findings reported in one section than scattered. Mullen presents twelve criteria for measuring the effectiveness of the three office leaders (A, B, C). Though the three regions clearly differ in the degree of complexity of problems, the home office attempts to design effectiveness criteria to control for this variation. A, B and C represent three distinct leadership styles: (1)A - employee centered; (2)B - balance of delegation of authority and passive leadership, combined with periodic angry attacks on subordinates and; (3)C - aggressive, energetic, self-confident, close supervision. Utilizing Mullen's twelve criteria, it would be difficult to choose between the three types. When evaluated by their immediate subordinates as a person to work with, they rank in order A, B, C; when so evaluated in terms of their effectiveness in achieving goals, they rank in order C, A, B. Head office superiors, however, see only C as top management material, they consistently emphasize his knowledge of how to motivate men and say (without confirming evidence) he developed more promotable men in three years

than A and B together in ten years. A was described as a "fire-eater" ten years ago, but now as passive and cynical. No evidence in the interview data is given to support this change; it is possibly significant that A's superiors talk of his loyalty to his people, and lack of it to the company and its policies. In brief, formal criteria of effectiveness do not distinguish A, B and C. Managerial beliefs about subordinate motivation (with or without evidence), and loyalty to the company appear as critical factors in evaluation. Clearly, ideology serves as a legitimating mechanism for evaluation in the absence of a technology for evaluation. The effectiveness criteria are seen only as rules of thumb, possibly to sort out demonstrably unfit cases.

5. Fiedler (27,1961) examines the role of psychological distance of the leader from his followers and relates it to a broad variety of environments through its effect on performance. The environments include basketball teams (26), surveying teams (22), air crews, tank crews and an open hearth steel shop. Where the formal leader is chosen sociometrically as the informal leader, there is a positive relation between leader psychological distance and group performance; where the relationship between leader and his key man is one of positive preference and where the leader key man relationship is negative, the relationship between leader psychological distance and group performance is negative. The correlations are higher for the first set than for the second set. The theoretical rationale for the findings suggests:

- if the leader is psychologically distant from his men, he must decrease the distance by showing a preference for his key man;
- if the leader is psychologically close to his men, he must increase the distance by not showing a preference for his key man;

- if the leader is psychologically close to the whole group, or psychologically distant from the whole group performance suffers.

Fiedler adapted his theory for a study of consumer co-operatives, and the findings support the theory. Interviews with a number of general managers suggest that those practising psychological distance are: (1) role oriented; (2) hold regular staff meetings; (3) bring their relevant subordinates to board meetings; (4) demand and give freedom and responsibility and; (5) expect that their assistants should put in a minimum of four years before being considered for promotion. The last three taken together suggest a possessive attitude. Reverting to the Mullen study, we might accord some recognition to leader C for practising psychological distance. However, leader A does not meet the description of "close" psychological distance. Except in his warmth, he showed no obvious tendencies to possessiveness and held numerous staff meetings.

Fiedler's data suggest a re-interpretation of the Katz findings that successful task performance suggests a formal leader must have informal acceptance if he is to get the ear of his subordinates on task matters.

He controls the spread, however, of informal acceptance to non-task matters by practising social distance. The formal leader who fails to make that distinction encourages warmth at the expense of performance. The formal leader who cannot get informal acceptance simply does not get the ear of his subordinates to communicate his leadership.

Fiedler's data also seem to refute, or at least very seriously question the Blau-Scott hypothesis that loyalty to supervisors occurs at alternative levels. On the other hand, Fiedler finds that successful leadership depends as well on the trust of one's superior; for without it, the leader lacks the power to achieve group goals.

6. Murray and Corenblum (58,1966) in a study of a public-owned utility with seven hierarchical systems also find no support for the Blau-Scott hypothesis. They find that the greater the hierarchical inter-dependence of the leader and the more influence he has in getting his sub-ordinates benefits, the more loyalty accorded to him. This finding is not a direct test of Fiedler's model, but is compatible with it, and aptly summarizes the relation between leader C and his home office, and his sub-ordinates. Altogether, successful leaders appear to perceive their roles on the basis of generalized power rather than on specific prerogatives.

7. Lefton (47,1959) studies decision-making in a mental hospital and presents evidence on how the team members perceive each other's influence; and of how much influence they would like for each other. The two sets are remarkably congruent and the scores of the senior psychiatrist on six categories strongly suggest the above hypothesis about leadership and generalized power. On the other hand the mean discrepancy score between the influence desired for his profession by a team member and the influence actually perceived by him on six items, shows that the lower the rank in the group's perception of influence the higher the mean discrepancy score. However, the greater the emphasis by the ward on organic treatment, the lower the mean discrepancy score for the ward as a whole. Clearly, there is a connection between technology and role behaviour. This hypothesis is elaborated, defined and defended in a separate section.

8. Crozier (18,1964) as we have already commented, has shown that bureaucratizing roles removes uncertainty. The question arises then, why do workers persistently express the desire for closer contact with the chief executive and tend to blame his subordinates because things go wrong if they believe that he doesn't run things anyway? Crozier argues that the chief executive is like a judge; he is valued, not in terms of what he does, or achieves, but whether or not he is fair and just. If this is indeed true, it

would explain why there is seldom any congruity between the perception of the chief executive's competence and personality by workers, but a close correspondence between these dimensions for his subordinates. The latter serve as inhumane judges who dramatize the humaneness of the chief justice. But from what sources does this valuation arise? Crozier is not able to answer.

9. Baumgartel (6,1957) finds a curvilinear relation between the degree of involvement (of 330 Ph.D's and M.D.'s in 20 research laboratories) and leadership climate. The degree of involvement is measured by the sum of the frequency of contact with director, and the amount of influence on director. Leadership climate is measured by the sum of the number of decisions made on one's own and the perceived influence of the director. The result is three types of leadership climate forming a continumm, i.e. laissez-faire, participatory and directive. A curvilinear relation was found to exist between the leadership climate and: (1) the importance the rank and file attached to research orientation; (2) the extent the job provided for research orientation; (3) rank and file favourable attitudes toward the director and; (4) rank and file over-all satisfaction with leadership (10, pp.344-360). White and Lippitt (80a,pp.530-551) present similar findings for 10-year-olds in children's clubs. Nevertheless there seems to be a discrepancy between findings reported in the charts, and the interpretation of them in the test.

10. Kahn and Katz (45a) find that among section gangs on a railroad, foremen of high producing sections are: (1) more likely to devote time to planning and perform special skilled tasks (p.556); (2) more likely to create a work climate in which the men perceive as planned ahead of time (p.556); (3) more likely to spend time supervising (p.557); (4) less likely to indulge in close supervision (p.559); (5) less likely to be punitive when a bad job is done (p.563); (6) more likely to train workers for new

techniques and duties (p.563); (7) less likely to have a particular man in the section speaking up for the men when they want something (p.558).

Katz and Kahn report similar findings for an insurance company. High productivity sections are more likely to report: (1) the supervisor spends time supervising (p.557); (2) providing general supervision (p.559); (3) setting their own work pace (p.559); (4) general supervision of section head by his superior (p.561); (5) pride in getting the work done (p.566).

The Katz and Kahn findings are consistent with the small group findings on role differentiation suggesting that the effective foreman is task-oriented in his leadership; leaving the expressive side of work relations to the workers. They may also be read as suggesting a distinction between leaders along the lines of being able to have personal influence as well as formal authority, so long as they confine your activities to the instrumental area. The failure of the low productivity foremen lies in confusing the instrumental and expressive areas.

11. Borgatta (11,1954,pp.568-574) finds that "the great man" is both a task and expressive leader. The foreman is highly unlikely to possess both these qualities. The relationship that Katz and Kahn find between supervisor and superior is especially interesting in terms of locating a leadership climate and its relation to modes of control of lower participants. These findings are relevant to what French and Raven call Expert Power. If one sees the instructions of the experimenter as instructions coming from an organization, then:

12. Schachter's findings (65a,1951) are relevant. Postive attempts to influence the group ("hurry things up", "see how fast we can go") reveal that the productivity of a group is not affected by its cohesiveness. Negative attempts at influence are more successful with high cohesive groups who show lower productivity.

13. Halpin (37,1954) examines the relationship between an airplane commander's sense of consideration (measure of friendship, mutual respect and trust, and warmth) and a superior's rating of combat performance and crew satisfaction with the airplane commander. Consideration and a superior's rating are negatively related, both during training and combat periods for 33 B-29 commanders: consideration and crew satisfaction are positively related with one another for both periods. The relationship between an airplane commander's score on initiating structure (degree to which he organizes, defines crew member roles, creates channels of communication) and a superior's rating is positive for both periods. The relationship between initiating structure and crew satisfaction is negative during training and positive during combat. Effective leadership, then, appears to require distance between leader and co-worker.

14. Fiedler (26,1955) presents similar findings, but introduces an interesting qualification of the hypothesis on distance; if the effective leader is generally distant, he must have a close relationship with the crew member he designates as his key man.

Both these works are especially interesting because they represent studies of the same group under two conditions - training and combat. It is significant that the same crew perceives the commander's initiating structure differently during combat than during training. Most small group studies - I would agree - may take place: (1) for too short a period or; (2) under too artificial conditions for the dynamic implication of group structure either to be felt, or if felt, to be worked through.

15. Adams' (1,1953) findings are relevant to the Halpin and Fiedler studies. Using nine statuses, i.e. age, popularity, combat time, length of service, military rank, education, position importance, amount of flying time, and reputed ability, an index of status congruence was calculated for each individual and each bomber crew. Status congruence (individual

and crew) tended to a positive relation with social performance (crew member ratings on morale, friendship, confidence). Adams offers only *ad hoc* hypotheses to account for his finding too little status congruence restricts communication to the minimum technical requirements of the job thus reducing performance and too much status congruence generates so much communication that the communication on which performance depends suffers.

The Halpin, Fiedler and Adams studies are not comparable (and one would like to see a replication, testing for both status congruence and initiating structure). But one might hypothesize that high status congruence leads to an excess of expressive communication over instrumental communication thus frustrating the high degree of initiating structure on which performance (and even crew satisfaction in the long run under combat conditions) depend. This "danger" factor suggests that without controlling for it, we may even be finding spurious relations between group cohesiveness and status congruence. A replication of Gouldner's data (32) in terms of status congruence of miners might prove enlightening. A formal mathematical model of Homan's interaction variables clearly establishes that "Under conditions of positive morale we require that the activity level be more strongly influenced by the external demands than by the level of friendliness" (Simon 70, p.106). Clearly "danger" increases the amount of activity imposed on the group by the external environment.

16. Morse and Reimer (56, 1956) in their study of clerical insurance workers are able to control, experimentally, the nature of work. They carry out a before and after experimental study introducing hierarchical control and permissive ("autonomous program") control into matched sections. As was expected, satisfaction fell in the hierarchical control group, and rose in the permissive control group. But productivity rose in both groups, especially in one of the hierarchical control groups. They present evidence

to suggest this phenomenon is not to be accounted for by a "Hawthorne effect". Nevertheless as argued above, the experiment may not have had a long enough time to work through the process of commitment.

17. Coser (17,1958) presents some very interesting observations, in a rather confused way, about differences on a surgical ward and medical ward. She appears to be saying that on the surgical ward because authority rests officially in the hands of the chief resident, and because he refuses to delegate authority, rank differences between other residents and nurses are washed out, resulting in: (1) more discussion among all personnel concerning the patients; (2) higher expectation of the head-nurse by the M.D.'s (foresight, intelligence, reading); (3) nurses' willingness to abandon, or modify official rules (e.g. nurse should not leave the floor when on duty alone) under crisis conditions of patient care (despite the nurses' inherent shyness). The medical ward is organized more hierarchically, with the chief resident leading discussions directed at a consensus. Coser seems to be saying the preservation of rank differences on the medical ward: (1) reduces discussion among personnel of patient care; (2) reduces even the head nurse to carrying out orders and holding charts on rounds; (3) lowers M.D. expectation of nurses ("carry out orders", "do routine work well") and invites M.D. criticism of nurses ("not willing or not able to think", "clinging to rules"); (4) increases nurse reliance on rules ("I would never leave the floor") even in crisis situations, despite medical ward nurses being more outgoing as people.

18. Kahn et al. (45,1964) examine the relations between 53 focal persons (drawn from seven different locations and four different technological systems: oil, auto, electronics and machine parts) and their role senders. The focal persons occupy managerial positions from division managers to unit heads and are largely limited to performing headquarters and manufacturing operations. Statistically significant findings among focal persons

are that the greater the role conflict:

1) the greater the intensity of experienced conflict;
2) the greater job related tensions;
3) the less job satisfaction;
4) the less the confidence in the organization;
5) the less the trust in the role sender;
6) the less the respect for the role sender;
7) the less the liking for the role sender;
8) the lower the frequency of communication;
9) the lower the power attributed to others;
10) the higher the experienced ambiguity.

This reader is somewhat skeptical of Kahn et al. having established the presence of a role-set: however, a factor analysis of 36 items representing statements indicative of normative expectations (pp.417-418) with responses coded from 1-5 on a scale is much more convincing. Using tenure, rank, occupation (blue vs. white) and responsibility (supervisory vs. non-supervisory) as independent variables, their findings can be presented statistically as a relation between each of the independent variables and the extracted factors (5).

NORMATIVE EXPECTATIONS OF ROLE SENDERS ABOUT FOCAL PERSONS

Characteristics of Role senders	Rules Orientation	Nurturance of Subordinates	Supervisory Closeness	Universalism	Promotion Achievement
	I	II	III	IV	V
Tenure	High	Mod.	High		High
Rank	Low	High	Low		
Occupation	Blue	White	Blue		
Responsibility	Supervisory	Supervisory	Supervisory	Supervisory	Supervisory

The table can be read across or down. For example, reading down a supervisor in a low status, blue collar job with long tenure believes a good organization man should be rules oriented and practise close supervision. On the other hand, reading across, occupying a supervisory position (line 4) disposes a person to take an extreme position on all five normative factors. Factor II is of special interest in view of the prevalence of human relations ideology in that it is those supervisors in a high status white collar job with only moderate tenure that score highest on nurturance. Finally, these men score low on close supervision and rules orientation. The findings suggest a new typology for the study of supervisory styles.

CLOSENESS OF SUPERVISION

		YES	NO
Nurturance of Subordinates	Yes	paternalism	employee centred
	No	job centred	laissez-faire, indifferent, impersonal

When the factors, rules orientation (I), supervisory closeness (III) and universalism (IV) for each role set are dichotomized into high and low, and related to high role conflict for the focal person, the percentage of focal persons experiencing conflict is significantly smaller for the role sets scoring high on the factors. Furthermore for those same role sets, focal persons experience lower tension. If one thinks of high scores as indicative of bureaucracy, then bureaucracy seems to imply freedom from tension. Alternatively, the anti-bureaucratic role-set can be seen as putting pressure on the focal person to break rules. The collision between non-bureaucratic expectations of subordinates and bureaucratic expectations of superiors generates role conflict.

Examining the same normative factors as functions of three variables: (1) proximity of role senders; (2) status and direct, or indirect authority of role senders and; (3) functional dependence of role senders (a division of labour such that the activity performance of one position is requisite to the adequate performance of another). Kahn et al. find the following statistically significant relations which can be organized and read like the illustration on the previous page.

NORMATIVE EXPECTATIONS OF ROLE SENDERS ABOUT FOCAL PERSONS

Characteristics of Role senders	Role Orientation I	Supervisory Closeness III	Universalism IV
Functional Dependence	High	High	High
Proximity	Low	Low	
Rank (Hierarchical level)	Superior	Superior	Superior

The fact of low proximity is especially interesting; it suggests that the superior who although he cannot observe quickly any changes in the focal person's behaviour, cannot easily tolerate the latter's effect on his environment since he is dependent on the focal person for his own performance. Thus those close to the focal person, and those not dependent on him, can afford to be non-bureaucratic in their orientations. Utilizing all seven attributes as independent variables, together they show multiple correlations of .53 (I), .72 (III) and .45 (IV).

The relationship between the effective power of the role sender over the focal person correlates with rank; the power of the role sender relates to each of the French and Raven measures of power in a statistically sigificant way.

1)	rewards correlate	.63 with effective power	
2)	punishments correlate	.61 with effective power	(making things difficult for the focal person)
	punishments correlate	.80 with effective power	(taking disciplinary action against the focal person)
3)	legitimacy correlates	.31 with effective power	(able to order compliance)
	legitimacy correlates	.74 with effective power	(ability to use authority over decisions)
4)	identification correlates	.22 with effective power	(using friendship appeals)
5)	expertness correlates	.18 with effective power	(role senders believe focal persons have confidence in their knowledge; focal persons express high respect for their knowledge)

The following table sums up the power strategies, including what we might call coping mechanisms.

STATUS ROLE SENDER

% Role senders Involved with F.P.	Superiors	Peers	Subordinates
1) threatening transfer	28	4	2
2) threatening dismissal	24	1	1
3) threatening block promotion/ salary increase	12	1	0
4) withholding information, aid, co-operation	19	32	44 (lowest sub-ordinates, 80)
5) willing to work with & help F.P. when deficient	30	18	11
6) threaten to use higher management as influence	54	77	88

The general image is one of: (1) superiors, both using explicit sanctions and being willing to nurture and; (2) subordinates as impotent except either by appealing to superiors over the focal person's head, or indulging in petty attempts to make life difficult. Asked to say what they would do if the focal person failed to perform (one of the activities listed as belonging to him) subordinates chose either to do it themselves (66%) or do nothing (34%). Superiors were more likely to do it themselves, or turn it over to someone else.

Kahn et al. demonstate a decided relationship between structural effects (tenure, rank, occupation, responsibility, functional dependence, proximity and hierarchical level) and bureaucratic orientation (rules orientation, supervisory closeness and universalism). They show a

definite relationship between hierarchical levels, power, the kinds of power utilized by each level, and coping mechanisms characteristic of those levels. The two sets of data clearly overlap, but they do not enable us to go from structural effects to the distribution of kinds of power and coping mechanisms. The remainder of their study relates a variety of findings to personality variables and states. Only those will be reported that shed light on the relation between structural effects and power:

1) the higher the functional dependence of role senders, the higher the communication (but communication declines as role conflict increases);

2) the higher the functional dependence, the higher the attributed power (but the attributed power declines with role conflict);

3) among those high in functional dependence, the higher the role conflict, the lower the success in coping with stress. Among those low in functional dependence, the higher the role conflict the greater the success in coping with stress;

4) the higher the functional dependence, the higher the intensity of experienced conflict (but the intensity of experienced conflict increases with role conflict);

5) the higher the functional dependence, the lower the job satisfaction (but the job satisfaction decreases with role conflict);

6) among those high in functional dependence, the higher the role conflict, the higher the sense of futility and among those

low in functional dependence, the higher the role conflict, the lower the sense of futility;

7) among those high in functional dependence, the higher the role conflict, the lower the affective interpersonal bonds. Among those low in functional dependence, the higher the role conflict, the lower the affective interpersonal bonds.

Broadly speaking, high functional dependence on five of the seven measures (1-3, 6-7) yields a higher score if role conflict is low; but if role conflict is high, it scores highest on only two measures (1-2). Insofar as we can take measures as indicative of a mental health syndrome, role conflict elicits a high cost for those role sets high in functional dependence. One non-structural finding is worth reporting. A. Cohen (15,1955,pp.291-294) argues that when the need for cognition is high (a clear problem and evident purpose), ambiguity leads to frustration. Kahn et al. report that role-sets with high communication experience more ambiguity as role conflict increases; role-sets with low communication experience less ambiguity. This points to the worth of investigating the relationship between the need for cognition and functional dependence, suggesting that the higher the functional dependence, the higher the need for cognition and vulnerability of such role-sets to ambiguity.

We have not been able to demonstrate firm associations between power, the distribution of power types and the status of role-senders. Power and status correlate positively. Kahn et al. present a number of interesting findings based on power as related to the focal person:

1) The greater the power, the greater the intensity of experienced conflict (but experienced conflict increases as role conflict increases).

2) The greater the power, the greater the sense of futility (but futility increases as role conflict increases).

3) Among those high in power, job satisfaction decreases with role conflict. Among those high in power, affective interpersonal bonds decrease with role conflict. Among those low in power, affective interpersonal bonds decrease with role conflict. Among those low in power, job satisfaction increases with role conflict.

Kahn et al. present data relevant to the N-achievement theory presented in the appendix of learning theory. The Atkinson model would predict a higher job involvement for those high in achievement and low in anxiety, relative to those low in achievement and high in anxiety. This is confirmed at a statistically significant level (p.314). The model would predict also that the perception for long range upward mobility prospects would differentiate along the same lines; this is also confirmed (p.314). Unfortunately, they do not relate these findings to any of the structural variables that interest us.

SECTION III

We have already referred to status congruence in connection with crystallization of norms (Sections I and II) and group performance (Section II). In this section we elaborate on those references, developing the theory and citing the growing empirical literature.

Galtung (30, 1966) gives the most sophisticated theoretical treatment available; it is composed of three variables and five axioms. The variables are:

- criss-cross - the degree to which individuals can serve as bridges between conflict sub-groups in a group structure;
- rank equivalence - the degree to which individuals have statuses of equal rank in their status set;
- equality - the degree to which individuals are similar in terms of total rank.

In the simplest terms, the theory says that high status is preferred to low, and status congruence in a person stimulates recognition, familiarity and a sense of ease in others when they associate with him. They may be above or below him, but all parties have normative expectations of one another, which are fulfilled. Incongruence in a person is stressful both to him and others because normative expectations are violated. Association at work and at play depends on congruence which provides linkage between people.

This brings us back to our earlier discussion of normative behaviour. If the expectations of one person become sanctions for another (and vice versa) congruence facilitates the process. The axioms are:

1) Any status held in common between two status sets is a link.

2) The lower the number of links, the less associative the relation.

3) The lower the number of high status links, the less associative the relation.

4) The lower the rank congruency, the less associative the relation.

5) The more achieved the link, the more associative the relation (in achievement-oriented cultures).

These five axioms form the basis of the theory. Gulting is able to show that it is not possible to maximize all three of criss-cross, rank, equivalence and equality. We can have relative equality or inequality of all at considerable up and down mobility. Clearly, groups can be studied in terms of how they fit together these combinations in relation to the status structure of their members. Although Galtung does not do so, we may think of his variables as dimensions of authority patterns.

No test of the model exists. Nonetheless, several papers are available which are relevant to H. Lenski (48,1954,pp.405-413) who shows that those with low status congruence (income, ethnicity, education and occupation) are more likely to vote Democratic and support Medicare, price

controls and a general extension of government powers. Lenski assumes without proof that low congruence generates stress, which is responded to by radicalism. Considerable data on voting suggests Lenski picked up only part of the picture: low status congruence is associated also with right wing voting and support of right wing policies. Clearly, some form of alienation is involved which leads on occasion: (1) to rebellion; (2) to withdrawal or; (3) to support of the status-quo. Politically, this is equivalent to: (1) radical voting; (2) non-voting and; (3) voting old parties.

Lenski (49,1956) finds further relationships between congruence and: (1) withdrawal and avoidance of social associations (negative); (2) long standing voluntary ties whether friendship or organizational, now inactive, (negative) and; (3) social motivation (positive). Jackson (41, 1962 and 42,1962) subjects the literature on status congruence to a careful review and designs several models to test existing hypotheses. Utilizing three statuses (occupation, education and ethnicity), he computes four types of congruence: (1) consistents; (2) moderate inconsistents; (3) large inconsistents and; (4) total inconsistents. He computes stress symptoms from a sixteen-item questionnaire. As one might expect, types (1) and (2) show fewer cases of high stress and more cases of low stress than types (3) and (4), a finding that is statistically significant. Type (1) shows less stress than type (2) but type (4) shows less than type (3) although more than types (1) and (2). Jackson hypothesizes that since type (4) has no

statuses in line, both the individual and others tend to take his mid-rank (that is whichever status ranks second among the three) for purposes of defining self-image and mobilizing expectations; if so, his experience of stress would be intermediate between (1), (2) and (3). Taking the statuses two at a time and relating them to stress, we find two interesting classes. Where occupation or education status is higher than ethnicity, the experience of stress is relatively low, but these two classes show the highest percentage voting liberal. The classes showing ethnicity status as higher than either occupation or education show both the highest stress and lowest liberal voting. Among <u>males</u>, highest stress was experienced by occupation status exceeding education status for types (3) and (4), a possible recognition of blocked mobility. (In the Mullen insurance study, appendix II, leader B was the least educated; the reader will recall his angry outbursts directed toward subordinates combined with passivity. His superiors reported it would not be possible now for someone like B to go as far as he did.) The lowest stress among <u>males</u> existed for types (3) and (4) whose education status exceeded occupational status. This suggests there is hope of achievement, yet one is puzzled that age makes no difference. For <u>females</u>, the results were reversed suggesting the influence of marrying up and marrying down.

It is clear alternative formulations are possible: (1) among males, assuming that the incidence of stress was equal for all groups, high stress generates downward mobility (or at least prevents upward mobility)

and this creates status inconsistency; (2) among females, where educated women also have high stress, they tend to marry down. Yet the two models are not incompatible; stress is a function of both social statuses, physiological states (Funkenstein, 29,1957) and personality structure (Eysenck, 23,24). Jackson's study is revealing of the relationships that were posited and not found between stress and age, marital status, religion, childhood residence, current residence, length of residence and region. The three statuses suggest individuals perceive both self and others through the dimensions of achievement (occupation and education) and ascription (ethnicity). If education is seen as in part ascriptive, we would expect to find some relationship between it and stress among type (2); unfortunately, there is none. However, among type (3), where education is high relative to occupation (two rank deviations between them), 40% experience high stress. This suggests that a marked occupational achievement failure must occur among the "Brahmins" before stress becomes pronounced, a hypothesis consistent with much material on family structure.

It is not possible to convert these findings into statements that converge with those in the preceding section. Do status and status congruency affect group attitudes toward bureaucracy? If so, what is the process? If school success is largely a question of family background, does the child who is mobile learn something from that family that facilitates learning to handle the stress and ambiguity we have associated with status

incongruence? We can partly study the process through what is called N-Achievement (see the Appendix on Learning Theory).

Kornhauser (46,1965) demonstrates an interesting finding - among those auto workers in the two lowest skills, those with the most education, regardless of age, experience less life expectation, lower self-esteem, but higher sociability and mental health. Kornhauser's study establishes that mental health is a multi-dimensional thing. It raises anew the question of what one gets out of school; this status incongruent group may have developed higher aspirations through staying longer in school. The blow to their self-esteem from low occupational status is greater, but their years of schooling carry compensations in learning friendship in our society. Of course, we are not sure what that means. Swanson and Miller (74,1958), following Riesman, suggest sociability in our society is learning how to break (brake) friendship with a minimum of stress.

The remainder of the Kornhauser findings reinforce the general theory; the higher the status and status congruency of the worker's early family background, the higher his work skill, satisfaction and mental health.

Zaleznik et al. (81,1958) find that leaders among work groups tend to be drawn from among those individuals, with both high status and high status congruence, who are also members of sub-groups that have high status congruence. Statuses include pay, age, seniority, education, ethnicity and sex. From a group of 47, eleven met these conditions. In actuality, the

group leaders numbered five, four of whom met the conditions. Clearly, status and status congruence are necessary but not sufficient conditions of leadership. One's friendship position in the group depends also on these dimensions. Low status seems predictive of membership in a deviant sub-group; status incongruence seems more important than status in determining an isolate position. This leaves a sub-group with high status and low status congruence. No evidence is available but Zaleznik speculates that this element is likely to become task leaders, and sources of innovation so far as social change is concerned. No evidence is forthcoming but the Lenski-Jackson material is compatible with it.

On the basis of group membership attributes, Zaleznik et al. are able to predict that regulars (high status and high status congruence) are most likely to: (1) experience high satisfaction and; (2) meet the opportunity requirements expected by management. Deviant members are more likely to be rate-busters and isolates under-producers. Ethnicity was a status dimension particularly important for this group; of the 20 regulars, 16 were Irish. Of the Irish who were both high status and high status congruent, all ten were regular members. Zaleznik et al. do not give sufficient data to relate their findings on group membership to the skill differences we have stressed.

There are some qualifications we need to attend to before concluding that status congruence is the key to human relations; namely,

status congruence and satisfaction among regulars may in part depend on the presence of non-regulars with statuses out of line. We are suggesting that people behave as if they were in a morality play where goodness requires evil if it is to be recognized. Secondly, in a world of unequal statuses, status congruents serve as links between groups where they have some linkage in common. This proposition underlies the whole debate among political sociologists about the presence and function of intermediate groups to bridge the gap between the mass and governing elite. Thirdly, group life is abundantly dynamic with considerable mobility upward and downward. Considerable evidence exists to the effect that individuals alter status (Catholics become Masons in business firms where a connection is perceived between success and religion) and where mobility is upward, take on the normative expectations of the group to which they have aspired.

SECTION IV

EXCHANGE BETWEEN INDIVIDUALS AS A SOURCE OF GROUP LIFE AND THE LEARNING OF GROUP LIFE AS A SOURCE OF REWARD

Over the years, Homans (39,1961 and 40,1950) has elaborated a number of interdependent propositions and used them to analyze and interpret a variety of empirical findings about group behaviour. It is hardly necessary to say he finds them compatible. From (40,1950) we can infer the following propositions about group membership:

- the more activity, given the initial level of friendliness, the more intensity of interaction;
- the more interaction, the more the friendliness;
- the more the friendliness, the more the activity;
- the more activity imposed on the group by the external environment, the more activity generated within the internal system given the initial level of friendliness.

At the individual level, Homans argues:

- If in the past the occurrence of a particular stimulus situation has been the occasion on which a man's activity has been rewarded, then the more similar the present stimulus situation is to the past one, the more likely he is to emit the activity, or some similar activity, now;

- The more often within a given period of time a man's activity rewards the activity of another, the more often the other will emit the activity;

- The more valuable to a man a unit of the activity another gives him, the more often he will emit activity rewarded by the activity of the other;

- The more often a man has in the recent past received a rewarding activity from another, the less valuable any further unit of that activity becomes to him.

Nonetheless, Homans has not shown the theoretical relationship between the two sets of propositions. Furthermore, he invokes "maintenance of one's personal integrity" as an alternative source of reinforcement to acceptance by the group. Clearly, these alternatives are in competition, and his operant conditioning model does not tell us the conditions under which an individual chooses one or the other. Homans' work is important because it brings together two sets of thinking, which have a tendency to be concealed in studies of how, in effect, people learn and how socialization takes place.

Blau (8,1964,pp.129-130) shows how Homans' exchange theory can be applied to account for a stable and differentiated social structure where members exchange commodities (advice and liking) in short supply. Supervisor rating of agents' (semi-professionals in a law enforcement agency) competence coincided with colleague rating of competence; and competence was in short supply. Blau's data do not yield a precise demonstration of opportunity cost basic to Homans' propositions; the cost of any particular use of resources is equal to the foregone value of alternative use. But interviews with agents are suggestive; namely, as an agent continued going

to one colleague for advice, the colleague found the association more annoying and less rewarding. The result was that agents tended to form associations with other agents of similar competence so that liking and advice were exchanged at rates more rewarding.

Blau's results are achieved without reference to any of the theoretical concepts we have been dealing with; this is not to say that they are not operative. Groups may have relatively stable statuses and congruence (or at least a middle-class orientation to work which serves as a reference point) and supervisors may practice psychological distance. Nevertheless, Homans' work serves to illustrate how the social process works, even if these conditions are met. The technological background of the agency might be described as low routinization combined with high worker autonomy. This would have a tendency to lower the bureaucratic orientation, making it possible for agents to explore the social relationships as sources of rewards.

Blau shows that the more subject the superior is to normative restraints of subordinates, the more likely he is to make his decisions congruent with their desires (pp.209-210), provided that the normative restraints are salient to him. Blau clearly establishes in this proposition that effectiveness is a dimension of authority. It demands, among other things, that the superior be independent not only formally, but informally. He finds (p.214) the more association between superior and subordinates,

the more the superior yielded to their demands. Blau does not make explicit the evidence for this paragraph; however, his interview data are convincing.

Blau finds that subordinate consent to a directive which they know to be illegitimate is the reciprocal side of the finding that a superior yields to subordinate's demands which he knows to be illegitimate (pp.216-217). Social obligations can take precedence over the legitimacy of bureaucratic rules and become, therefore, quasi-normative in themselves. How much tension of this kind an organization can tolerate is not studied here.

It is clear Blau's data are also consistent with the Jackson Return Potential Model: this should not be surprising since Homans uses the word "norm" to mean "A verbal description of behaviour that many members find valuable for the actual behaviour of themselves and others to conform to." Indeed, it may be argued Jackson requires some sort of explanatory variable like Homans to account fully for the shape of his curve, and more particularly for shifts in the curve.

The difficulties involved in using a Homans type of model are revealed in the analysis of influence by Rosenberg and Pearlin (63,1962). Nurses were studied to discover what criteria: (1) they used in influencing patient behaviour; (2) they would like to use and; (3) they found most effective. Responses were designated as: (1) persuasion; (2) benevolent manipulation; (3) legitimate authority; (4) exchange power and; (5) coercive

power. Combining first and second choices for all nurses for types (1) and (2), responses to the three questions were 92%, 86% and 84%. Clearly, persuasion and benevolent manipulation represent favoured techniques of control and are seen as both legitimate and effective. However, the Homans model tells us nothing about the reinforcement involved in the selection of technique. The greater the prestige of the nursing type (assistant, charge, R.N.), the greater the reliance on persuasion and benevolent manipulation (as one would expect from scores on the Gilbert-Levinson C.M.I. Scale) and the less reliance on legitimate authority. These results are to be expected for they are comparable to the findings relating years of education and tolerance. Still, nursing assistants spend their working hours with patients; they serve as principal control agents and they have no office to retreat to. Is it any wonder they are more custodially oriented and are more likely to manipulate and coerce? They are more subject to stress with fewer outlets for escape. Despite all this, the study does not tell us how and why the techniques work. Surely this is the crucial question for reward theory.

Bennis et al. (7, 1958) study the relationship between a supervisor's control over rewards and his influence in a hospital setting, i.e. six outpatient departments in a large eastern city. Supervisors may incorrectly perceive the rewards desired and/or be unable to control these rewards. The greater the perception and ability to reward, the greater the influence. The most revealing element of the study to me was the apparent powerlessness of

supervisors to control rewards at all; this suggests an entirely unusual awareness of the relation between influence, reward and hierarchical control.

Gold (31,1958) focuses on the personal properties of an agent that serve as resources for exerting influence. His study is among children in a class-room. The 17 characteristics reduce to five categories comparable to expertness, referent, reward and coercive power. The fifth power, legitimacy, that appears in the French and Raven theory does not appear. And not unnaturally, since the subjects were children. Gold found that the salience of rewards varies with sex and age, but that specific individuals who possessed many important resources were considered by their class-mates as more able to influence them than others possessing only a few resources.

In a number of studies of hospitals and reformatories, Seeman (66,1961; 67,1963; 68,1962) relates alienation and learning to stratification. Since stratification is a correlate of bureaucracy (Hall and Tittle,36,1966) we can think of his work as a relationship between alienation, learning and a particular kind of authority structure. Among T.B. patients, high stratification wards show a statistically significant negative correlation between alienation and the satisfaction a patient expresses about his knowledge of T.B. On a low stratification ward, no such finding existed. Patients were matched according to age, income, months hospitalized and months before discharge; Seeman controlled for effects between low alienation and high stratification, but found no evidence that response is better.

Ignoring stratification, Seeman found a statistically significant negative relation between alienation and both patients' objective knowledge and staff reports of patient knowledge about T.B.

Now if an assumption is made that expectation for control over events is a crucial factor in any learning process, we might argue that the satisfaction a patient expresses about his knowledge is more salient to him than what he is told he knows. We might tentatively argue then that bureaucratic authority generates a feeling that one has no control over events (alienation) and an attitude of dissatisfaction about one's knowledge. We have no hypothesis as to why on low stratification wards, alienation and satisfaction are unrelated.

In his reformatory study, Seeman recognized that the hospital finding may have shown no more than that powerlessness is related to poor information. He finds a negative correlation between alienation and three types of learning, but only one is significant (knowledge about parole matters). Controlling for SES, criminal experience, I.Q. and education, his findings are unchanged; each of them has a low or zero correlation with learning. Controlling for values, since motivation depends also on the outcome to which learning is relevant, he finds no correlation between alienation and learning among "Real Cons" (low earners of either money, or time points in vocational training). "Real Cons" are taken as evidence of those not committed to rehabilitation values. Among those committed (Square Johns), learning and

alienation are negatively related. Once again, age, I.Q., education, length of service and length of service left do not correlate with learning. Holding alienation constant, merit earnings and learning show no correlation. Clearly, alienation is an important intervening variable; however, the alienation effect is displayed only among those nearing the day of leaving and who are committed to rehabilitation values.

The significance of the Seeman findings, as I see it, is his demonstration that regardless of a number of structural values, learning is associated with low alienation and the expectation that learning is relevant to the outcome significant for the actor. His work suggests concentration on devising measures to identify alienation and the factors involved in connecting outcomes and learning. In a certain sense, when one sees that connection, it becomes the main source of reward. We can represent his argument by the matrix:

		ALIENATION	
		High 1	Low 2
Commitment to Rehabilitation Values	High		
	Low	4	3

- Among those with low commitment, absence of relation between learning and alienation, 3 and 4.
- Among those with high commitment, learning and alienation are negatively related, 1 and 2.

Seeman's work leads us to look at early socialization as a source of explanation for his findings. I find them so puzzling (the failure to find any correlation between learning and social structural variables for reformatory inmates) that early socialization is worth looking at.

The relationship between family structure and socialization (dispensing of rewards) is a complex one. Swanson and Miller (74,1958) attempt to delineate the social origins of inner vs. other directed behaviour in the family. Yet their findings are sparse: (1) of 19 indices of child training, only five distinguish middle and working class; (2) of 27 indices of individual responsibility, only seven distinguish middle and working class; of 73 indices designed to distinguish bureaucratic from entrepreneurial families and lower middle from middle class, only 19 are significant. Glen Elder, in a preliminary report of findings covering families in the United States, Great Britain, West Germany, Italy and Mexico, finds authoritarianism in parent-youth education and; (3) parents yielding to adolescent requests. These results hold both for men and women, and are stronger for rural than urban areas (21,1965). McKinley (54,p.19) in a study of a number of high schools finds a strong positive correlation between SES and the child's: (1) sense of fairness of life; (2) opportunities; (3) security; (4) feelings of freedom and; (5) desire for freedom. He finds a negative correlation between SES and child anxiety and frustration. The mechanisms he stresses are (among upper class children): father exercises authority, control and devotion; father

explains his requirements and does not need to employ severe discipline; yet he does not discuss family matters with his son. Sons reciprocate by talking over with fathers both worries and successes.

Blood and Hamblin hypothesize that in families where wives work: (1) working wives change toward egalitarian authority expectations more than do housewives and; (2) husbands of working wives change toward egalitarian authority expectations more than do husbands of housewives. More hypotheses were confirmed, but only the first is statistically significant. When actual power is substituted for expectations, only the second hypothesis is in the predicted direction (10,1958). Baake (5,1940) studies the effect on family structure of unemployment. He sees five stages of adjustment. Insofar as the wife now works, the first hypothesis proposed by Blood and Hamblin is confirmed; in addition, conflict is generated between spouses and between father and children as his status is reduced. Families either disintegrated or survived and insofar as they survived, husband-wife relations remained as good as before, if not better.

Clearly, these data make Seeman's findings more puzzling. A report by Prof. Arnold Anderson on the recently published report of U.S. schools may offer us some insights. The authors, Coleman and Campbell, have studied some 600,000 students in grades one through twelve in 4,000 schools. If one wishes to account for performance on standardized intelligence and achievement tests, family background is a powerful predictor.

School environment is also a contributing factor, but what is decisive in the school is the pattern of characteristics of the other children attending the same school. Of negligible importance are: (1) per pupil expenditure; (2) children per class; (3) laboratory space; (4) volumes in the school library and; (5) presence or absence of ability grouping.

The implications are quite clear: children of advantaged families do well, regardless of the background of the other children; children of disadvantaged families do reasonably well if their school-mates have an advantaged background.

In short, Seeman's findings would not surprise anyone if they had not come from a reformatory! Presumably, his inmates were precisely the group Coleman thought of as doing poorly on standardized tests, i.e. disadvantaged children attending school with other disadvantaged children. We would expect this group to show high alienation and low expectation and that learning is relevant to outcomes significant to them. And of course many do, but the wonder is that there are any who don't have these attitudes.

SECTION V

COMPLIANCE STRUCTURES AND SELECTIVE RECRUITMENT AS GENERATORS OF SOCIAL SYSTEMS CAPABLE OF MEETING MEMBER NEEDS

This section concludes the paper. It takes as its starting point the need-dispositions of individuals who become a potential source of involvement of the individual in some organization. At least some organizations know the kinds of involvement they require: they adopt criteria which they pursue more or less selectively, for choosing individuals whose need-dispositions are likely to be met in the organization. Thus a prior socialization experience combines with a new socialization experience to cement together, so to speak, the individual's initial degree of involvement and the requisite involvement of the organization. Coleman's model of the educational process suggests how the adults in a family (more or less sensitive to the variety of organizational needs) combine with peers (more or less sensitive to the advantages offered by the family) to produce a supply of labour which can locate itself (more or less satisfactorily) in one or another of the variety of organizations. The price the disadvantaged pay is roughly not being able to find organizations whose required involvement has much to do with need-disposition. The disadvantaged and the organization meet on the lowest common denominator, money. Little wonder, then, that we find such a strong positive relation between years of education, work skill levels and satisfaction, either with the job or life.

Seen in this way, there is something very remarkable about the plasticity of human beings. The image of pegs and holes just being there with the human condition being one of sorting them out in terms of squares and rounds is too fixed. Organizations can become rounder or squarer, individuals can become rounder or squarer; each is capable of adjusting to the other. Indeed, we may be getting to the stage where to talk of a job classification is misleading: (1) technological change is so rapid that job classifications are obsolescent almost before they can be completed, and; (2) the individual in contact with such dynamic change, makes the job what he wants it to be. Indeed, there is some evidence that in some white collar jobs, the educational qualifications of the last man to hold the job set the definition, and the definition never reverses itself. Furthermore, unless Dalton is absolutely wide of the mark, regular members of work groups combine with each other and supervisors, to produce work that has nothing to do with the formal work requirements of the organization. Nonetheless, only highly viable organizations can afford such tolerance; a pre-condition would appear to be an expanding market for the organization's services.

The most ambitious attempt to relate both early socialization of individuals and organizational goals so that they become a congruent whole is that of Etzioni (22, 1961). The result, he believes, is that the effective organization selects an administrative system appropriate to the kinds of power employed by the organization. Organizations strive to bring

these factors into line. Unfortunately, attractive as the model is, no empirical evidence exists to support it.

Etzioni writes (22): "Compliance is a relationship consisting of the power employed by superiors to control subordinates, and the orientation of the subordinates to this power" (XV). This involves the kinds of distribution of power and the differential commitment of actors to the units wielding power over them. More formally:

> Compliance refers both to a relation in which an actor behaves in accordance with a directive supported by another actor's power, and to the orientation of the subordinated actor to the power applied. By supported we mean that those who have power manipulate means which they command in such a manner that certain other actors find following the directive rewarding, while not following it incurs deprivations....Power means, manipulated to support the directives, include physical, material and symbolic rewards and deprivations,... The orientation of the subordinated actor can be characterized as positive (commitment) or negative (alienation). It is determined by the degree to which the power applied is considered legitimate by the subordinated actor and by its congruence with the line of action he would desire. This orientation, we refer to as involvement in the organization (pp.3-4).

FIGURE 3

Power Means	Involvement: Alienation	Involvement: Calculation	Involvement: Morality	Typology of Organizational Types based on the structure of compliance. Goals (value-content, to use Parsons' phrase) appear in ( ) for each type.
Coercive (Physical)	Coercive (order)			
Remunerative (Material)		Utilitarian (economic)		
Normative (Esteem, Prestige Acceptance)			Normative (cultural)	

Power "is an actor's ability to induce or influence another actor to carry out his directives, or any other norms he supports (4)." Normative power is of two kinds: pure (the manipulation of esteem, prestige and ritualistic symbols) and social (the manipulation of acceptance and positive response). Involvement has both a direction (positive or negative) and an intensity (high or low). Involvement is negative and high where alienative; negative or positive and low where calculative; positive and high where moral. Moral involvement can be pure (internalization of norms and identification with authority) or social (sensitivity to pressures of primary groups and their members). The power means and involvement dimensions can be either congruent (as being the diagonal) or incongruent. Etzioni hypothesizes:

> Organizations tend to shift their compliance structure from incongruent to congruent types and

> organizations which have congruent compliance structures tend to resist factors pushing them toward incongruent compliance structures (p.14).

Dual structures are possible, witness certain kinds of unions (Lipset, Trow, Coleman Union Democracy), but Etzioni's summary classification (pp.66-67) indicates he believes a wide variety of organizations can be located along the diagonal.

What is the relationship between legitimacy and involvement? Etzioni argues that any compliance structure may be legitimate in the eyes of participants, but it is more likely that legitimacy is associated positively with the degree of involvement and negatively with the degree of coercion implied in the power means. The reason for the tendency it that:

> The motivational significance of rewards and punishments depends not only on the objective nature of the power applied, but also on the meaning attached to it by the subject. Coercive and remunerative means of control are considerably less dependent on such interpretations than normative ones (22, pp.15 and 21).

Thus, for most men in most situations, a fine or a confinement means punishment; on the other hand, if one denies the legitimacy of a priest or teacher (depending of course on the total situation) their censure is not felt as a deprivation. Yet the educated upper middle class Catholic woman under forty seems to be able to distinguish between her priest's right to instruct her on birth control and her right to disobey without undermining either her

sense or his sense of the clerical normative power. Yet another Catholic woman may feel the priest's instruction as condemnation of her conduct, fear the priest's condemnation and yet feel he has no right. In brief, normative power tends to be considered legitimate and to lead to normative authority, but the literature is vague about the mechanisms through which the process is realized. Without an understanding of these mechanisms, we are at a loss to account for many of the more interesting features of human behaviour: (1) those granting legitimacy, but withholding consent on some particular command; (2) those granting both legitimacy and consent, yet resentful of their consent because they feel their consent is purchased through fear.

We have seen that involvement depends on: (1) the degree of legitimacy accorded a directive and; (2) the degree of congruence between the directive and the line of action the subordinate desires (need-dispositions). High legitimacy and high congruence yield high involvement. Low legitimacy and low congruence yield low or negative involvement. Varying combinations of legitimacy and congruence yield intermediate involvement. We might consider a third factor: (3) the association between the degree of congruence of directive and need-disposition, and power means available and used to reward and punish.

Legitimacy is, therefore, a state of mind to be explained in terms of: (a) dispositional needs; (b) reward and punishment structure; (c) the

primary work group; (d) the nature of the directive; (e) the employment contract (such that the more there is of it, the more involvement there is). The second set of questions suggests that any finding of a relation between legitimacy and involvement is spurious, once we locate the determinants of each. So far as normative power is concerned one might say its weight is so crushing that for one's peace of mind one either accords it legitimacy thus forming a normative authority relationship, or one gets out. The relatively high turn-over of professionals in mental hospitals suggests that this process may be in operation.

FIGURE 4

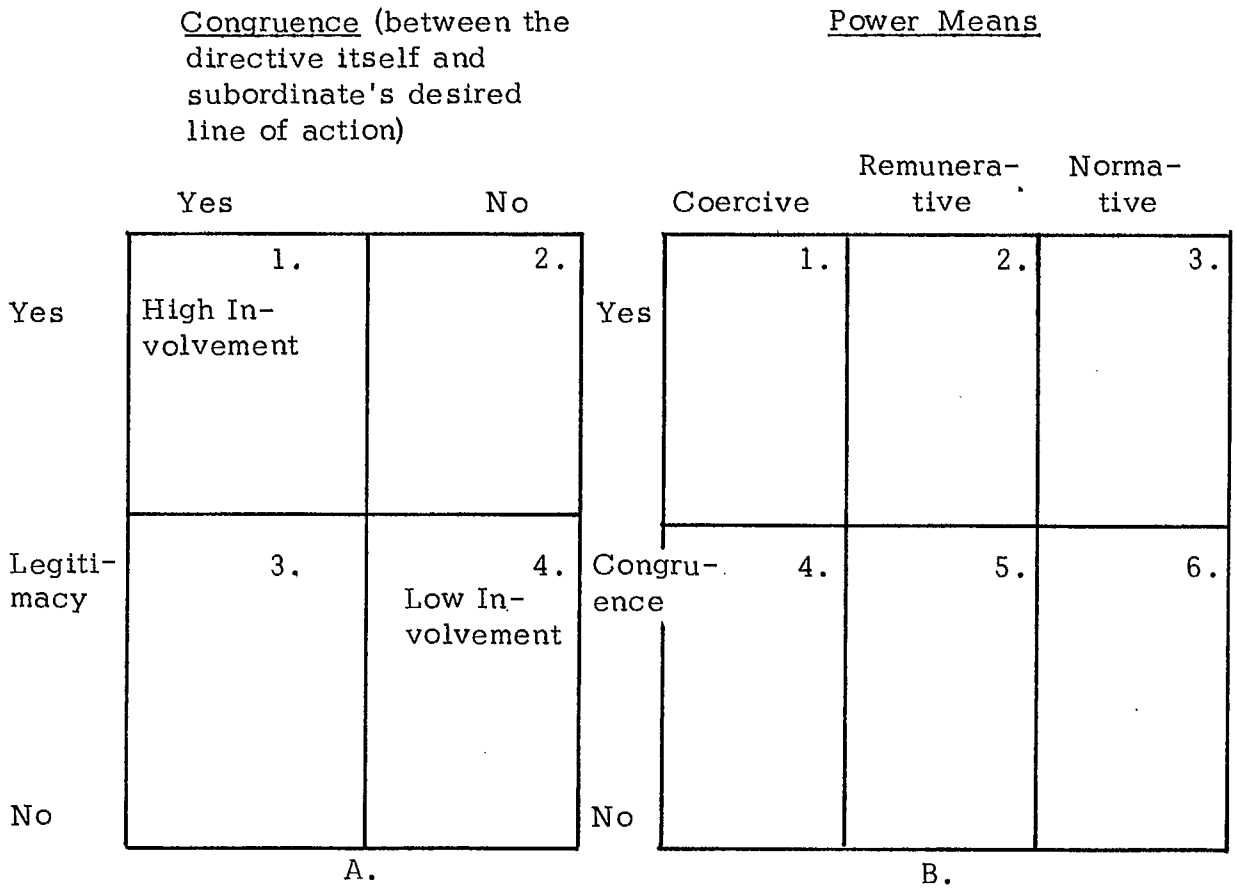


Figure 4A makes explicit the relation between legitimacy and congruence in determining involvement. If we think of involvement as positively related to the number of activities in and outside of the organization for which the organization sets norms (so long as congruency is high) then normative power means produce more involvement than remunerative which produces more than coercive. On the other hand, where congruence is low we might argue the reverse, i.e. involvement would be lowest where normative power means are used.

In support of his typology of organizations, Etzioni presents evidence showing that executives who move from one organization to another tend to remain within the same compliance system. In a study of generals now working as civilians we find the hypothesis confirmed.

PRESENT CIVILIAN POSITION

Past Military Position	High Normative	Mixed	Low Normative
High Normative	11	-	1
Mixed	-	5	-
Low Normative	4	-	8

Etzioni goes on to stress that the old argument whether executives are generalists or specialists is specious. They are both specialists in compliance structures, and generalists in the performance they supervise.

Etzioni presents a model of how involvement compliance and effectiveness are made congruent in organizations. It is through recruitment

that an organization perpetuates its congruity. Recruitment depends on the criteria and the degree of selectivity. The new recruit brings with him an initial involvement, and the tighter the criteria and degree of selectivity, the closer the relationship between initial and required involvement. Socialization is used to cement them and the established involvement generates compliance. Argyris (2,1957) utilizes interview data to show precisely how a bank follows this sequence and the relationship between recruitment and the maintenance of both the informal employee and informal officer cultural norms. He shows that if an individual is made a bank officer and is not the right type, he will be disliked by employees and officers both, be perceived as a deviant, feel hostility being expressed (but clandestinely and indirectly), and leave the organization reporting frustration. If either of the work groups is asked to diagnose the causes of human problems, they will blame the other and the informal culture, and defend against seeing the part they play in it. If both groups are brought together and requested to communicate their true feelings, neither group will communicate their true feelings. Despite officer-employee committees designed to "sell" the bank, and officers talking of the need for stronger leadership, no change occurs. In short, from the point of view of the total system, morale is neither good nor bad but high and functional meeting need dispositions. It permits members to: (1) avoid recognizing aggression in either oneself or others; (2) control one's own behaviour and be left alone and; (3) provides economic security and predictability in one's own life.

If one pays a price in low wages and slow promotion, if the system incurs costs of turnover, absenteeism, job apathy, low identification and hostility toward officers, there is a congruity between the power means, the organizational involvement and personality needs. Nevertheless, insightful as the compliance model appears, neither Hall et al. (36,1966) nor Haas et al. (34,1966) find any empirical support for it beyond the common sense level. The Hall study relates the compliance model to eight organizational indicators (organizational change, external relations, status and power, interdependency, organizational activities, goal specificity, formalization and complexity) for 75 organizations. The results do not go beyond what an experienced observer might have reported. The Haas et al. study is even more pessimistic; a factor analysis of 99 variables for the same 75 organizations yielded ten factors of major classes. The compliance model does not appear as basic criterion around which other attributes cluster. The study itself does not yield an alternative taxonomy, but analysis of the data is still going on (personal communication with the authors). One cluster they report is worth mentioning, i.e. Polynesian Restaurant, State Regulative Agency, Motel, Bank, Health Insurance Agency, Electrical Equipment Firm, Catholic School System, Elite Restaurant, Commercial Television Station. They do not wish at this stage to identify the organizational meaning of such a major class; and therefore report it simply as a number.

On such a modest note, we conclude.

SECTION VI

APPENDIX ON LEARNING THEORY

In a broad common sense way, training involves building into a unit (the individual, the group, the organization) desired behaviours. This is accomplished by rewarding desired behaviours such that they are likely to be reported when the cue (stimulus) associated with them appears. Alternatively, undesired behaviours can be extinguished from the unit by punishing them so that they are not likely to be repeated when the cue associated with them appears. Difficulties arise when something intermediate comes between the cue and the behaviour (response). That something we can call a psychological set or the definition of the situation or the frame of reference.

Appropriate definition of the situation requires on the part of any human being a fairly stable and complex technology that answers for him: (1) the probability distribution of future events; (2) knowledge of alternatives for action; (3) knowledge of the consequences attached to alternatives and; (4) rules or principles ordering the alternatives and consequences according to preferences. For easy reference, call these issues the Cognitive Situation. In short, an individual must possess however vaguely: (1) goals; (2) means appropriate to goals and; (3) a view of the environment that he perceives as sufficiently benign that it does not interfere continuously and in such random fashion that he cannot discover a connection between effort and

outcome. Psychologists recognize these questions as the heart of reinforcement and generalization theory. Such a model of the universe lies behind the willingness to undertake learning. What are some of the things that go wrong? The cue may generate a definition of the situation (psychological set) that is different from or larger than what is expected; the cue evokes a large variety of possible responses, a large number of expectations about the consequences of those responses, or of attitudes, preferences and evaluations about the consequences. The cue may not define the situation clearly, nor discriminate sufficiently, or it may evoke a response to a mixture of elements.

Clearly, learning desired behaviours is now a complex business. Having learned a set of behaviours, it is very difficult for an individual to learn another set, and to suppress a particular set. Game theory and decision-making theory imply rationality on the part of the actor. Clearly, however, rationality is relative to the definition of the situation, or frame of reference. We have used the terms psychological set, frame of reference and definition of the situation as if they are synonymous, and have related them to the cognitive situation. Strictly, they should be sorted out and the relations between them specified. For our purposes, it is sufficient that we see them as forming an interdependent system, acting on and being acted on by each other. Paranoia is a beautiful example of rationality gone "wrong" and fulfilling itself through feedback impregnable to evidence.

This statement is by way of introduction to a series of research models designed to test these complex relations.

Power is a social relationship. It depends on institutions, mores, norms and resources of individuals to reward and punish one another. For anyone oriented to game theory, there is an expectation that there is a close relationship between power and strategies and pay-offs. Within this orientation, a scientific study would show the conditions under which power is established, strengthened, weakened, sustained or abolished by appeal to: (1) the number of players in the game; (2) the expected utility of a particular strategy for any given player; (3) the pay-offs associated with any given strategy; (4) the degree of uncertainty in information available to the players; (5) the degree of risk involved in making a correct choice and; (6) the relationship between reinforcement schedules, pay-offs and learning the choices that relate expected utility and strategies. In a series of brilliant theoretical and experimental papers, Siegel (69, 1964) is able to show the identity of game theory and learning models showing the conditions under which they are alternative statements; namely, by specifying the rewards and costs associated with any given prediction and varying them, the experimenter can show that "the probability of a person's predicting the occurrence of the more frequent event in a two-choice uncertainty – outcome situation is a function of the level of reinforcement present in the situation (Messick and Brayfield 55, 1964, p.163)." Given this orientation, then, power is measured by the amount of influence exercised by one individual over the reinforcement level of another individual.

The parsimony of assumptions in Siegel's work is likely to blind one to the scope of his theory. Siegel's work provides both a theoretical foundation for an empirical test for findings on the level of aspiration. Child and Whiting (14,1954,p.508) formulate five propositions representing the conclusions which may today reasonably be drawn from research on aspiration levels:

- Success generally leads to a raising of the level of aspiration, and failure to a lowering.
- The stronger the success, the greater is the probability of a rise in level of aspiration; the stronger the failure, the greater is the probability of a lowering.
- Shifts in level of aspiration are in part a function of changes in the subject's confidence in his ability to attain goals.
- Failure is more likely than success to lead to withdrawal in the form of avoiding a level of aspiration.
- Effects of failure on level of aspiration are more varied than those of success.

Siegel is concerned with showing that the individual - in carefully designed experiments testing choices among a set of alternatives - strives to maximize his subjectively expected utility; which is the sum of the products of probability and utility ($\xi\ p\ \dot{v}\ v\ \dot{v}$), where utility depends on the level of aspiration and degree of reinforcement. He is able to show that:

> The level of aspiration of an individual is a point in the positive region of his utility scale of an

> achievement variable... (and) is associated with the higher of the two goals between which the rate of change of the utility function is a maximum (69, 1964, p. 120).

The decision making theory of learning is a very simple one. An individual's choice on any given trial is the result of his degree of belief (subjective probability) that a given event will occur and as well the utility he associates with the event's pay-off. On any given trail, the individual chooses as if he is attempting to maximize the above subjectively expected utility. It is clear, then, that an increase in the degree of belief that an event will occur results when the belief is confirmed. This is consistent with learning curves associated with Estes' scholastic models that attach stimulus elements to responses. The decision making model goes beyond Estes in accounting for behaviour under different conditions of reinforcement. However, the relation between degree of belief and choice behaviour is not simple, since choice behaviour reflects a strategy to maximize subjectively expected utility.

Siegel employs a variety of models; we consider one to illustrate how his theory predicts hypotheses and the findings relevant to them. Suppose that some frequently occurring event has a probability (π) of occurring and suppose the subject chooses that more frequent even p% of the time. Then, the expectation that a subject's prediction of the more frequent event will be correct (E_x) will be equal to $p\pi + (1-p)(1-\pi)$. Those readers who play poker know that for someone concerned with maximizing

expected gain, pure strategy dictates that one always choose the most frequent event; that is, p equal 1. Estes found in experiments involving two lights, where one comes on 75% of the time and other 25% of the time, that subjects choose the more frequent event 75% of the time. Siegel challenges the correctness of the theory underlying Estes' experiment. The expected utility of a correct prediction (Ur) depends on E_x (the marginal utility of a correct prediction) when and only when the subject chooses the more frequent event (a) and (the marginal utility of a correct prediction) when and only when the subject chooses the less frequent event (b); that is: $E_x(Ur) = ap\pi + b(1-p)(1-\pi)$. The total expected utility of a particular strategy p (Up) is the sum of $E_x(Ur)$ and Uv (the utility of varying one's responses), where $Uv = cp(1-p)$ and c = the marginal utility of varying responses. We have $U(p) = ap\pi + b(1-p)(1-\pi) + cp(1-p)$. Differentiating the equation with respect to p and setting $\frac{d\,u(p)}{dp}$ equal to zero, we have $\frac{du(p)}{dp} = o = a\pi + b(1-\pi) + c - 2cp$. Therefore, $p = \frac{a\pi}{2c} - \frac{b(1-\pi)}{2c} + \frac{1}{2}$: letting $\alpha = \frac{a}{c}$ and $B = \frac{b}{c}$, we get $p = \pi \frac{(a(+B + (1-B)}{2}$. Thus by systematically varying reinforcement on (a) and (b) above, we can induce variations in p from 0 to 1. Siegel is able to show that Estes' findings depend on special values of a, b and c. Assuming the condition governing the probability of occurrence of the more frequent event used by Estes ($\pi = .75$) Siegel shows the mean asymptotic probability of an individual's prediction about π under three different reinforcement schedules.

MEAN ASYMPTOTE FOR FINAL TWENTY TRIALS OF 1ST, 2ND, 3RD HUNDRED TRIALS

Condition	0-99	100-199	200-300	Description
No Pay-Off	.69	.74	.75	Seeing the outcome only
Reward	.78	.85	.86	Seeing the outcome only, 5¢ for each correct prediction
Risk	.95	.95	.95	Seeing the outcome only + 5¢ for each correct prediction less 5¢ for each correct prediction

Clearly, the game theory predictions are shown to be viable under the appropriate pay-off conditions (essential to the theory) and the Estes findings are shown to be a special case.

Siegel shows in a variety of experiments the same ability to generate predictable hypotheses that are not disconfirmed. These experiments include:

- A variety of the Estes experiment designed for children aged 3 years, 10 months to five years.
- Testing the utility preference functions of students for grades.
- Testing a bilateral monopoly case under varying conditions of information and uncertainty, utilizing levels of aspiration and pay-off.

It is now possible to translate the meaning of these findings into game theory language. Let a, b, c, d be pay-offs such that $a > c$ and $d > b$ so that one column does not dominate the other.

Let the subjective utility of any alternative be μ

Let the preference value of any alternative be V

Let the subjective estimate of the likelihood of an event occuring be Ψ

Let the probability of an event occuring be α

Let the probability of an event not occuring be $1 - \alpha$

Let the alternatives a and b be associated with $(1 - \alpha)$

Let the alternatives c and d be associated with (α)

$$\mu(a) = V(a)\,\Psi\,(1-\alpha)$$
$$\mu(b) = V(b)\,\Psi\,(1-\alpha)$$
$$\mu(c) = V(c)\,\Psi\,(\alpha)$$
$$\mu(d) = V(d)\,\Psi\,(\alpha)$$

Column I $= \mu(a \alpha d) = V(a)\,\Psi\,(1-\alpha) + V(d)\,\Psi\,(\alpha)$

Column II $= \mu(b \alpha c) = V(b)\,\Psi\,(1-\alpha) + V(c)\,\Psi\,(\alpha)$

X indicates a materializes if x does not occur, and d materializes if x does occur.

	Join the Action I	Not Join the Action II
$(1-\alpha)$ I	a	b
α II	d	c

Probability of Violence being Avoided	Empirical Estimate of Probability of Joining the Action
0.00 - 0.20	0.00
0.28 - 0.41	0.18
0.41 - 0.46	0.59
0.46 - 0.58	0.89
0.58 - 1.00	1:00

We have a one person game in which the subject chooses the column and a chance event selects the row. Suppose the subject is a gang leader with the options of joining the action or remaining aloof. Suppose the chance event is a risk of violence, absent if $(1-\alpha)$ and present if α. Luce's empirical estimates (51, 1959, p. 88) show clearly that as the probability of row I increases and approaches one-half, the probability of column I being chosen approaches unity.

THEORETICAL SIGNIFICANCE OF N-ACHIEVEMENT

The relationship between N-Achievement, occupational success, occupational choice and attitudes toward authority is by no means clear. But the theoretical significance of N-Achievement is not in question, see: Kahl, 44, 1965; Lipset and Bendix, 50,1960; Scanzoni, 65,1967; Strodtbeck, 73,1958; Rosen, 61,1956. In brief, McClelland (53,1961,pp.350-356) argues that N-Achievement is vitally linked to occupational attainment. Specifically he locates it in the parent-child relationship involving: (1) high standards of excellence by both parents, especially the mother; (2) high warmth or nurture from both parents, particularly the mother, and; (3) low authoritarianism on the part of the father and high authoritarianism on the part of the mother. He believes these findings hold across cultures.

The findings about the relationship between N-Achievement and social class are by no means clear, but Rosen (61, 1956,p.206) finds evidence pointing in the direction of higher N-Achievement among middle class boys than either working or upper class boys. McClelland (53,1961, pp.253-256) reports findings which he interprets as evidence of an association among the upper classes of authoritarianism and the choice of a business occupation. He sees occupational preference as a joint function of prestige, class status and N-Achievement. Henry (38,1949,pp.286-291) reports that successful executives are able to form interim identification with their superiors. His analysis is suggestive of a connection between

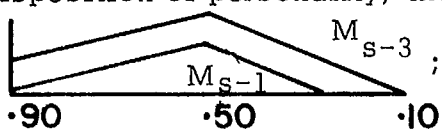
dedication to impersonal goals within the framework of a rational bureaucracy, and some form of early identification with the father. This suggests a hypothesis about authoritarianism and business occupational success.

In a study of over achievers and under achievers among both Jews and Italians, Strodtbeck (73,1958,pp.169-182) finds that the best predictor is a composite of high N-Achievement and high "sense of mastery" and high "sense of independence of family". However, correlation between the mother's mastery and independence scores and her son's N-Achievement score is negative, a very apparent contradiction of the findings reported by McClelland. The contradiction may be apparent only, since items composing the respective studies are not identical. On the other hand, the correlation between the father's and son's scores is both high and positive. Strodtbeck also computed a power score for each individual based on decision-winning in family arguments. The results are very puzzling - the son's mastery and independence score is high only when the mother's power score is high, yet her power score correlates highly with her mastery and independence score.

Atkinson (4,1965,pp.27 and 59-60) provides a conceptual scheme which - in his opinion:

> Summarizes most, if not all, of what we know about the dynamics of achievement oriented behaviour, and it suggests new and non-obvious hypotheses about motivation which constitute potential tests of the scheme itself .... The law of effect is fundamentally inadequate as a guide to understanding in the domain of achievement-oriented activity ... because ... an

> increase in the expectancy of success, which is the effect on the person of success, produces a change in the incentive value of success.... The effect of this change depends upon the motive to achieve or the motive to avoid failure and upon the initial strength of the expectancy of success at the task.

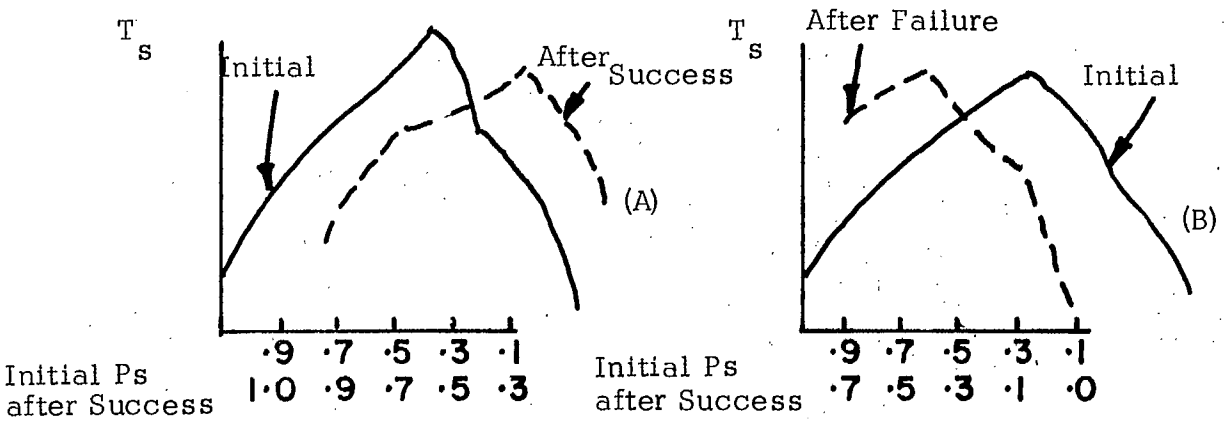
The conceptual scheme appears in the form of an equation, $T_s = M_s . P_s . I_s$. The strength of the tendency to achieve success (T_s) is a simple multiplicative function of the motive to achieve success (M_s), the strength of expectancy (subjective probability) that performance will be followed by success (P_s) and the incentive value of success (I_s) meaning the relative attractiveness of success at that particular task. Atkinson assumes $I_s = 1 - P_s$ which says the attractiveness of success varies directly with the difficulty of the task. He thinks of $I_s = 1 - P_s$ as a general description of conditions underlying achievement-oriented activity. Hence, we can write $T_s = M_s . P_s (1 - P_s)$. The theoretical implication is that for any M_s (thought to be a relatively general and stable disposition of personality) the relationships between T_s and P_s is of the form 

; the tendency to achieve is more strongly aroused by tasks having intermediate probability of success than either very easy or very difficult tasks. The empirical literature in support of this proposition is considerable and is reviewed in McClelland (53,1961,pp.211-225); persons scoring high both in N-Achievement and level of performance prefer intermediate risks to either high or low risks. It is necessary to qualify however: (1) tasks must

require some imagination, new ways of putting things together, or mental manipulation if N-Achievement is to be aroused; (2) tasks must involve a belief among those with high N-Achievement that they can affect the outcome by application of skill; (3) wherever performance is associated with monetary pay-offs, differences between those high and low in N-Achievement are washed out; (4) $I_s = 1 - P_s$ does not apply to situations involving gambling. High N-Achievement scores prefer the highest probability of success when playing poker; low N-Achievement, like a long shot, especially when a large amount of money is involved; (5) in unstructured situations where there is an absence of cues to justify their estimates, high N-Achievement individuals tend to feel their chances of winning or succeeding are greater than the stated odds. Hence, $I_s = 1 - P_s$ is not applicable. It is as if their behaviour takes the form $M_s(1-P_s)$ based on a generalized confidence about their ability.

The tendency to avoid failure (T_{AF}) assumes the same curvilinear shape in relation to P_s. It is a multiplicative function of M_{AF} (the motive to avoid failure), P_F (the subjective probability that performance will be followed by failure) and I_F (the incentive value of failure at the task). Atkinson assumes $I_F = -P_s$ summarizing the idea that failure at an easy task is a noxious event to be avoided, while failure at a difficult task is not very noxious. The achievement-orientation tendency is equal to $T_s - T_{AF}$ and implies $M_s > MAF$. Suppose, however, $MAF > M_s$; not only is $T_{AF} > T_s$,

but the value of $T_{AF} - T_s$ is at a maximum for intermediate risk tasks and at a minimum for very easy or very hard tasks. Now the individual with $T_{AF} > T_s$ should prefer to avoid all alternatives among tasks, but suppose he is constrained from doing nothing, he will then choose either a very easy or very hard task, and appear to have either a low level of aspiration or a high one. In actuality, his achievement orientation is only a defensive reaction; a mere going through the motions. The price he pays is acute anxiety; here we have a new theory of anxiety. "Anxiety is the consequence of inhibition overcome." We thus get the paradox, that for such an individual the level of aspiration appears to fall after success and rise after failure! The most probable outcome is success at the easy task and failure at the difficult task; there is, therefore, no incentive to change the level of aspiration. Now, if the individual fails at an easy task, the curve shifts to the left and what was once an easy task becomes an intermediate risk one (which as we have seen, is to be avoided) as the process continues, (given failure) the task for which the tendency to avoid failure is very weak, becomes the P_s at the other end of the continuum where the probability of success is small. If the unlikely should happen, (the hard task is succeeded at) the same thing happens in reverse. The following figures may help to clarify the argument.



Where Ms > Maf

Where Ms < Maf

The model does not say (with the Law of Effect) that success leads to a strengthening of the tendency to repeat the same action. It says simply that the level of aspiration will in general tend to be raised after success and lowered after failure.

The theory thus predicts behaviour about the effect of success and failure on those with high and low N-Achievement.

Those with high N-Achievement who fail at an intermediate risk task will choose a less difficult task; those with low N-Achievement who fail at an intermediate risk task will choose a more difficult task.

In a controlled experiment where each subject's initial preference among three tasks described as very easy, intermediate, very difficult was ascertained, Moulton ordered students in terms of a combination of normalized N-Achievement less normalized Test Anxiety Scores (Ms-Maf). After performing the intermediate difficulty task, each student was given the

choice of working at either the very easy tasks or very difficult ones. Describing the expected theoretical choice of high N-Achievement as a typical shift, and low N-Achievement as an atypical shift, we have the following result:

N-Achievement	Test Anxiety	Typical Shift	Atypical Shift
High	Low	30	1
Low	High	20	11

The theory also predicts that:

- Those with high N-Achievement will show more persistence if they fail at a relatively easy task than if they fail at a hard task.
- Those with low N-Achievement will show less persistence if they fail at a relatively easy task than if they fail at a hard task.

Feather (25a,1961,p.54) tested these hypotheses with the following results, confirming them.

% ABOVE MEDIAN IN PERSISTENCE

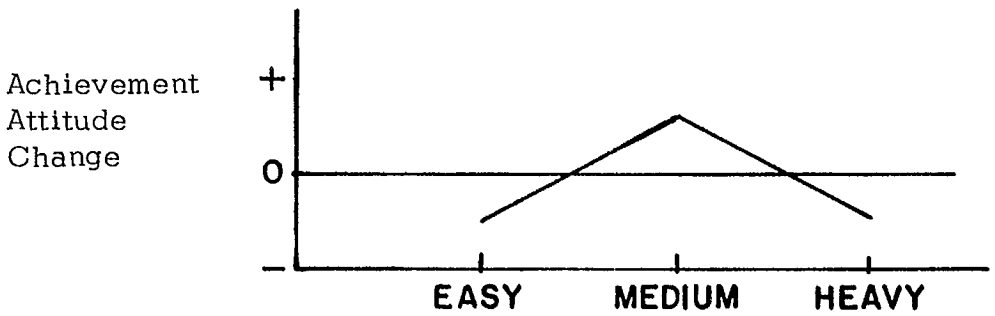
N-Achievement	Test Anxiety	Task Seen Initially as Easy	Task Seen Initially as Hard
High	Low	75	22
Low	High	33	75

Briefly then, the relationship between achievement and rewards is complex; in the case of high N-Achievement it is as if the reward system has been internalized and is related to certain kinds of parent-child practices. In the case of low N-Achievement accompanied by high anxiety, the tendency

to avoid alternatives can only be overcome by an appeal to an extrinsic motivation. What we need to know is how social approval, the most ubiquitous source of rewards, can be used to improve performance.

One further study (Breer and Locke, 12,1965) is worth reporting; their subjects were students attending summer school with ages varying between 16 and 45. A Six Factor score (derived from statements measuring various aspects of achievement) was established for each subject before the experiment. Each subject was retested after the experiment. Subjects were placed in one of three groups: easy task, medium task and hard task. The rationale of the experiment was derived from Atkinson and the expectation was that for the medium task group the retest score would exceed the original score. That is to say, the task is not so easy that effort is not required for success, nor so hard that success is unlikely. Hard work in such a task has considerable instrumental reward value and this should be reflected in a liking for hard work, and in the value that people should work hard. Hence, positive orientations to a given task should generalize to: (1) a variety of task situations which are more or less similar, and; (2) increasingly abstract and inclusive classes of experience. When we talk of role playing flexibility, it is presumably some such process we have in mind. For both the easy task and the hard task, the expectation is the retest score will be less than original score; the easy task calls forth little effort in relation to success hence the instrumental reward value is low and the hard task calls

forth a level of effort inadequate to achieve tasks. A graphic plot of the predicted changes in achievement attitude in relation to task difficulty is given by the figure below.



That the experiment established the conditions appropriate to the model is indicated by the table below.

		TASK	
Subjective Probability of Success Rating	Easy .82	Medium .53	Hard .29
Actual Proportion Attaining Success	.96	.54	.14

The results of the experiment are disappointing (for the theory) but indicate that they should be explored. Of the six factors, only one (effort versus luck) showed the required form; two others showed negatively sloped linear forms. Nevertheless, the experiment shows how task complexity can affect modes of response: cognitive, cathectic and evaluative. What is puzzling is why the easy task group should go up on the factors of control and mastery over nature, while the medium task and hard task groups went down. The explanation would seem to lie not in reinforcement as such, but

in a changed perception of one's ability. Yet why should the easy task group change in the direction of luck as an explanation of success? The hard task group behaved as one would expect: attitude change in the direction of luck, acceptance and passivity. It is the medium task group behaviour that is difficult to reconcile with Atkinson's theory, but of course the models are quite different, and not even comparable one might argue. Still, they leave one feeling uncomfortable; the fact that Breer's subjects spent nearly four hours under conditions of failure and success may have influenced the findings since this implies something about persistence, an important factor in the Atkinson model.

The Breer experiments suggest something about the interplay of values and performance. If being upper class is being confronted with easy tasks (ascriptive achievement) relative to the working class, we have some insight into the active-passive dichotomy that seems to differentiate classes. Both of these classes (for different reasons) see success as a matter of luck, rather than hard work; in the one, easy won success leads to a perception of one as having ability; hence mastery, control and activity seem worthwhile; in the other, hard task failure leads to a perception as not having ability, hence passivity seems the only response to a world where hard work does not have a pay-off.

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