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Level and Type of Capability in Relation to Executive Organization

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Brunel University

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The specific objective of this report is to test earlier work on the assessment of individual capability to perform in real life with reference to the capability to carry responsibility at higher levels of work in both civilian and military organizational settings. In relation to this objective, this report increases scientific understanding of the meaning of human capability in action and of the nature of the psychological processes underlying the level of complexity of action the person can generate, comprehend, and effect; the type of capability they prefer to use; and the growth of capability to act and take responsibility at increasingly complex levels. In this work, the implications of Stratified Systems Theory are examined and applied to military organizational settings.

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INTRODUCTION

In our original proposal we stated both specific and general objectives. Our specific objective was to test earlier work on the assessment of individual capability to perform in real life with specific reference to the capability to carry responsibility at higher levels of work in both civilian and military organisational settings.

In relation to this objective we sought to increase scientific understanding of the meaning of human capability in action and of the nature of the psychological processes underlying:

a) the level of complexity of action the person can generate, comprehend and effect;

b) the type of capability they prefer to use;

c) the growth of capability to act and take responsibility at increasingly complex levels.

We also set out to develop and refine methods of assessing level, type and potential capability and to place our work on levels of complexity in the context of other research.

Our more general objective was to draw out the implications of Stratified Systems Theory for the military.

An Outline of Stratified Systems Theory

The background to the work described in this report lies in the development of a comprehensive theoretical model of levels of managerial and specialist work in executive organisations. This model has emerged from more than thirty years of study of the interplay between social structure and individual behaviour in institutions of all kinds - industrial, commercial, Central and Local Government Departments, Health and Social Services, Churches and universities.

This model of organisation offers a means of linking the analysis of different levels of work with the study of individual capability to take responsibility for work at those levels.

The theory arose from the discovery, through widespread testing over a long period, of a systematic structure of successive levels within organisations, each level creating a new and more extensive context within which work must be done.

One dimension of this context which can readily be measured is the time-span of the longest task in each level. At the lower levels, the longest task will be completed in a year or even in a day; at the higher, "strategic" levels the longest tasks may not be completed for twenty years or more.

Time-span as a measure of level of work is complemented by the time-frame of individuals, which corresponds to the longest time-span within which they are able to perform their work effectively. Thus a person with a time-frame of one day would be comfortable when performing simple manual tasks under close supervision, whilst a time-frame of ten years would suggest an individual capable of being the chief executive of a company operating on a national scale, or the national subsidiary of a multi-national enterprise. Our evidence suggests that the time-frames of individuals develop at different, but in each case broadly predictable, rates throughout their adult life.

In order to understand the relationship between time-span and time-frame, we need to define work in a new way, namely as "the exercise of discretion within prescribed limits".

The prescribed limits are the boundaries on a piece of work: those elements which constitute a boundary by setting limits on what a person carrying out that work may or may not do. Among other elements, prescribed limits can include a statement about the time or date by which the work must be completed - in other words about the time-span which will define the level or work.

The discretionary element feels quite different. It is composed of all those elements wherein choice of "how the work is to be done" is left to the individual carrying it out. As that individual exercises discretion, he or she must tolerate the uncertainty of relying on their own judgement whilst awaiting the result of the work. Throughout the performance of the task there can be no reassuring confirmation that all is well. If the individual is to be comfortable in carrying out the work, his or her time-frame must correspond to the time-span set by the prescribed limits of the work. Thus time-span measures levels of work, whilst the time-frame of each individual indicates his or her capacity to carry responsibility for work at a given level.

Levels of work

To date, time-span has been used to define and measure eight different levels of work. Table 1 indicates how, in civilian and military settings, seven levels of work can be matched by time-spans ranging from under three months to over twenty years.

Table 1

Time-span in civilian and military organisations

Time-span	Level of work		
	7	Corporation	Macom
20 yrs.			
	6	Group	Corps
10 yrs.			
	5	Subsidiary	Division
5 yrs.			
	4	General Mgt	Brigade
2 yrs.			
	3	Unit	Battalion
1 yr.			
	2	Section	Company
3 mths.			
	1	Shop Floor	Squad

People working at the various levels are connected with each other by two separate but complementary sets of linkages. The technical set of linkages is concerned with the details of how the purposes of the organisation are to be realised in practice, whilst the social linkages are concerned with the overall philosophy. At each level, the responsible person must instruct his or her subordinates about the details of how the work is to be done, thus setting the limits for that work. He or she must also communicate to their subordinates the philosophy and values of the organisation, and charge them to use their discretion in the service of that philosophy.

The predominance of either set of linkages damages the organisation. The dominance of the technical leads to an impersonal attitude in which subordinates are seen as tools rather than as people. The dominance of the social leads to cosy, unproductive cohesion. Each is the complement of the other, ensuring that social cohesion and commitment to the philosophy is matched by efficiency in translating that philosophy into action.

Level of Capability

Stratified Systems Theory uses the general concept of capability in a particular way. It assumes that people bring their world into being through their own creative acts. They thus have the potential to create their own development through interaction with their environment.

An individual's capability is expressed in the way he or she patterns and orders experience through time. Capability therefore defines the extent and complexity of the context within which an individual can operate.

To date, five levels of capability have been fully described.[1] These five levels are summarised in Table 2.

Table 2

Individual Levels of Capability

Level	
5	Able to make relationships between previously unrelated material and, therefore, to create general rules of theory and redefine fields of knowledge and experience. A capacity to generate new multi-dimensional structures.
4	Able to develop alternative approaches and evaluate them against knowledge and experience. A capacity to uncover underlying structure.
3	Able to extrapolate from the given and create new connections within a defined system. A capacity to generate serial structure.
2	Able to generate different perceptions of a given situation and organise dimensions in alternative ways. A capacity to handle ambiguity.
1	Able to see the world in terms of a few dimensions with simple rules of combination.

Type of Capability

Our research indicates that, in addition to differences in level of capability, people have different ways of functioning within a given level. These range along a spectrum from pragmatic to reflective: that is to say, from a preference for being immersed in experience to a preference for standing back and dipping into experience. We describe these differences as types of capability. Research has also shown that people have a definite preference for functioning in a particular way, and therefore for different

[1] The opportunity to interview people currently operating at levels six, seven and eight has been limited. Nevertheless, a considerable body of data has been accumulated.

kinds of work. However, those who are able to work at the higher and more complex levels are also able, when necessary or appropriate, to use other ways of functioning than those naturally preferred. Versatility in type therefore tends to increase as higher levels of capability are reached.

Whilst level of capability at a particular age offers the most important key to an individual's career prospects, type of capability may, in certain circumstances, have equal significance. For example, a person who is comfortable carrying out original research could be badly served by promotion to a post with full managerial responsibility for the department in which he or she has been working. Type of capability must therefore be carefully considered when planning individual development in certain areas of work. Types of capability are summarised in Table 3.

Table 3

Types of Capability

Type	
A	The proceduralist who likes to work directly with external reality building up an implicit sense of what is happening by focusing on the particular task of the moment. The proceduralist is often seen as a very important back-up man in the sense of providing specialist information in a particular field.
B	The practitioner who likes to be directly involved with tasks but also brings an awareness of alternatives and new possibilities to bear. Practitioners are not particularly imaginative but often very successful at making the most of current situations and quick decisions on the basis of the information available.
C	The networker who is particularly skilled at marshalling the strengths of others. The networker likes to hold incoming information in a general overall pattern until the shape and extent of the sequence is clear.
D	The structuralist who likes to bound experience by filtering through conceptual frameworks, and by ordering priorities. Structuralists like to discriminate clearly between what is relevant to their concerns and what is not and will often define the former by discarding the latter.
E	The originator who looks for the unusual and the unexpected. The originator is often poor at routine work and tends to take an original approach to a problem even when this may not be appropriate.

Development of Capability

We have extensive longitudinal evidence which shows that capability develops at different rates throughout adult life. The rate at which it develops in any particular individual determines the scope of the context that he or she will be able to handle at the height of their powers.

These different patterns of development are illustrated in Figure 1 (overleaf) where the vertical axis represents levels of work measured in time-span and the horizontal axis represents age in years.

It will be noted that the curves have been grouped into eight separate modes. The upper boundary of each mode is the curve which will come closest to, but will never cross, the upper boundary of its matching level. Thus, mode I is bounded by the curve which almost meets the upper boundary of level I and then slowly falls away. Mode II is bounded by the curve which runs parallel with the upper boundary of level II, at least until the age of 65. Mode III is bounded by the curve which almost meets the upper boundary of level III at 65, etc. It will be seen that the boundaries of modes IV, V, VI and VII fall steadily further short of the upper boundary of the matching level.

Thus, for example, a person in mode V will be comfortable working at level V at the height of his or her powers, but will never be comfortable working beyond that level. People in mode V may thus reach level V but the majority will make their most substantial contribution at level IV.

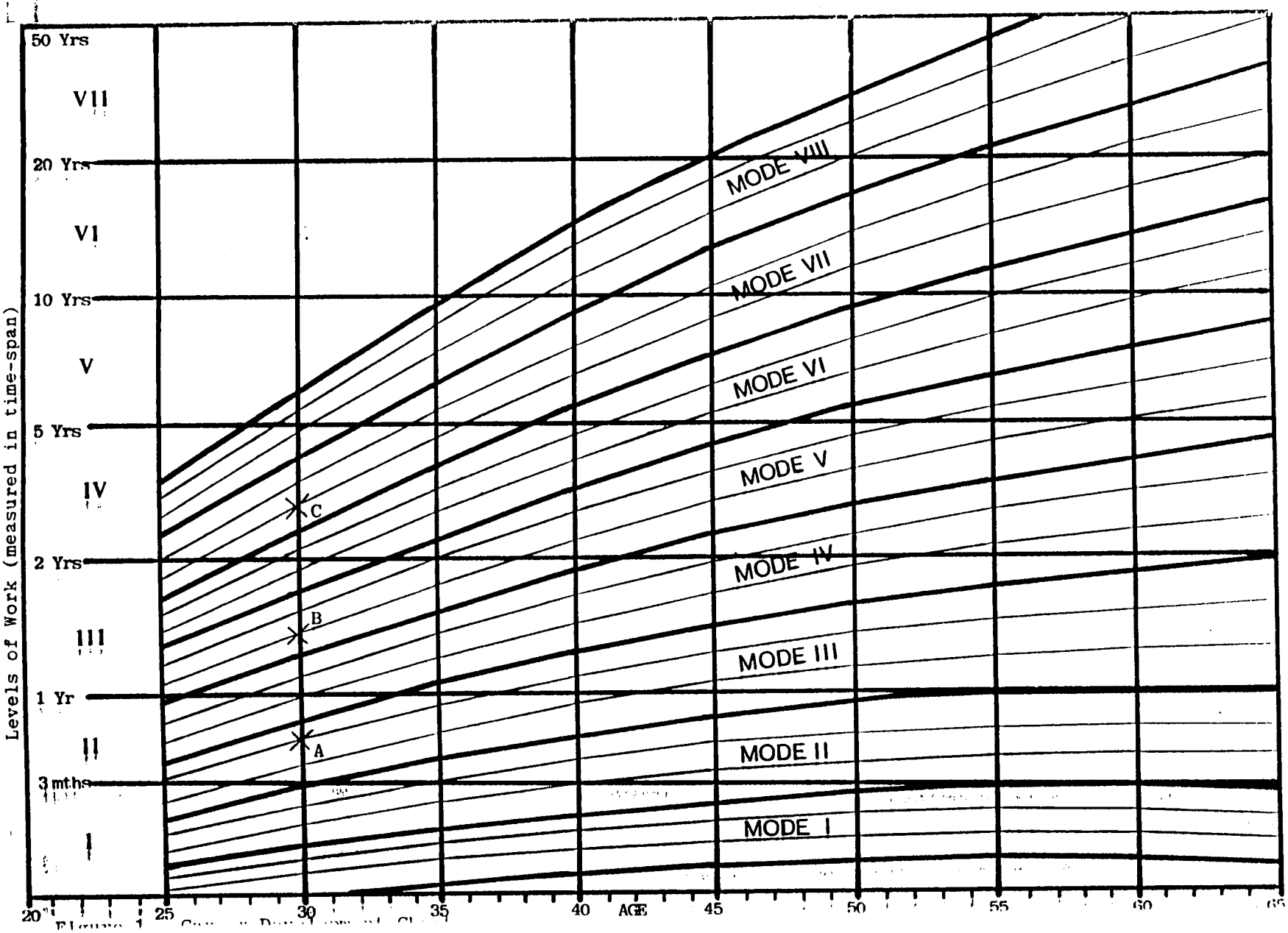
The implications of these modes for career development and succession planning can be illustrated by three examples of hypothetical case-histories, which demonstrate the way in which the curves may be used to predict the development of capability in individuals A, B and C, each first interviewed at the age of thirty.

A is capable at 30 of first-line managerial work, for example, supervising workers on a shop floor. At 45 he will be capable of managing a department, and at 50 he could be an experienced departmental manager but will have no expectation of promotion beyond that level.

B is capable at 30 of managing a department with two levels of subordinates. At 45 she will be capable of general management at a multi-functional level, and at 50 she will still be operating at that level.

C is capable at 30 of general management, and at 45 will be approaching the boundary between chief executive management of a subsidiary and group executive work at corporate level. At 55 he will be competent and comfortable working at the first corporate level.

From the point of view of the individual, the mode represents the likely boundaries of his or her career path, and the experience of being in different modes obviously differs widely.


50 Yrs
VII
20 Yrs
VI
10 Yrs
V
5 Yrs
IV
2 Yrs
III
1 Yr
II
3 mths
I
Levels of Work (measured in time-span)
MODE VIII
MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I
A
B
C
20
25
30
35
40
45
50
55
60
65
AGE

To be in mode I means that the individual "comes into his or her own" - in the sense of matching capability and level of work - early in working life. He or she can therefore enjoy, and contribute, a long period of settled competence. To be in mode VII means that an individual will not come into his or her own until late in their working life. Their path to a mature matching of capability and work is, therefore, much prolonged. They must live not only with the excitement of growth and new challenge, but also with a feeling of constantly reaching out for a resolution which is not yet there.

Although matching capability with level of work is the core of career development, it is, of course, not the whole story. Experience, and the specialist knowledge needed for a particular job, are common criteria in selection and career development, whilst less tangible but equally important factors are personality characteristics and the culture of the organisation, which often tends to encourage particular attitudes and hence favours particular kinds of people.

It hardly needs stressing that the full development of individual capability in organisations calls for a high degree of sensitivity and respect on the part of management. There must be respect both for those whose capability matures early in their careers and for those with slower maturing capability who are often described as "high-flyers". The first group make a long term contribution to the continuity and stability of the organisation, particularly at those levels concerned with direct operations, whilst the second need time and opportunity if their capability is to be fully realised. Whilst our experience indicates that a high level of capability normally manages to fight its way through even an insensitive management, this is commonly achieved only at the cost of considerable stress, whilst the job-changing familiar in the case of 'high-flyers' can only represent a disappointing return for investment to their employers, where such tangible wastage as expenditure on training is compounded by the intangible wastage of loyalty and experience.

Stratified Systems Theory offers an opportunity to examine individual development in the context of organisation structure, to the benefit of both individual and organisation. It avoids the problems of developing potential in a vacuum, and offers a means of examining an entire organisation in terms of its human resources, thus maximising potential, achieving planned growth and succession and ensuring innovation.

In the course of the three year research project described here, unexpected opportunities for discussions about the implications of Stratified Systems Theory arose both within the United States military and in some very large civilian organisations. As a consequence, we were able to extend the field of our research so that it includes inter-current relationships among various continuing investigations.

Our approach in each of these settings is to use Stratified Systems Theory as a model to help draw out the fullest possible empirical details and to modify and extend theoretical formulations in the light of those details. We seek a constant interplay between the predictive power of Stratified Systems Theory in uncovering organisational confusion and stress and the detail of actual day-to-day reality in organisations.

In this report we deal first with research focused on our specific objective of testing work on the assessment of individual capability. In the second section we consider the implications of Stratified Systems Theory for military leadership.

SECTION 1

A. Background to Assessment of Capability

This section of the report sets in context the research and development of techniques for assessing differences in the capacity to carry responsibility at different levels of work. The immediate antecedents lie in Stratified Systems Theory and in the work of John Isaac; the assessment can also be linked with psychological work on stages of development and individual differences in style and ability.

Although we have already given a brief outline of Stratified Systems Theory, our focus in this section is on Jaques' early ideas about differences in the capacity to carry responsibility, and we therefore touch only lightly on other aspects of the theory. In the early 1950's in the course of his social analytic work with the Glacier Metal Company, Jaques was asked to work with members of staff on the problem of how to determine the appropriate pay and status of individuals for the work they do. In order to address the problem he had first to define the meaning of work, and then to find some means of measuring the size of the job. The distinction he made between the prescribed and the discretionary elements of work is the basis of all that follows.

He defined economic work as "the totality of prescribed and discretionary activities that a person in discharging the responsibilities he has contracted to undertake in order to earn a living". Prescription and discretion are a genuine duality - they feel different to the person doing the job. Prescribed limits refer to objectively identifiable standards outside him*: discretionary content to intuitively sensed standards within him.

Prescribed limits of work consist of those elements which eliminate choice and therefore constitute a boundary. They set limits to what the person in the job may do and they state what he may not do. Further, they state the regulations, policies, methods, routines to which he must conform. Conforming to the prescribed limits feels like doing work that someone else has already decided about. It is easy to know when the prescribed part of a job has been done because

* For the sake of brevity, the male pronoun will be used throughout the rest of the report. It should be taken that, in each case, the statement could equally apply to a woman.

the limits or the regulations to be adhered to have been clearly established beforehand - they exist in external reality and can be independently observed.

Discretionary Content

The discretionary content feels quite different because it consists of all those elements in which choice of how to do the job is left to the person doing it. There is no external referent and no reassuring confirmation that all is well at the time the work is being done. As he exercises discretion the person must use his know-how, his judgement, his nous: his capacity to weigh up available information, to sense what other information, if any, ought to be obtained and to proceed on the basis of what feels like the best course of action, where many factors can be only unconsciously assessed and some are even unknown.

On the basis of this intuitive feeling of "the right thing to do", actions must be taken. Discretion is always executive; it is the shaping of the feel of a situation into action against the background of uncertainty.

Jaques came to realise that it is precisely the element of uncertainty, of having to rely on his own judgement and guide his actions without knowing the result until the work has been completed and reviewed, that gives the person the feeling of the size of his job. In talking about their work in this way, people often commented that there was a relationship between the felt size of their job and the length of time over which they had to carry responsibility and cope with uncertainty. The longer the time, the greater the anxiety and uncertainty to be faced.

Measuring the size of a job

This link between length and felt size of a job made Jaques think that it might be possible to measure size of responsibility in terms of time. Originally, the span of time was calculated by analysing the decisions the person in a particular role had to take, and specifically the maximum length of time over which, on his own initiative, he could commit company resources. This span was then checked with the manager to see whether he had in fact delegated a job of this size. From this experience grew the time-span of discretion, which measures (a) the relationship between a manager and his subordinates and (b) the felt size of the role from the point of view of the subordinate.

It soon became apparent that, the higher the executive level, the longer the time-span. This suggested that time-span might also be a measure of level of work, and this idea was strengthened first by the regular relationship that emerged between time-span and felt fair pay and second by the emergence of a systematic pattern of levels of work which could be defined by time-span.

This pattern of relationships between time-span, level of work, felt fair pay and felt size of job suggested that people differ

in their capacity to exercise discretion over longer and shorter periods of time - in short, they differ in their time-span capacity.[2]

Jaques then set out to explore in depth the work histories of nearly 200 people many of whom have now been followed up for up to 28 years. They were asked to describe the biggest job they had done at varying stages of their careers, and to analyse those jobs in terms of time-span. The initial findings suggested that time-span capacity develops through adult life at different rates. In any person at any given time one would, therefore, expect to be able to see both current and potential time-span capacity and would also expect a regular pattern of development.

These early findings were extended by examining the earnings of 250 people. Because the purpose of the study was to ascertain career movement, earnings were plotted against age. Through the population of individual progression curves, Jaques drew a number of smoothed continuous curves representing the general trend of the individual curves. These curves softened the steep slope of the original earnings curves which had not been predictive of capacity development because young people's salaries tended to be depressed in relation to their capacity.

At this stage Jaques could do no more than identify time-span capacity as the capacity to carry responsibility at a given level of work measured in time-span. His observations of relationships between managers and subordinates suggested the hypothesis that different levels of work might correspond to differences in the level of abstraction which had to be used for the work to be done. The nearer the person has to be to his task, the lower the level of abstraction. In terms of progression, a person would be ready to move to a higher level of work when he could apply a higher level of abstraction. This emphasis on the idea of discrete levels implied that individual differences would not be a matter of quantity - of more or less - but of quality - a difference in the structure of capacity.

Jaques described five levels of work in terms of levels of abstraction,[3] and people with the potential to work at any one of the levels were described in similar terms. He suggested that a person's potential capability could be seen in the level of abstraction he applied at all stages of his working life. The maturation of his ability to use his level of abstraction would take place gradually as illustrated by the capacity growth curve. At each stage of his career, his current level of work could be measured in time-span.

[2] We now use the idea of the "time-frame" of the individual rather than time-span capacity.

[3] We have now described eight levels of work (see section on Stratified System Theory in the introduction).

Stratum 1 : First level of abstraction - perceptual concrete

At a time-span of three months and less, the person doing the work is dealing with it in terms of the restricted evidence of what the eye can see. He cannot work in image terms, and the object of his task must be physically present for the work to be done.

Stratum 2 : Second level of abstraction - imaginal concrete

At about three months' time-span capacity, people are able to work with an imaginal picture of the physical object. The actual physical object need not itself be present. It thus becomes possible to manage the work of stratum one because the level of abstraction is sufficiently high to deal with tasks imaginally.

Stratum 3 : Third level of abstraction - conceptual concrete

At time-span capacity levels of over one year, work begins to take on an additional quality connected with the future. It becomes possible for the person not only to deal on the imaginal plane with current tasks, but to develop a predictive picture of the likely forward load of tasks and the changes needed to be put in train to meet it. The predictive imaginal picture remains firmly embedded in a concrete conception of the task.

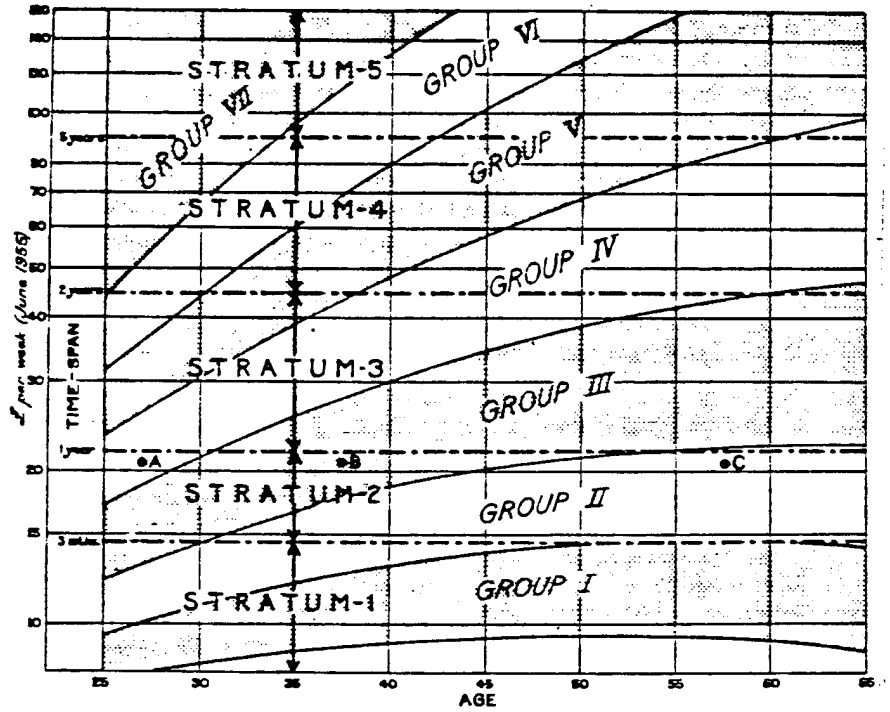
Stratum 4 : Fourth level of abstraction - abstract modelling

At time-span capacity levels of over two years the person is able to detach himself from reliance on the presence - whether perceptual or imaginal - of the actual object, while maintaining sufficient intuitive contact with the concrete world for the work with abstractions to be translated into concrete things which will give practical results.

Stratum 5 : Fifth level of abstraction - theory construction

Individuals operating at this level need only one time contact with the concrete. Actual first-hand experience of one instance of the wide range of events and situations covered by the emerging theory gives the person enough "feel" to understand what is going on. He can then make the links to create a theory.

Figure 2 [4]



Over the next twenty years Jaques continued to collect the work histories of individuals against the background of the 1963 progression of curves. Each person was asked for his own judgement about the level of work where he felt comfortable, with his capacity fully used but not over-stretched. In other words, where he had the opportunity to exercise discretion over a period of time which felt right for him at that particular stage of his development.

Early in 1982 an analysis of all Jaques' individual progression data was completed by Dr. T. Kohler of the University of Southern California. The first material to be analysed was individual judgements about work comfort level:- the level of work at which the person felt right and competent now, and the level at which he thought he would feel right in the future. 90% of the data fell within the boundaries of the working modes as redrawn by Jaques in 1981. 95% fell within the mode occasionally touching the boundary. It is important to be absolutely clear that Jaques' data about development was gathered against the 1963 hypothesis of earning curves.

[4]From page 111 of Jaques, E., (1965) Glacier Project Papers; Heinemann, London.

The work of John Isaac and his colleagues

In 1961 Jaques' ideas about levels of work and individual capacity had come to the attention of John Isaac. On the basis of many years of study of mathematics, philosphy and history, Isaac had also become interested in the general idea of levels of abstraction, reflected on the one hand in the hstorical development of society and on the other in the way people in present society structure their experience. Isaac and his colleague O'Connor decided to undertake a series of experiments to test this idea. In order to free themselves from the source of the ideas and to make it possible to look at levels of abstraction in purely quantitative terms, Isaac and O'Connor first constructed an abstract theory. In common with Jaques, Isaac and O'Connor started from the premise that each person brings his own world into being through creative acts. The development of the person is thus the development of a series of structures representing the inter-relationship between the self and umwelt. At each successive stage, restructuring involves extension of the field (the context) and the addition of a new way of behaving in that field (modes of functioning).

The theory consisted of an abstract system of structures related to a sequence of developmental stages. It suggested the form of an experimental problem-solving procedure, completely separate from the sources of the theory, which would make it possible to obtain quantitative expressions of behaviour for example, the length of time taken to solve the problem, or the number of trials to solution.

The outcome of the experimental work of three different problem-solving experiments with more than 7000 subjects was a set of histograms which could be associated with the structures of the theoretical system.

The pattern of the histograms demonstrated the two discontinuities of structuring predicted by the theory: i.e. the extension of context as the field of operation becomes more complex, and new modes of functioning to cope with the increasing complexity. These two sets of discontinuities are interdependent: the extension of the field depends on the emergence of new ways of behaving - and new ways of behaving are essential to cope with the extensive field.

Isaac and O'Connors' concept of levels of extension of context can readily be linked to Jaques' levels of work measured by time-span. Their second discontinuity of modes of functioning suggest the possibility of further refinements to time-span capacity. The links between these ideas and the findings which have emerged from the reserach on assessment will be discussed later.

To summarise: the work of Jaques and that of Isaac and O'Connor rests on the premise of the active person reaching out into experience to shape his own world. Both sets of empirical work demonstrate that this premise leads to discontinuous patterns of structure of development in individuals and organisations, although Jaques' concept of potential capability also suggest an underlying continuity in the person's level of abstraction.

B. Links with other Psychological Research

There are important links to be made between the assessment of level, type and potential/capability and psychological work in the fields of development, mental complexity and cognitive style. Here we are not attempting to review the literature but seeking to set time-span capacity and its assessment in context. In making these links it must be borne in mind that, even when the focus of psychological research has been on individual differences, it is more often than not, laboratory based and has not been concerned with adult development but with describing mental processes at a given moment. By contrast, all Jaques' theories have been evolved from collaborative study of the working lives of people in organisations, and Isaac and O'Connor's work, as we have shown, was deliberately freed from qualitative descriptions and verbal reports in order to test an abstract theory in quantitative terms.

a. Despite these differences there are many interesting similarities, particularly in psychology, that emphasize the active involvement of the person in the construction of his world and therefore the structure rather than the content of his behaviour. The first obvious link is to the work of Piaget[5] whose genetic eipistemology starts from the assumption that the child is actively involved in creating his world. As the creation becomes more complex so the child's approach must be restructured to allow for and to accommodate the increasing complexity. Piaget's observations led him to the conclusion that there are clearly defined stages in the development of the operating world of the child. The stages follow one another in a constant order, each has a characteristic overall structure and the structures are integrated according to the order of their formation. Piaget's works relies on careful observation and therefore does not lend itself to experimental studies of the kind pursued by Isaac and O'Connor. Although in one sense it is a general theory of development it is for the moment linked specifically to children.

[5] Piaget, J., (1970) Genetic Epistemology, Columbia University Press, New York.

Piaget, J., (1972) The Principles of Genetic Epistemology, Routledge & Kegan Paul, London.

Piaget, J., (1977) The development of thought: equilibration of cognitive structures, Basil Blakwell, Oxford.

b. The second link is with the personal construct theory of Kelly[6] which is also based on the premise that the person is actively involved in organising the world around him. The individual makes predictions and modifies them according to their outcome - these are the constructs with which he creates his world. Kelly's approach emphasizes the making of choices as the basis of thought and behaviour, and suggests a consistency in the individual in the pattern of choices he will make his constructs. Despite the fact that this work has provided a sophisticated technique for analysing the structure of individual behaviour and differences in mental complexity, it has not produced a model of levels of complexity.

c. The third link is with the work of Harvey, Hunt and Schroder[7] who started from the assumption that people are processors of information. Following Lewin they saw behaviour as a function of the transactions between the person and his environment. This aspect of their work was later developed by Streufert who showed that, just as people differ in mental complexity, so the environment varies in terms of information complexity. Individual behaviour is thus best understood as an interaction of the two. Harvey, Hunt and Schroder demonstrated that the rules people use for integrating information may be simple or complex and that these levels of complexity lie along a concrete/abstract dimension. Their five patterns are summarised below.

1. Low integrative index: Perception of only a few dimensions, and simple rules for combining them. Behaviour anchored in external conditions.

2. Moderately low integrative index: Alternative schema for organising dimensions. Generation of different perceptions of a situation.

3. Moderately high integrative index: More complex rules for comparing and relating; weighing and compromist among the elements.

4. High integrative index: Comparisons made between alternatives.

5. Very high integrative index: General rules of theory; alternative schemes and relationships between structures.

The similarity in content between these five levels of complexity and Jaques' levels of abstraction is striking.

[6] Kelly, G. A., (1955) The Psychology of Personal Constructs: W.W. Norton & Company Inc., New York.

[7] Harvey, O. J., Hunt, D. E., Schroder, H.M., (1961) Conceptual Systems of Personality Organisation: John Wiley & Sons Inc., New York.

	Stratified Systems Theory	Harvey, Hunt & Schroder
5	Shape aggregates of things and construct theory.	General rules of theory.
4	Appreciation of alternative systems.	Comparisons between alternatives.
3	Serial extrapolative shaping of thing from single fixed path.	More complex rules for comparing and relating.
2	Progressive articulation of single fixed path.	Alternative schema for organising dimensions.
1	Aided shaping of one fixed thing.	Perception of only a few dimensions. Simple rules for combining.

d. The fourth link is the growing interest in identifying different managerial styles and linking them to appropriate work settings. The research has been much influenced by the original work of Harvey, Hunt and Schroder and by the Jungian typology of individual functioning. A careful look at seven recent studies of management style (Hudson, 1966, Mitroff, 1974, Mitroff and Kilmann, 1974, 1982, Driver and Mock, 1975 a and b, McKenney and Keen, 1974, Morse and Gordon, 1974, Kolb, 1975. See also Margerison and Lewis, 1979 and Belbin, 1981) shows that there is a remarkable consistency in the discrimination of four clearly distinct styles. All these studies use dimensions with common themes, for example, abstract/concrete, reflective/ active, analytic/integrative, convergent/divergent, rational/ intuitive. In order to present this wealth of material as simply as possible I shall draw it together using two dimensions which are implicitly or explicitly common to all the studies; simple/complex and holistic/analytic. I shall then summarise the nature of the style in each quadrant drawing directly on descriptions given in the literature.

Table 4

holistic

1.	2.
Problem finder (M & G) Moderate or extreme diverger (H) Diverger (K) Intuitive-receptive (M K & K) Flexible (D & M)	Integrators (M & G) Extreme diverger & converger (H) Assimilators (K) Intuitive-receptive (M K & K) Integrative (D & M) Type 1 (M) Conceptual Theorist (M & K)
Simple	**Complex**
Technician (M & G) Extreme converger (H) Accommodator (K) Systematic receptive (M K & K) Decisive (D & M) Type III (Mitroff)	Problem solver (M & G) Moderate converger (H) Converger (K) Systematic perceptive (M K & K) Hierarchic (D & M) Type II (M) Analytic Scientist (M & K)
4.	3.

analytic

1. The style of this quadrant is summarised by the idea of divergence. This kind of person excels in viewing concrete situations from a number of different perspectives and organising many relationships into a whole. He is flexible, using just enough data, analysing it globally and creatively and remaining open to reconsider decisions as situations change.

2. The style of this quadrant is summarised by integration. This kind of person finds and creates patterns in data drawn from widely scattered fields. He generates multiple possible solutions not successively (as the diverger) but simultaneously. He creates new conceptual possibilities which allow revision, rethinking and challenge of accepted ideas. He welcomes ambiguity and uncertainty.

3. The style of this quadrant is summarised by convergence. This is the rational, logical approach which uses as much data as has value to reach the best conclusion. This kind of person likes to focus deductive reasoning on specific problems. He works best within a defined, self-consistent explanation. He is thorough, accurate and reliable, and often does well in conventional intelligence tests.

4. The style of this quadrant is summarised in pragmatism. A minimum of data is logically analysed and used to reach a good decision and then hold to it. This kind of person tends to excel in settings where he must adapt himself to specific immediate circumstances.

Although these typologies are of great interest they have important limitations. Some (Driver, 1979, Mitroff, 1974, McKenney and Keen, 1974 and Morse and Gordon, 1974) make direct or oblique reference to differences in levels of complexity, but the overall emphasis is on matching style to function and not on matching capacity to carry responsibility with level of work. The word "style" is used very generally to describe the way the person shapes his actions. A distinction is sometimes made (for example by Streufert and Fromkin, 1972) between gathering and processing the information on the one hand - the perceptual aspect - and acting on it - the executive aspect.

C. Research on Assessment of Time-span Capacity

The last three years of research has strengthened our sense of two dimensions in the capacity to exercise discretion.

a) Level of capability is the person's view of the world - the breadth of attention he can sustain and therefore the form and extent of the field of operation he creates and acts within.

b) Type of capability - the way the person prefers to act and achieve his intentions.

If these two dimensions are recognized the very general notion of "style" can be discriminated into (a) level of capability which can be linked to a level of work measured in time-span and (b) type of capability which can be linked to a preference for a particular kind of job.

These two dimensions can then be linked to Isaac and O'Connor's abstract structure.

Their model provides two sets of discontinuities. First, levels of extension of context can be linked to the level of capability and the second, levels of abstraction to type of capability. Isaac and O'Connor's theory suggests that, the more extended the context, the more levels of abstraction recurred. At the first level of context there is one level of abstraction and therefore one mode of functioning. At the second level of context the first mode is transformed because of the extension of context and a further more abstract mode is added. This pattern is repeated at each successive level. The theory predicts five levels of abstraction at the fifth level.

On the basis of Jaques' longitudinal researches and Isaac and O'Connor's experiments, a matrix of fifteen different modes of working built up from combinations of views of the world and ways of acting is assumed.

Table 5

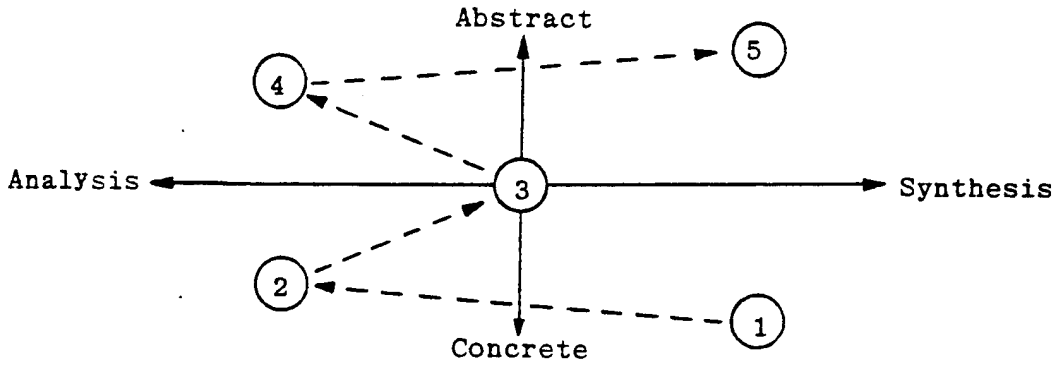
Levels of Extention of Context	Levels of Abstracting				
	A	B	C	D	E
5	X	X	X	X	X
4	X	X	X	X	
3	X	X	X		
2	X	X			
1	X				

The more extended the level, the more modes of working available, therefore, if a person can work at a particular level, he has access to all the modes at that level. Our evidence, however, suggests that he will have a marked preference for one.

In order to establish a clear link between Jaques and Isaac and O'Connor and the pattern of individual capacity, it will be useful to draw together under one general idea the notions of level of work, extension of context and view of the world under the general term abstraction - distance from the original concrete object of work. Way of acting and mode of functioning or working can be drawn together under the general term abstracting - the relationship with the object of work at that particular level of context.

In order to give content to the matrix there follows a description of abstraction and abstracting and the relationship between them at each level of context.

Figure 3



a. First level: (Concrete Synthesis) At this level of abstraction everthing is related to everything else although action is focused firmly on one thing at a time. All knowledge is experiential and comes directly from 'touch and feel' contact with the world.

Within this level there is only one fully-fledged way of abstracting which is pragmatic and intuitive. The person who prefers it could be called a proceduralist. He likes to work directly with external reality, building up an implicit sense of what is happening by focusing on the particular task of the moment. He will be very competent in his own specialist field but less likely to succeed outside it. He is often seen as a very important backup man in the sense of providing specialist information in a particular field for example, statistics or patent law.

Level 1 | P | Key: P = Proceduralist

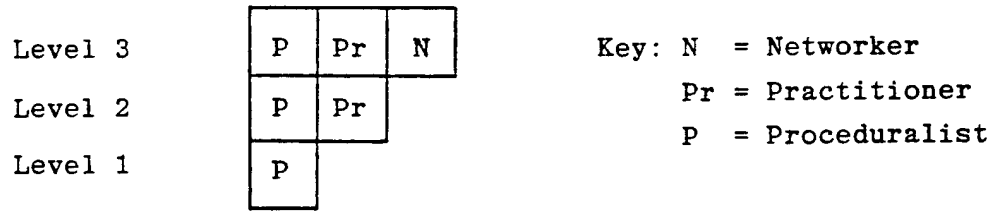
b. Second level: (Concrete Analysis) At this level of abstraction single issues are discriminated from the whole and different ways of approaching them either on their own or in clusters can be considered. These alternative possibilities give rise toaa sense of ambiguity and the possibility of choice between options.

In this second level there are two ways of abstracting. The first is the proceduralist working now in a wider context. The second is pragmatic and logical. The person who prefers to work in this way - the practitioner - likes to be directly involved with tasks but also brings an awareness of alternatives and new possibilities to bear. The practitioner tends to base his active approach to the solution of problems on an understanding of the subtleties of concrete situations and, particularly, their human implications and he chooses between alternatives in the light of practice. He is therefore very successful at making quick decisions on the basis of the information available and, as a consequence, making the most of current situations.

c. Third level: (Synthesis) This level of abstraction has two aspects. It is predominantly concrete and synthetic but with abstract and analytic overtones. On the one hand it is concerned with the systematic analysis of concrete events, on the other, with an integrated grasp of the whole. Both are characterised by sequences and connections.

The proceduralist and the practitioner are now working in an extended context and they are joined by a third way of abstracting characterised by a steady oscillation between being with experience and standing back from it to see its directions or trend.

The practitioner within this level seeks to build systems and sequences by logical extrapolation from what has been given, searching carefully for all the links in the chain. This serialist approach can readily be put into words at every stage of the process. However, the person who prefers the third mode of acting - the networker - holds incoming information in a general overall pattern until the shape and extent of the sequence is clear. He might well not be able to put into words the process or even the solution to a problem once he has achieved it. It is interesting to note how often this intuitive approach is undervalued and explained away in apparently 'logical' terms by those who use it.

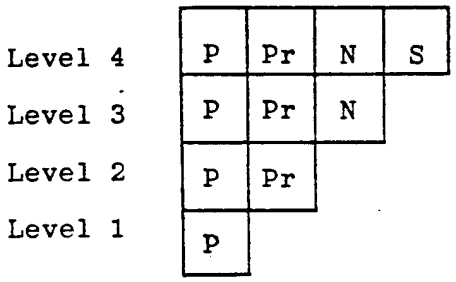


d. Fourth level: (Abstract Analysis) This level of abstraction is well illustrated by the classic form of logic based on the law of contradiction and the law of the excluded middle: no proposition can be both true and false at the same time and every proposition is either true or false.

Within this view there are four ways of abstracting. The proceduralist, the practitioner and the networker are all now working in a further extended context and are joined by a reflective and logical mode. The person who prefers to act in this way - the structuralist - likes to bound his experience by filtering it through conceptual frameworks, by carefully ordering priorities through conceptual frameworks, by carefully ordering priorities and evaluating alternative courses of action.

He likes to discriminate clearly between what is relevant to his concerns and what is not and he will define the former by discarding the latter.

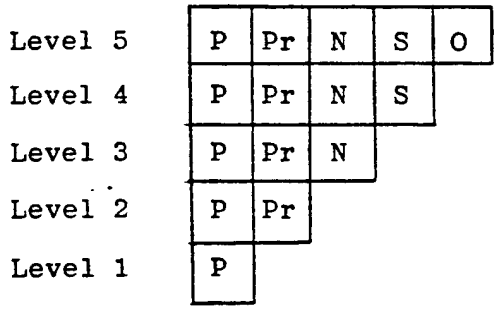
The structuralist often has a high measured IQ and prefers to reason deductively, testing hypotheses against a pattern of previous assumptions. He is very self-contained in his work and likes to use an essentially theoretical approach. He will often excel in research and staff or consultancy roles.



Key: S = Structuralist
N = Networker
Pr = Practitioner
P = Proceduralist

e. Fifth level: (Abstract synthesis) At this level of abstraction all the dimensions are interwoven in such a way that each separate term defines and is defined by its opposite. This view is epitomized by the idea that everything is interdependent; to affect one part is to change the whole.

The proceduralist, the practitioner, the networker and the structuralist are all now working in a very extended context and they are joined by a fifth way of abstracting which is reflective and intuitive. The person who prefers to act in this way - the originator - always looks for the unusual and the unexpected, seeking to create new patterns of connections between previously unrelated material. He is often poor at routine work and tends to take an original approach to a problem even when this may not be appropriate. The word most commonly used to describe originators is 'flair'.



Key: O = Originator
S = Structuralist
N = Networker
Pr = Practitioner
P = Proceduralist

Development of Capability

The descriptions above, referring as they do to particular levels of abstraction and modes of abstracting within them are essentially static. What is now required is the influence of Jaques' evidence

of groups of people with the potential to work at a given level of abstraction and the continuity of those groups which emerges from Kohler's analysis of Jaques' data. Given this evidence of growth in the capacity to carry responsibility, we have to consider both the continuity of each person's way of working - his working mode and the discontinuities he experiences as that working mode matures through more extended levels of work. This combination of an underlying continuity and discontinuities of experience suggests that we may need to reconsider the adjective 'working' to describe the individual mode.

Our attempts to assess potential indicate that we must distinguish between different levels in which the mode may be expressed. In young adults there may be clear signs of competence to operate at more than one level; where capability has matured, the mode will coincide with one particular level.

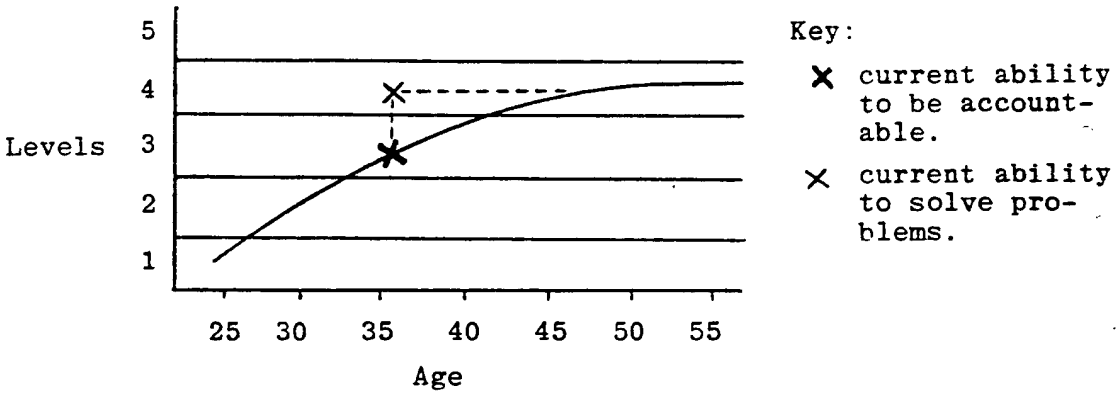
We first became aware of the different levels in which working mode could be expressed when two assessors were working together one using the card sorting task and one doing time-span analysis of roles. We frequently found that people apparently demonstrated higher level capacity in the card sorting task than in describing the details of their work. This tendency was particularly marked with young managers or graduate trainees. People on growth curves which had levelled off appeared to approach the card sorting task in the same way as they approached their work.

Sometimes there was very little difference between the two researchers' assessments as, for example, in the case of a manager in his late thirties who appeared to show high level three capacity in the card sorting task but low level three capacity when interviewed about his work. Our first thought was that perhaps our assessments were not as accurate as we had hoped and that maybe what we were dealing with was a person currently at mid level three being slightly under assessed in one situation and over assessed in another. However, when young graduate trainee intakes were given the card sorting task, some clearly showed a level four approach in that they were able to cope with concepts, make deductions and test out hypotheses. These same people were found to look at their work in a level two way, focusing in on two options and choosing between them without the ability to draw in all the relevant issues. A difference as large as this could not be put down to slight errors in assessment.

What we were seeing were signs of potential to operate at a more extended level. In order to further our thinking, we made a distinction between three levels - or expression, articulation and comprehension.

The level of expression is the level of work the person is currently able to do, i.e. his present time-span capacity. The level of articulation will be one level below the level of expression and will be the level the person can make statements about and to which he can, therefore, delegate. Finally, the level of comprehension is the level he can understand but for which he cannot yet carry accountability.

Looking at these aspects in more detail, the level of comprehension as shown in the card sorting task is basically a reflection of a personal view which can be experimented with in a situation where there is licence to do so. However, this level of comprehension may contrast markedly with the action taken in a working situation. Here there are externally set objectives to be met, standards of performance to be maintained and resources allocated. This level of expression of capacity requires more than the production of ideas and possibilities. In our assessments we frequently saw level of comprehension higher than level of expression but not the reverse. Our evidence suggests that level of comprehension might be the precursor of level of expression. For example, a person who, at the age of 35 is currently capable of working at mid level three but is showing the ability to use mid level four techniques in the card sorting task is likely to be on a growth curve which will take him to mid level four.



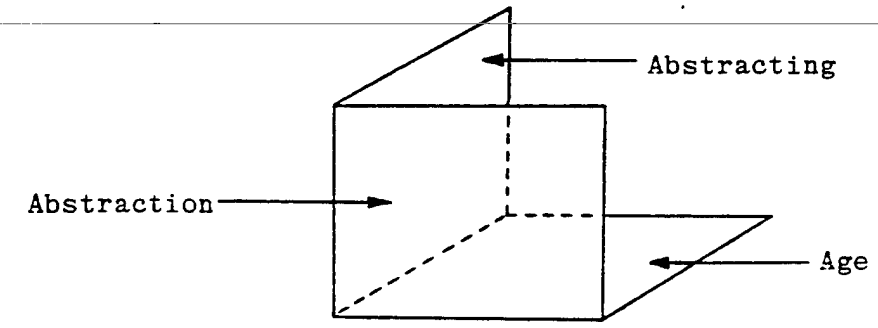
In our consideration of these findings we turned to Vygotsky's work on the development of thought and behaviour in children and in particular, to his concept of the zone of proximal development. Vygotsky[8] found that, if he took two children with the same mental age, (8 years for example) gave them harder problems than they could solve on their own and offered slight assistance, marked differences could be seen between them. "We discovered that one child could, in co-operation, solve problems designed for twelve year olds, while the other could not go beyond problems intended for nine year olds. The discrepancy between a child's actual mental age and the level he reaches in solving problems with assistance indicates the zone (or proximal development) is four for the first child and one for the second. Experience has shown that the child with the larger zone of proximal development will do much better in school."

[8]Vygotsky, L. S., (1962) Thought and Language: M.I.T. Press, Cambridge, Mass.

Rest, Turiel and Kohlberg [9] demonstrated that a person may be able to comprehend material at one or two stages beyond that at which he can spontaneously produce it. They concluded that the individual's capacity to understand, appreciate and assimilate higher stages is a characteristic distinguishable from his 'spontaneous stage' (what we are calling his level of expression) and that it represents the person's openness to levels of thought which have a natural hierarchical relationship. They suggest that these individual differences in "the zone of proximal development" distinct from spontaneous level could be an important predictor of future development.

We therefore concluded that the 'mode' with which we are dealing in the assessment of potential could not really be described as a working mode - the capacity to do work and to be held accountable being limited to the levels of expression and articulation. Following Kelly, the term 'construing' mode seemed to convey more accurately a way of making sense of the world which, before full maturity, would be demonstrated, as Jaques has always said, in imagination and breadth of vision.

Each person's construing mode will have two aspects; his view of the world i.e. his level of abstraction and his way of acting, i.e. his level of abstracting.



The three location points necessary for placing an individual on a growth curve which can predict his potential are thus his level of expression (current abstraction), his preferred way of acting (abstracting) and his zone of proximal development (his highest levels of comprehension and abstraction).

[9] Rest, J., Turiel, E., and Kohlberg, L., (1969) 'Level of Moral Development as a Determination of Preference and Comprehension of Moral Judgements made by others': in the Journal of Personality, Vol. 37, Pages 225 - 252.

D. The Assessment Method

The assessment method involves one hour spent with each subject by an interviewer who is thoroughly familiar with the theoretical framework and carefully trained in the assessment process. There are three parts to the assessment; an opportunity for self-assessment, the completion of a sorting task and an interview. Each will now be described separately.

1. The Phrase Cards

The phrase cards are used at the beginning of the assessment because they are of immediate interest to the subject, they focus thinking on his own particular way of approaching tasks and they engage him in the process from his own perspective.

The subject is given ten sets of phrase cards in groups of four. Each group contain phrases linked to construing modes two to five. He is asked to select from each group the one he feels most closely reflects the way he would approach a task and to explain his choice. Detailed notes are made of subjects' exact words and phrases in giving the reasons for each choice.

Choice of phrase cards and reasons given seem to be a good indicator of construing mode. The majority of subjects select most of their cards from those representing a single level. A striking feature of the way subjects use the selection of phrases is the tendency to 'nest' cards. For example, a subject of construing mode five will, more often than not, state a sequence of approaches to a task commencing with the five card and describing that as 'setting the context'. He will then take the four, three and two cards in that order as the characteristic way he would approach and resolve a problem.

The whole process thus provides a semi-structured opportunity for focusing the subject's own awareness on his characteristic way of organising possibilities, ideas and projects. This can, briefly, be called his construction of the world.

Some preliminary work has been done using the phrase cards to focus managers' assessments of the level, and therefore, potential of their subordinates. The results to date are promising in that they appear to provide a framework in which managers' own judgements and intuition about their subordinates can be tightened.

2. The Card-Sorting Task

This task provides an experience in constructing and solving a problem, which can be taken either to solution or to a point at which the tester intervenes. The purpose is to provide a sufficiently extended stretch of behaviour for observation of the whole process of the subject's generation of

different patterns of strategy towards the definition, construction and solution of the problem. The interest is not in the solution, but in how it is reached. The instructions are deliberately brief in order to provide scope for the subject to structure and identify the emergence of a solution at his own pace.

The score - that is number of trials to solution - and the time taken are both noted.

Description

The test material consists of 81 cards each containing between one and three coloured symbols. Each card contains only one colour throughout and one size of one shape of symbol throughout.

The variations are:	size	- small, medium, large
	colour	- red, blue, green
	shape	- circles, squares, triangles
	number of symbols	- one, two, three

In addition there are four display cards:

Two medium green squares

One small red triangle

Three large blue circles

Blank card.

The tester is an additional source of information.[10]

3. The Interview

By this stage the subject has had the opportunity to describe his construing mode through the phrase cards and to demonstrate it in sorting the symbol cards. He is then asked to describe the history of his working career, his present work and his aspirations for the future. He is asked specifically to describe: (a) one period when he has felt his ability underused (b) one when he has felt fully stretched (c) the time-span of his present work. Very few subjects need further questions because, by this time, they are concentrating on themselves and their way of working probably for the first time in their lives. This gives a freshness and clarity to their descriptions as they make links between, for example, the

[10] Detailed instructions for administration may be found in a manual which is available from Dr. G. Stamp, BIOSS, Brunel University, Uxbridge, Middlesex, England.

experience of working for someone whom they have found very difficult and their new understanding of how they have developed. Another characteristic pattern which emerges is that of the subject who suddenly sees a consistency in his working pattern and begins to understand how this has influenced him and those around him.

For many subjects the interview is an interesting experience which sets them thinking about their own career and its future in a completely new way because they have had the opportunity to look back, forward and, in depth, at the possibilities and constraints of their current working life. Many subjects make contact with the interviewer within a couple of years in order to continue structured thinking about their capability and its implications for the future.

Throughout, the interviewer is listening for the characteristic patterns with which the subject organises his world. The first clear indications would have come from the selection of phrase cards and reasons given. The mode of sorting the symbol cards will be further evidence. Finally, the shape of the subject's working story, particularly his descriptions of how it feels to be fully stretched and to have spare ability, will give a very clear indication of his mode, and more often than not, his own attitude to it. For example, young people of very high potential (that is to say construing mode 6 and above) tend to feel very different from those around them, unsure about their way of working although unable to work any other way and aware that they may not be seen to be doing their current work as competently as others. Such young people are often very lonely, uncertain of their own ability, although quite clear that they are able to encompass situations within a wider context than their peers (and often their superiors).

For example, one described his thinking thus. "Well, if there's a task to be done, I'll think about it and around it and then I might have an idea and it's sort of over here (he gestures to corner of desk). When I mention it, someone says 'how did you get there?'. I can't tell them because I'm not aware of the path, so I say 'Oh well, don't worry about that idea, it may not be very important. Try this one instead'. (He gestures to the other corner.) And by this time the others are confused and irritated and I don't know what to do".

In summary, the three parts of the assessment complement each other and, together, provide a focused but open setting for observing and making judgements about capability. The first and third part rely on focused self-description, and in the second the subject is required to act and thus to provide material for direct observation of capability.

E. Assessment Settings

1. The Army Staff and Command College

A total of fifty-six members of the staff and command college have been assessed over a period of three years. A detailed report on the research with 31 officers interviewed in 1980/81 has been published jointly by APRE and BIOSS. There was considerable accord between assessments of capability, assessments made by Directing Staff at Camberley and judgements of potential made several years earlier by the Regular Commissions Board.

A further 25 officers were assessed in the autumn of 1982. The assessments on all 56 officers are charted in Appendix A.

The first formal follow-up will be in the autumn of 1983 when the first group of officers will have completed a two-year assignment on leaving Staff College. The second and third groups will be followed-up in 1984 and 1985 respectively. However, seven officers from the first two groups have approached us independently and short-term follow-up with them has been possible.

2. The R.A.F. Staff College

Two groups of officers have been assessed on this course. One in 1980 and one in 1982. Unfortunately, it has not yet been possible to negotiate facilities for discussion with directing staff and plans for follow-up. (Assessments on both groups are enclosed as Appendix B.)

3. The Naval Staff College

One small group of officers was assessed in 1981. It has not yet been possible to see a further group in 1982 but arrangements are underway for further interviews early in 1984.

4. Engineering Corporation

Two groups of men have now been assessed at the invitation of a large engineering corporation with a number of subsidiaries. The first group is composed of men in their thirties who are members of a master's course run by the corporation. Sixty percent are graduates and all have been selected because they are felt to have potential for higher levels of management.

These men have been assessed over a period of four years and their progress is subject to a continuous review both within the corporation and by Dr. Stamp. (Assessments are included in Appendix C.) The second group is composed of student engineers sponsored by the corporation through their university course. These men and women range in age from 19 to 23. Again, there is close supervision of their progress in both degree course and their work experience. The original assessments

were made two years ago and, despite the youth of those involved, early indications are that progress is in accordance with judged potential capability.

5. Fertilizer Company

Assessments of individual managers as part of an assessment centre programme have been done within this company for seven years. The company has undertaken an independent analysis of all the techniques used and has demonstrated a correlation of .67 between assessment of capability and company prediction of potential. The company has therefore concluded that capability assessed by the technique described above is the dominant factor in potential and, therefore, the most valuable for prediction purposes. They feel that there is no room nor indication of a need for any more than the two basic factors of capability and personality to predict potential. Their article of independent validation is enclosed as Appendix D.

6. South African Subsidiary of American Company

The project work on assessment and development of the potential of black staff continues as a result of an intensive training programme in Johannesburg in January 1982. There are, as yet, no detailed results to report but substantial work is underway using the assessment method described as well as the picture cards.

The work is focused on trying to develop techniques for assessing and developing potential of men and women from a black African cultural background. Within the next year it will be extended to include black children from the age of 14. Some of the issues raised by this work are discussed in an article - Some Implications of Differences in the Capacity to Carry Responsibility - which is enclosed as Appendix E.

7. Related Work

(a) Dr. Busch-Jensen, a senior psychologist in the Danish Armed Forces, has now established an assessment programme incorporating the concepts of construing modes and levels of work and employing the assessment technique described above. In this centre subjects will also complete personality inventories and undergo other tests of, for example, cognitive complexity. The results of all this work will be available to us in due course.

(b) Professor W. Taggart of the University of Florida is using the assessment method as part of his study of cultural differences in problem solving mode. His sample will include Finnish, British, African, Asian and American subjects. His results will be available to us within five years.

Follow-up of assessments

During the three years covered by this report a total of 43 subjects from the civilian cohort has been followed-up. 3 over six years (1976-1982), 22 over five years (1975-1980), 8 over four years (1978-1982), 6 over three years (1979-1982), and 4 over two years (1980-1982). This material is charted in Appendix C.

F. Assessment of Officer Potential

In addition to the specific research work assessing the development curve of individuals and following their careers, the general concept of growth of capability has been applied to the assessment of officer potential in the United States Army for selection for training and promotion at higher levels. This work arises from discussion about the difficulties of deciding which O-5s should be promoted to O-6.

There are some thousand O-5s available for promotion each year, for only about ten promotion slots. The selection panel has little more to go on than fortuitous personal knowledge of some candidates and an accumulation of OER forms.

The difficulty with these forms is that all officers tend to get ratings of one on all fourteen of the professional criteria for performance appraisal, since to give a rating of less than one on any one of these criteria is to damn that officer to no further progress. In addition, when overall ratings of performance are called for, it is impossible to know which of a number of equally possible and substantially different meanings of 'performance' is intended. Thus, for example, in the question whether or not an officer 'met requirements' the term 'requirements' can be interpreted in a number of entirely different ways by the raters as for example:

i. did the officer achieve his targeted output (without reference to whether or not the conditions were easy)?

ii. did the officer give the required quality of performance even though he rarely achieved targeted output because of difficult circumstances?

iii. did the officer's Unit sustain its required output, despite the officer?

On the question of assessment of potential for promotion, similar problems arise. The OER requires an immediate Commander to compare his own subordinates with each other and with others, for their potential for promotion to his own level. But he should be concerned with the promotion not of his immediate subordinate to his own level (he is too often not a good judge of who can do his own level of work), but rather of his subordinate once-removed to his immediate subordinate command level (for he should be able to judge who would have the potential to work for him.)

This problem is not resolved by having an intermediate rater for there are various positions which he could occupy; nor by having a senior rater place the officer in a population of 100, since all officers who have been successful at O-5 level will be in the top 1% of the population.

Finally, some of these difficulties arise from the failure to separate performance appraisal from assessment of potentail. Performance appraisal should be a matter between a superior and each of his immediate subordinates, as part of the superior's mentoring of the subordinate against periodic systematic review which may lead to an official merit assessment. Assessment of potential should be a quite separate process in which those higher up in the system consider which officers are coming along below who might be capable of working for them: it is a matter of succession planning and provision. Effective and constructive performance appraisal is seriously inhibited by making it part of the process of assessment of potential.

Performance Appraisal

Performance appraisal is bedevilled by the fact that the terms apply to at least six significantly different conditions:

i. simple output; e.g. the fact that an officer or his Unit trained all its men in a new procedure in 64 days;

ii. degree of success; e.g. the extent to which an officer or his Unit's output achieved the targeted requirement;

iii. productivity; e.g. the fact, for example, that an officer and his Unit carried out a targeted requirement with 10% less than the budgeted resources in manpower, supplies and equipment;

iv. performance record; any of the above criteria over a given period of time (say, annually);

v. absolute performance rating; e.g. a rating by objective assessors of where the actual record of a Unit or an officer falls on a scale of better than ⟷ worse than, as compared with other Units or officers doing the same kind of work - regionally, or nationally, or as compared with other threat or friendly forces (e.g. an NTC rating);

vi. conditional performance review and appraisal; e.g. how an officer's performance is judged by his immediate superior commander, in a mentoring situation, of how well that officer has done over a given period taking into account plans and achievements, the judged ease or difficulty of unexpected conditions that were encountered, and the training, experience, and level of capability of the officer.

Each of these six conditions refers to quite different matters, each of which is important in its own right. They all need to be taken into account for different purposes. Each will be the subject of a separate note in due course. For the moment it is intended only to refer to the last; namely, conditional performance review and appraisal in order both to contrast it with assessment of officer potential and to demonstrate its role in such assessments.

It is essential that every officer should mentor and educate his immediate subordinates. It is a crucial part of leadership in combat as in peacetime. Conditional performance review is an essential component of this education. It is the means whereby an officer periodically sits down alone with each of his subordinates and reviews his judgement of the quality of their work.

In this setting the superior must be free to discuss directly with the subordinates his view of the subordinate's weaknesses as well as his strengths. It is a delicate situation, for it is founded upon the quality of the superior's own judgement. The goal of the exercise is that the review ought to be helpful to the subordinate; the discussion must therefore be free and frank.

Such freedom and frankness cannot obtain however, if the review is tied in with a report which can make or break the subordinate's career. The process of conditional review and appraisal of performance must therefore be separate from the process of eventual career judgements about individuals as part of their official records. The separation can be achieved by the following means.

Assessment of Officer Potential

Conditional performance appraisal of his immediate subordinates is a requisite responsibility of every officer as part of his on-going mentoring role. He and he alone, by virtue of his position and his duty, can exercise the necessary judgement. By contrast, assessment of potential must be carried out at least by an officer's superior-once-removed; for that is the first level of accountability for determining succession to the in-between level. Assessment of potential must be organised therefore as a process separate in time and place from conditional performance review and appraisal.

In its simplest form superior A assesses the potential of subordinate-once-removed C, aided by B who is the intermediate superior (the immediate superior of C); for example, a Division Commander assessing each of his Battalion Commanders, with the aid of the relevant Brigade Commander.

In order to carry out this assessment, the superior-once-removed must personally know his subordinates-once-removed by having observed them regularly at work. During an assessment procedure he will discuss with each intermediate commander B each of the subordinates C. It is at this point

that the intermediate commander can bring in his judgements of the performance of his subordinates (Cs) to assist the superior-once-removed in his own decision about their potential.

The superior-once-removed would be required to make and to record two assessments, in the form of answers to these two questions:

i. Current potential: if the officer being assessed had had the necessary training and experience, at what grade do you judge he would be capable of working at the present time (whether his existing grade, or a lower or a higher grade)?

ii. if the officer being assessed were to have the necessary training and experience, do you judge he would ever be capable of promotion to a grade higher than that you stated in reply to the previous question, and, if so, within how many years?

There is substantial experience to show that superiors-once-removed are capable of making such judgements if they are competent in their own posts; and they should requisitely have the duty of doing so.

Given these two judgements, made annually, it becomes possible to accumulate a series of judgements by a succession of superiors-once-removed which can be plotted to produce a vivid picture of the evolution of an officer's judged potential. The graph is highly discriminating with respect to age - a factor which is ordinarily not sufficiently taken into account in comparing individuals with respect to potential.

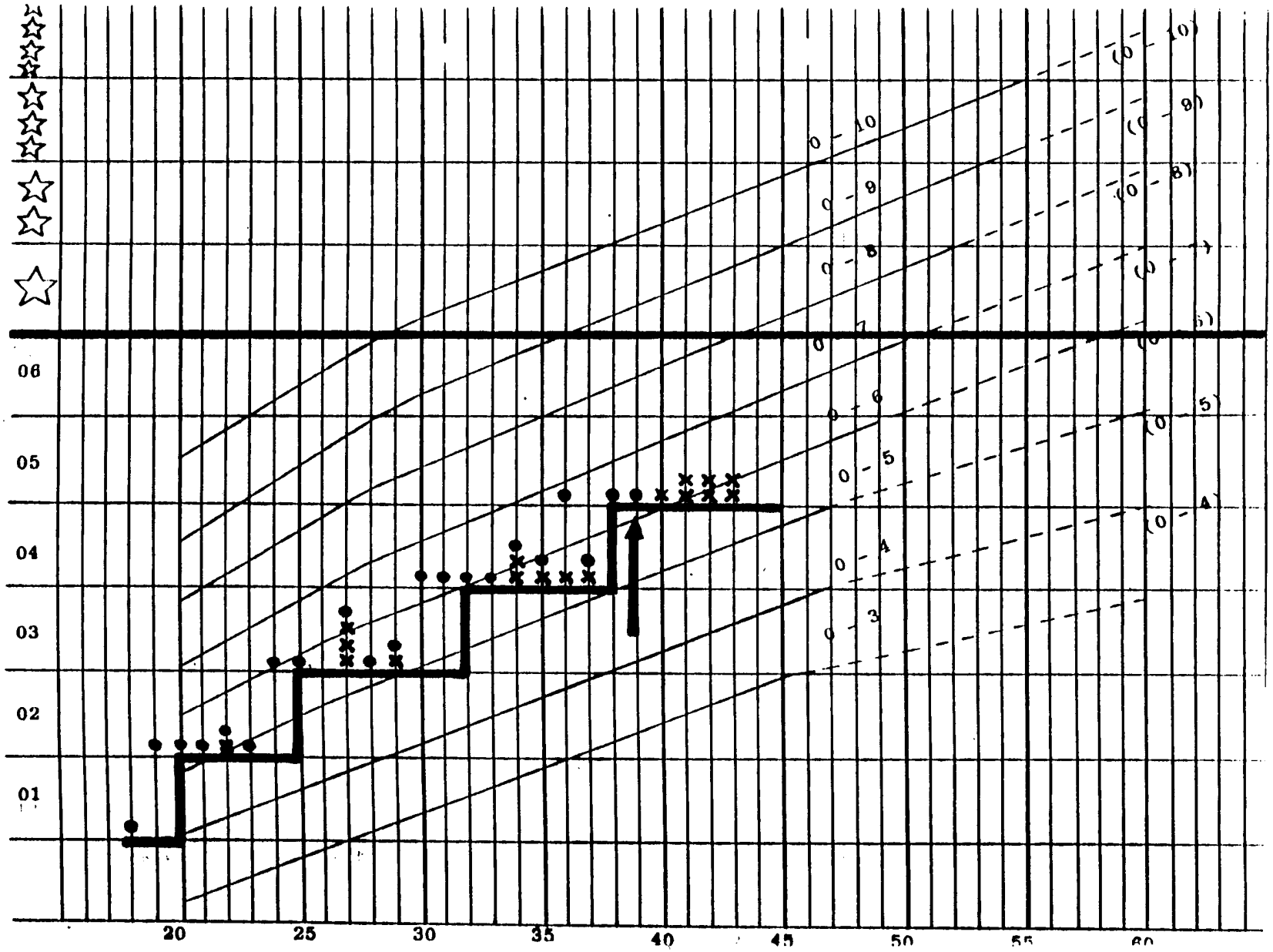
Three illustrative charts are given, constructed by transforming data from industry into their Army equivalents. The data show the successive judgements of superiors-once-removed about current potential; and the crosses show judgements about future potential. The thick stepwise lines show the grade of the individual's current position.

The illustrations which have been chosen, show three individuals all working at the equivalent O-5, one aged 36, and two aged 39. The sloping curves have been drawn from experience in non-military institutions of many kinds in many different countries, which has shown that individuals who eventually succeed in reaching levels of work consistent with their potential, show regular and predictable paths of development in assessed potential from very early in their careers. Moreover, these paths are the ones actually followed by individuals who have been fortunate enough to have had career opportunities to work consistently at their full potential in jobs that felt just right for them.

It will be seen from examination of these three illustrative cases, that the cumulative assessments of one individual

judge him potentially to be headed for an O-6 level of work, by say age 47 - 50; a second individual is judged to be capable currently of an O-6 level of work and to be headed for O-7 level by about age 42 - 45, and eventually to an O-8 level by about age 50; and the third (and youngest) is judged to be currently capable of an O-7 level of work (even though he is only working at O-5), and to be headed for O-8 at about 42 - 45, and O-9 by say 50 (he is one of the potential leavers unless promoted pretty quickly!).

Cumulative judgements of this kind, if expanded by a form allowing for brief descriptive comments by superiors-once-removed, give selection panels the kind of data they require. Separation of this process from the conditional review and appraisal of performance by immediate superiors, can leave the delicate mentoring process intact, while providing in a practical way for assessment of potential.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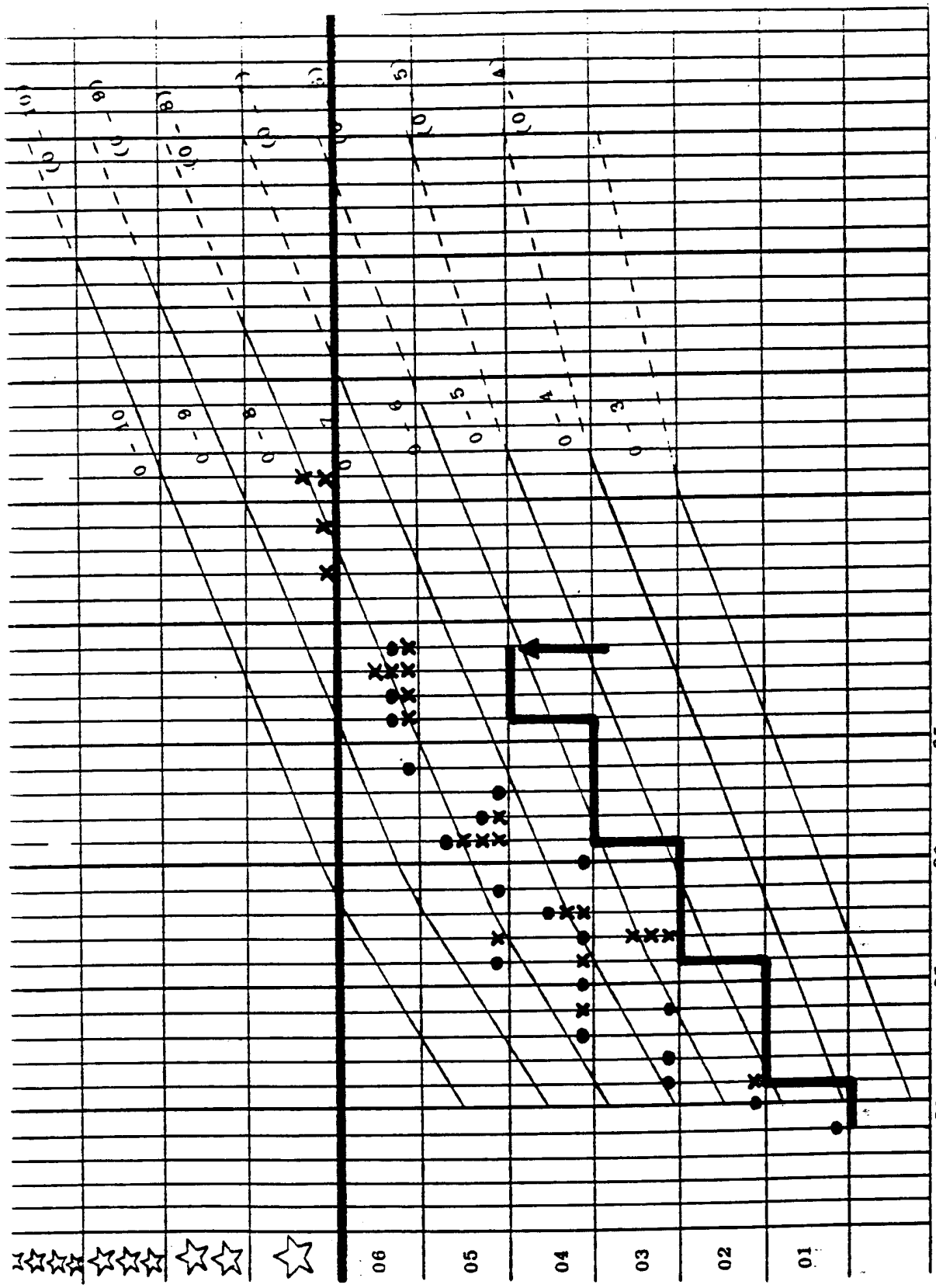
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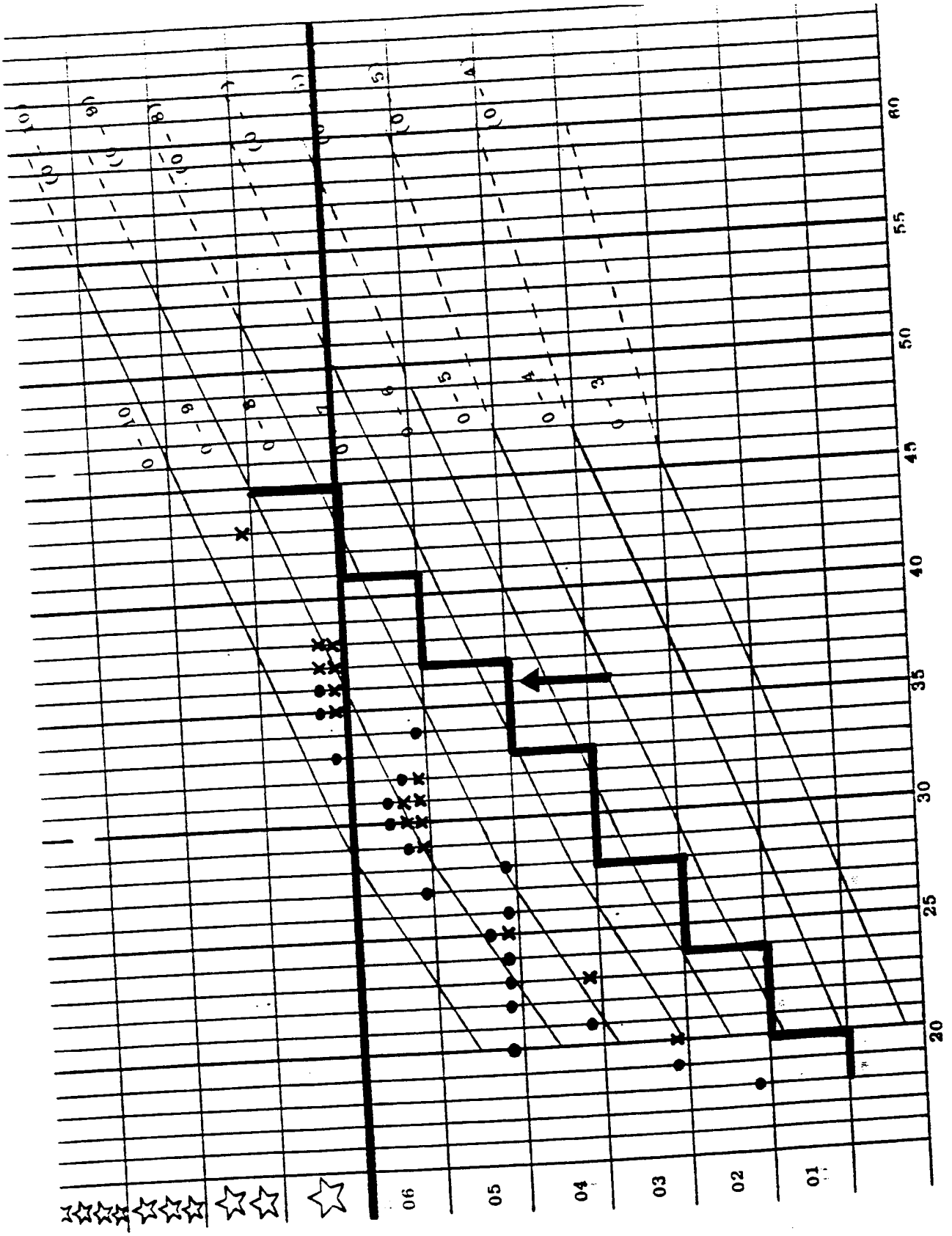
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SECTION 2

The Implications of Stratified Systems Theory for Military Leadership

The applications of Stratified Systems Theory to military systems are under active study in a number of different settings. In this section we consider the implications for military leadership.

A. Minimum Conditions for Effective Leadership

The areas of work relevant to an understanding of how to establish the minimum conditions for effective leadership include:

Organisation:

- Universal application of the Army structure of seven command levels;
- Structure and role specification of -

  Strategic command: Army and Corps command levels;

  General command: Division and Brigade command levels;

  Direct command: Battalion and Company command levels.
- On-the-ground organisation of NCOs, WOs, Specialists, Privates.
- Command systems and collegial functioning.

Vision up to power down.

Leadership training and development at all levels.

Assessment of individual capability and working mode, and early identification of high-level officer potential.

Selection, progression and general training.

Streamlining of information, communication and control systems.

Processes of planning and decision-making under combat conditions of time and space compression.

Performance appraisal (separated from capability appraisal).

Differential pay (and civilian comparability).

Sustaining of loyalty, will to fight, and ethical values.

Individual mentoring.

Cohesion-building institutions and processes.

B. Commanders, Managers and Leadership

Commanders and Managers

Command and management are both functions of hierarchical systems in which individuals are employed in order to carry out specified tasks:

- command is connected with military institutions;
- management is connected with civilian institutions.

The starting point for both types of institution is the establishment of superior-subordinate relationships, in which superiors are held accountable for the quality of performance of their subordinates. They must have the authority to match their accountability:

- superiors must have a higher level of capability than their subordinates so as to be able to set the context for their work;
- it is this higher level of capability which enables the superior to understand and inform the subordinates and to be understood and informed by them, and enables the subordinates to understand and inform one another, and thus enables all to work together effectively.

	Military: Commander-Subordinate	Civilian: Manager-Subordinate
1. Veto on appointment	No	Yes
2. Decide tasks	Yes	Yes
3. Decide performance appraisal	Yes	Yes
4. Removal	Instructs(in combat)	Can initiate
5. Discipline	Article 15 Courts martial	Limited

In the Army, command should apply to all military personnel, whether in TO&E Units or in TDA Units. Managership should apply only to civilian personnel. Thus, Army officers who have both military and civilian subordinates will operate as commanders of the former and as managers of the latter. But all will operate within the general culture of a command system.

Contractual Accountability and Personal Responsibility

In peacetime, Armed Services can function well enough on a foundation of contractual accountability - what a person can be expected to do by virtue of the position he occupies.

In wartime, however, especially under combat conditions, contractual accountability is not enough:

- except for mercenaries, men will not kill and face death for contractual accountability alone;

- they require to exercise their own feelings of personal responsibility, deriving from their own personal sense of loyalty, patriotism, and commitment, and of cohesion within their immediate groups and associations and larger ones as well.

Unlike the differences in levels of capability required for effective superior-subordinate relationships, loyalty, patriotism and commitment are the equal heritage of all soldiers, and are not a function of rank or command; commanders are not necessarily better endowed than their subordinates in this respect.

Command and Leadership

All soldiers, at all levels, are accountable by virtue of contract to do a reasonable job for their pay:

- a good commander is one who sustains an effective superior-subordinate relationship with his subordinates, in the sense that he is competent to operate the command structure to ensure that the subordinates do all that they are accountable for doing; that is to say, they all do the work they are called upon to do, some enjoying it more than others.

Good leadership, however, goes much futher than good commandship:

- a good commander-leader is a commander who can arouse and release in his subordinates their own natural desires to work and to fight with spontaneity not solely because they are contractually accountable for doing so but because they feel personally responsible to their country, the Army, their Unit, and themselves, for doing so and get personal satisfaction from it;

- a good cammander-leader can mobilise his subordinates to express their personal sense of responsibility to the full.

C. Evidence from Industry

There is evidence from industry - from the Japanese experience, for example - that when employees work with feelings of personal responsibility in addition to doing what they are contractually accountable for doing, there are very substantial gains both in individual satisfaction in work, and in productivity, quality, innovativeness, and stewardship concern.

Two sets of conditions are required:

- first, effective hierarchical organisation and manager-subordinate relationships;
- second, mitigation of the hierarchical structure, by mentoring and individual development and by non-hierarchical associations which support group cohesion.

The conditions for good managership include:

- requisite hierarchical organisation;
- sound planning, task-setting, and communication;
- good selection and assessment of individuals;
- good matching of jobs and individual ability;
- effective performance appraisal;
- fair differential payment.

The conditions for good managerial leadership include:

- social bonding by means of associations and association-type activities cutting across work-strata, across department boundaries, and across lines of command; for example:
  - quality circles;
  - in-work-time training and education;
  - common social amenities - canteens, washrooms, dress, working conditions;
  - employee-administered benevolent schemes, housing schemes, sports facilities, etc;
  - representative systems for employee participation in policy-making;
- a personally-motivated and continual mentorship relation sustained by the superior towards subordinates based upon genuine human concern and directed towards supporting the subordinates' own desires for self-development and self-realisation.

D. Main Conditions for Effective Military Leadership

Sound leadership calls for individuals with the necessary personal qualities, knowledge, skill, experience, and level of capability, to develop effective and understanding relationships with their subordinates. But the conditions of requisite command organisation structure and of mentoring and cohesive

associations are as essential a foundation for leadership in the Armed Forces as they are in industry:

- without these conditions leadership is inhibited or thwarted, or may become misdirected.

Soldiers require leadership which is organised and carried out within a clear command structure but whose foundation lies in:

- the social cohesion that comes of being members of associations concerned with the fighting, such as:
  - being members of the same regiment;
  - coming from the same community or locality;
  - being responsible citizens of their country;
- their commander's ability to sustain a mentorship outlook and relationship, especially in the heat of battle, using the command structure as the framework for maintaining order:
  - this mentorship ability in battle is a common theme that appears when officers describe the qualities of those immediate commanders whom they considered to be outstanding leaders in the heat of battle.

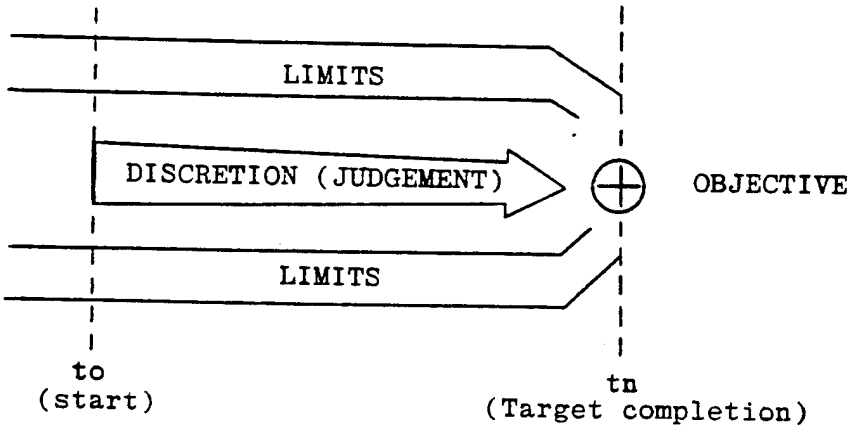
Good command leadership requires, therefore, two main sets of conditions: an effective organisational context; effective superior-subordinate relationship:

- the necessary organisational context includes:
  - adherence to the Army structure of seven command levels so as to maintain a lean organisation structure;
  - vision up to power down;
  - command-level specific information systems, and use of state-of-the-art information technology for communication and education;
  - collegial modes of functioning at strategic command levels;
  - development of appropriate institutions for infusing unit cohesion;
  - process of performance appraisal by immediate superiors, separate from that of assessment of potential by superiors-once-removed and selection and career development processes to ensure the matching of individuals to positions at all levels;

- the necessary superior-subordinate relationships include:
  - two-way information processes for conveying understanding;
  - superiors capable of operating at the next higher level of abstraction from their subordinates, so that rational order can be maintained by virtue of the command structure while information can be shared so that differences can be understood and sorted out;
  - continual mentoring with performance appraisal.

Work

Exercise of discretion within prescribed limits (policies, rules, regulations) to balance pace and quality in reaching an objective within a targeted completion time.



Level of Work = Time-span of Discretion

Measured by those tasks in a position which have the longest target completion times.

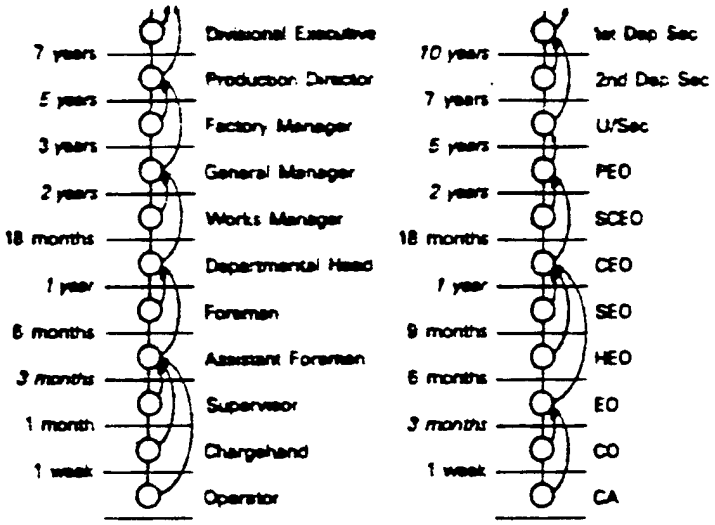
In military systems the longest tasks will be found in training and in garrison conditions.

In combat there is an enormous compression both of time and of space.

Time-span gives objective measure of:

- Level of work
- Level of responsibility
- Complexity of work
- Complexity of information processed.

TIME-SPAN REVEALS REGULAR STRUCTURE OF MANAGEMENT LEVELS



Everyone in a role below 3-month time-span feels the occupant of the first role above 3-month time-span to be his real manager; between 3-month and 1-year time-span the occupant of the first role above 1-year time-span is felt to be the real manager; between 1- and 2-year time-span, the occupant of the first role above the 2-year time-span is felt to be the real manager; between 2- and 5-year time-span, the occupant of the first role above the 5-year time-span is felt to be the real manager; between 5- and 10-year time-span, the occupant of the first role above the 10-year time-span is felt to be the real manager.

TIME-SPAN	STRATUM		
(?) 50yrs	Str-8	Super Corpn	Chiefs of Staff
20yrs	Str-7	Corporation	Army
10yrs	Str-6	Group	Corps
5yrs	Str-5	Subsidiary	Division
2yrs	Str-4	General Mgt	Brigade
1yr	Str-3	Unit	Battalion
3 mths	Str-2	Section	Company
	Str-1	Shop Floor	Squad

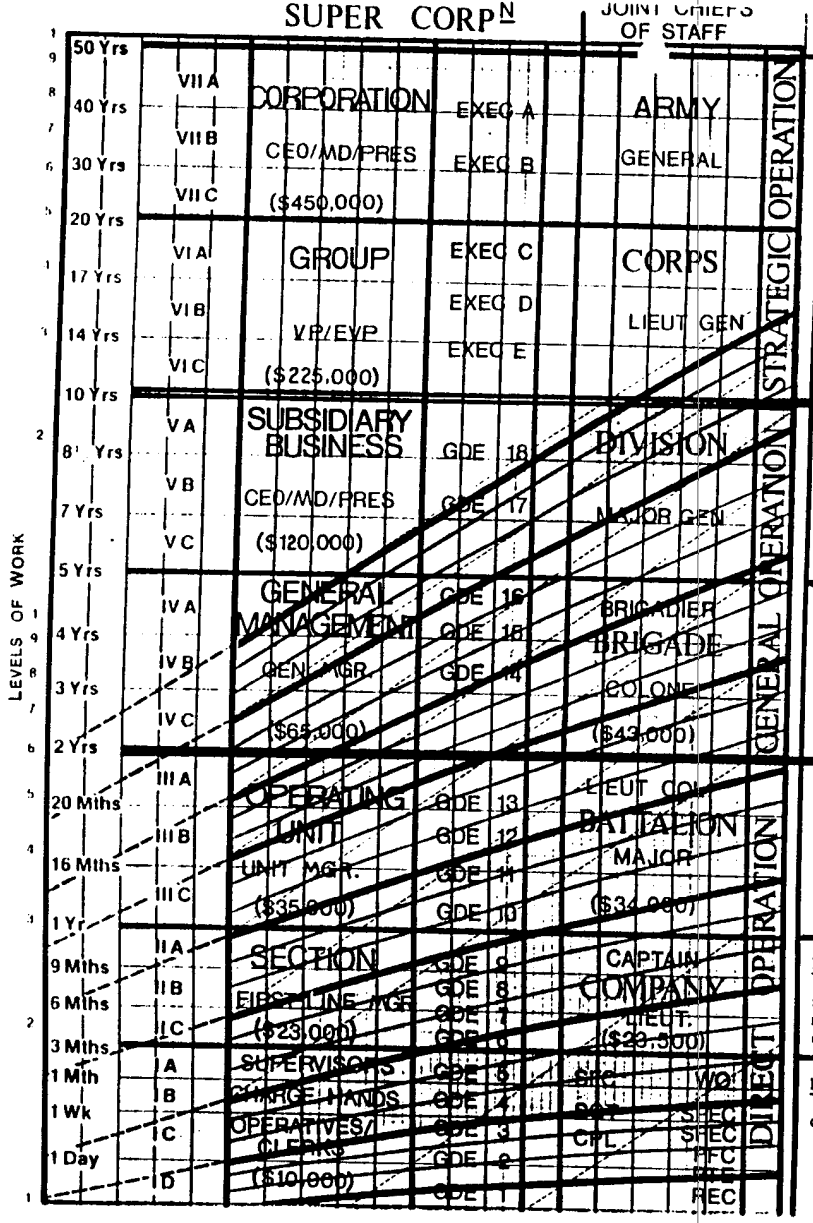
This regularity - and it has so far appeared constantly in over 100 studies, points to the existence of a structure underlying bureaucratic organisation, a sub-structure or a structure in depth, composed of managerial strata with consistent boundaries measured in time-span as illustrated.

MAJOR HYPOTHESIS

DISCONTINUITY: Discontinuity in Organisation Levels occurs because of Discontinuities in Human Populations in the way that people construct the world they work in.

WORKING MODES: These discontinuities in capability group into a stratified hierarchy of qualitative differences in psychological modes.

Stratum	Time-Span		WORKING MODE	
VIII	50yr	STRATEGIC MODE OF OPERATION	General System of Strategic Design: can operate general system of connections between the development and the deployment of groups of complex systems.	Joint Chiefs of Staff
VII	20yr		Strategic Design for Development or Deployment of Complex Systems: can create a strategic context for the development or deployment of complex systems.	Army
VI	10yr		Direct Deployment of Complex Systems: can develop or deploy a plurality of complex systems.	Corps
V	5yr	GENERAL MODE OF OPERATION	Complex Systems (a social system such as a Division or a Business Unit, or a general theory): can not only operate a complex system, but can modify the context within which that system functions and cope with any consequential 2nd & 3rd order readjustments required.	Divn.
IV	2yr		Alternative Operating Systems: can operate a contrasting and comparing of paired alternative operating systems, and thus of alternative modes of deploying or modifying such systems.	Bde.
III	1yr	DIRECT MODE OF OPERATION	Direct Operating System: can mould given direct operating tasks and given operating methods into a functioning system of direct work, and adjust that system as necessary to cope with change trends.	Bn.
II	3m		Direct Operating Methods: can put together and program a series of direct operating tasks, choose the methods for those tasks, and change program or methods as required by the situation.	Coy.
I	1d		Direct Operating Tasks: work directly upon physical objects, or serve people, one task at a time.	NCO WO Spec. Pte.



WORKING MODES	OPERATIONAL WORK
Strategic Design for Development or Deployment of Complex Systems: can create a strategic context for the development or the deployment of complex systems.	**Strategic command:** develops strategic designs for the operation of Corps and Div and for modifying them by regrouping Divs or Bdes within Corps: determines relationships with populations and national leaders. In longer term sets strategic framework for new types of Div in connection with technological, social and political changes.
Direct Deployment of Complex Systems: can develop or deploy a plurality of complex systems.	**Strategic interpretation:** transform strategic design into operational plans for Div: co-ordinate support activities determining when to assign support groups to Div, when to transfer them, and when to keep them at Corps: maintain political admin relationships with local community: operate within collegial relationships in strategic command.
Complex Systems (a social system such as a Div or a Business Unit, or a general theory): can not only operate a complex system, but can modify the context within which that system functions, and cope with any consequential 2nd and 3rd order readjustments required.	**Strategic implementation:** highest level of unified team and lowest level of comprehensive military function: dual role: independent operation within Army strategy, and active renegotiation of that strategy: alter battle tactics and the structure and deployment of Bdes and Bns within strategy.
Alternative Operating Systems: can operate a contrasting and comparing of paired alternative operating systems, and thus of alternative modes of deploying or modifying such systems.	**Battle command:** general command of battle: ensure Bns effectively deployed and resourced: continual collateral interaction with neighbouring Bde Cmdrs, and mutual readjustments: keep alternative deployments and alternative task-force arrangements continually under review: redeploy and reorganise Bns and task forces as required.
Direct Operating System: can mould given direct operating tasks and given operating methods into a functioning system of direct work, and adjust that system as necessary to cope with change trends.	**Direct command:** weld Bn into cohesive force of people familiar with one another: keep a steady trend extrapolation of the course of battle: adapt both the deployment of Coys and the arrangement of materiel and personnel between Coys so as to make most effective arrangements of resources under rapidly changing conditions.
Direct Operating Methods: can put together and program a series of direct operating tasks, choose the methods for those tasks, and change program or methods as required by the situation.	**Operating methods:** determines which of given methods to use in particular situations of attack, defense, reconnaissance; e.g. particular use of mortar, rifle, red-eye squads: deals with immediate problems in action on the spot.
Direct Operating Tasks: work directly upon physical objects, or serve people, one task at a time.	**Direct operations:** foot soldiers, gunners, vehicle operators, engineers, signals, repair technicians, etc. etc., engaged in direct physical tasks. The non-reflective nature of the mode of work calls for continuous first-hand face-to-face contact with comrades and with squad and team leaders.

	OPERATIONAL WORK	LEADERSHIP
ARMY	Strategic command: develops strategic designs for the operation of Corps and Div and for modifying them by regrouping Divs or Bdes within Corps: determines relationships with populations and national leaders. In longer term sets strategic framework for new types of Div in connection with technological, social and political changes.	Internat[illegible]l outlook: Army Cmdr is of great importance to total command: epitomise personal qualities of commitment, loyalty, courage and will-to-win: express the American ethos, and publicly demonstrate confidence-stirring competence: win full support of Corps Cmdrs for strategic design.
CORPS	Strategic interpretation: transform strategic design into operational plans for Div: co-ordinate support activities determining when to assign support groups to Div, when to transfer them, and when to keep them at Corps: maintain political admin relationships with local community: operate within collegial relationships in strategic command.	Strategic consensus: sustain collaborative relationship with Div Cmdrs in elaboration of strategic design, and its modification in action: provide strategic support, materiel and political conditions, and intelligence, which enable Divs to operate effectively.
DIVISION	Strategic implementation: highest level of unified team and lowest level of comprehensive military function: dual role: independent operation within Army strategy, and active renegotiation of that strategy: alter battle tactics and the structure and deployment of Bdes and Bns within strategy.	General impact: make personality recognised and felt throughout the Div: regular ceremonial visits when possible: direct impact upon Bde and Bn HQs: must be seen to be concerned about conditions under which soldiers train and fight; ensure on-the-ground continuous direct leadership of soldiers by Coy Cmdrs and Pln and squad leaders.
BRIGADE	Battle command: general command of battle: ensure Bns effectively deployed and resourced: continual collateral interaction with neighbouring Bde Cmdrs, and mutual readjustments: keep alternative deployments and alternative task-force arrangements continually under review: redeploy and reorganise Bns and task forces as required.	Reinforcing activity: mainly through Bde Staff Offrs and Bn Cmdrs, with periodic field visits: maintaining adequately resourced Bns is a central requirement of Bde leadership, ensuring flow of ammunition and fuel, and repairs and replacement of equipment, and redeploying personnel as required.
BATTALION	Direct command: weld Bn into cohesive force of people familiar with one another: keep a steady trend extrapolation of the course of battle: adapt both the deployment of Coys and the arrangement of materiel and personnel between Coys so as to make most effective arrangements of resources under rapidly changing conditions.	Personal force: personally known to total Bn: direct command oscillating between command post and continual first-hand surveillance of action and contact with Coy Cmdrs and troops: encompassing direct command of staff.
COY	Operating methods: determines which of given methods to use in particular situations of attack, defense, reconnaissance; e.g. particular use of mortar, rifle, red-eye squads: deals with immediate problems in action on the spot.	Mutual knowledge: Coy Cmdr personally knows all his troops, their strengths and weaknesses, personal circumstances, fears and desires: maintains continuous command of groups - directly and through Pln, squad and team leaders.
SQUAD	Direct operations: foot soldiers, gunners, vehicle operators, engineers, signals, repair technicians, etc. etc., engaged in direct physical tasks. The non-reflective nature of the mode of work calls for continuous first-hand face-to-face contact with comrades and with squad and team leaders.	Face-to-face groups: extreme mobility and continuous problems require that Coy Cmdr be assisted by Pln, squad and team leaders who can hold face-to-face groups together under stress, see that they are on the correct move, and help them to overcome difficulties outside the drill and the training rule book.

APPRAISAL OF PERFORMANCE AND OF CAPABILITY AND LEADERSHIP TRAINING AND DEVELOPMENT

1. PERFORMANCE APPRAISAL BY IMMEDIATE COMMANDER

- Immediate Cdr is continually in contact with his subordinates, and has direct affective impact.
- Cdrs at all levels must know their immediate subordinates in the same way that the Coy Cmdr must know his troops.
- In addition to doing their own jobs effectively, Cdrs must know how their immediate subordinates are doing - and judge whether it is good enough or not.
- They must inform their subordinates of those judgments:

THIS IS PERFORMANCE APPRAISAL

2. CAPABILITY APPRAISAL BY CMDR-ONCE-REMOVED

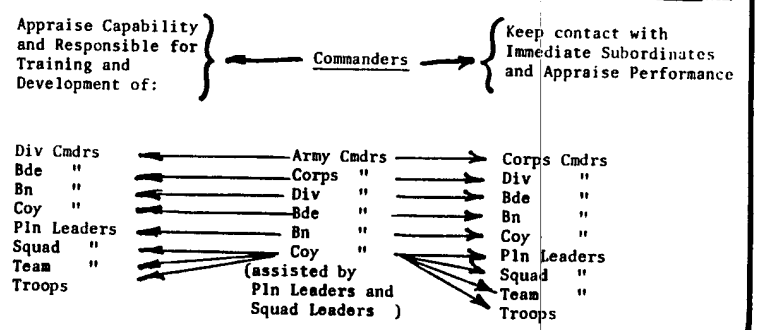
- Performance appraisal is the job of the immediate Cmdr.
- By contrast, it is the Cmdr-once-removed who must make the appraisal of actual and potential capability of his subordinates-once-removed.
- He is the one who must judge which of his subordinates-once-removed are likely to be capable of moving up to become immediate subordinates, and by when.

THIS IS APPRAISAL FOR SUCCESSION

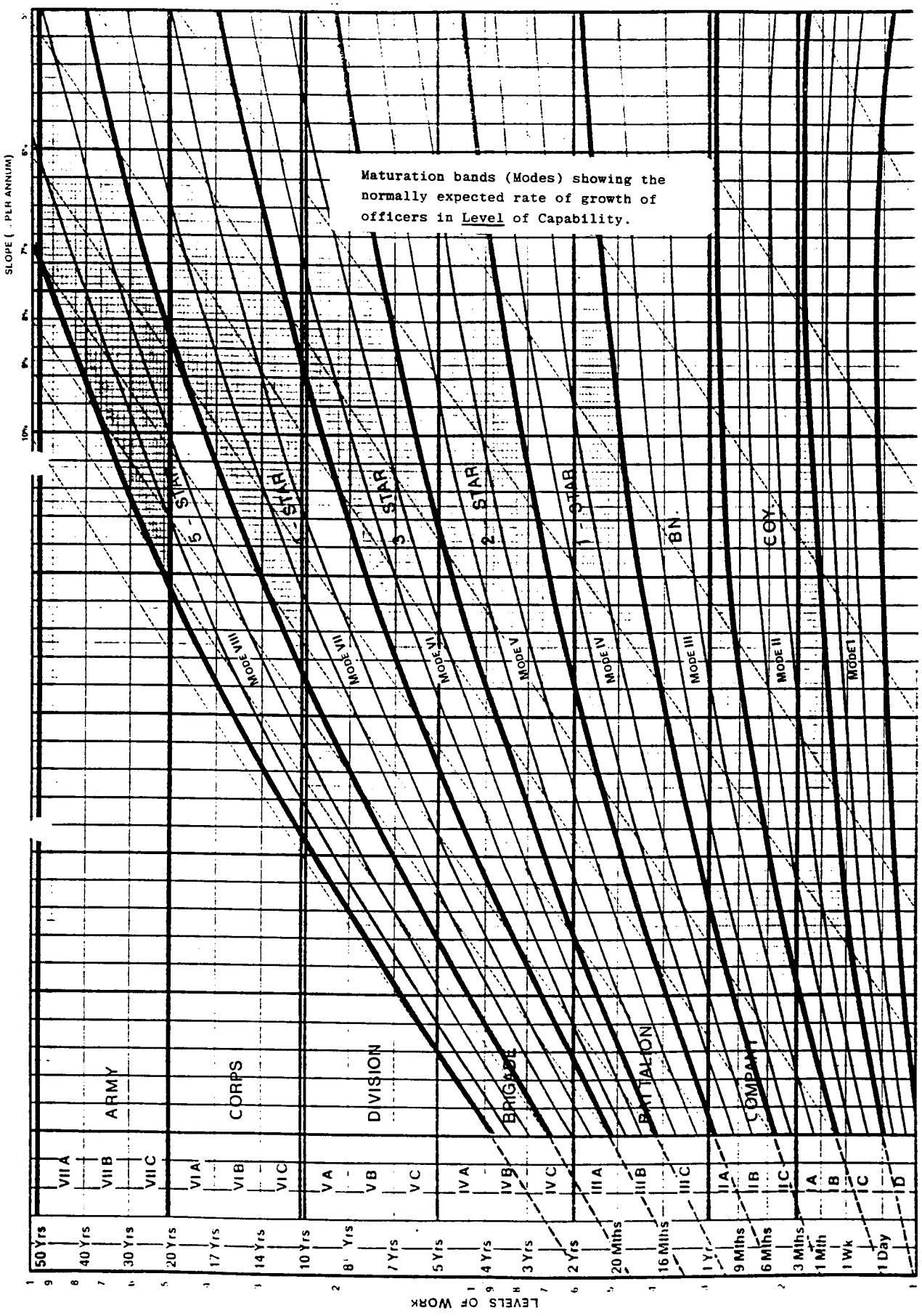
3. TRAINING RESPONSIBILITIES OF CMDR-ONCE-REMOVED

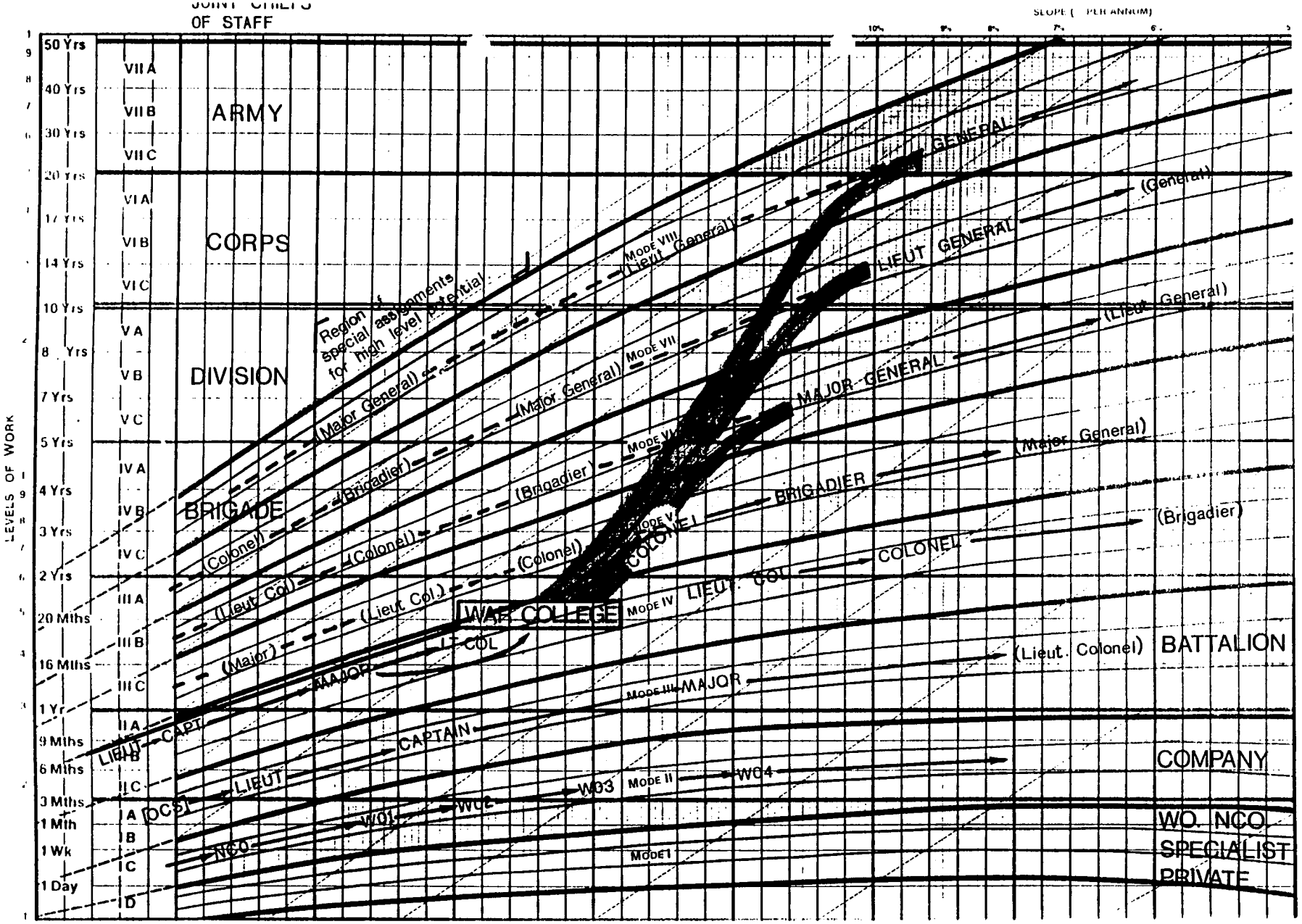
- By the same token, it is a prime act of leadership that the Cdr-once-removed must decide, arrange and control the training and development programmes for all his subordinates-once-removed.

THIS IS TRAINING FOR DEVELOPMENT



	OPERATIONAL WORK	PLANNING	INFORMATION/COMMUNICATIONS	ETHICS/VALUES
ARMY	Strategic command: develops strategic designs for the operation of Corps and Div and for modifying them by regrouping Divs or Bdes within Corps: determines relationships with populations and national leaders. In longer term sets strategic framework for new types of Div in connection with technological, social and political changes.	Strategic de: : formulation and evaluation of alternative ends so as to develop strategic design for operations, including gaining maximum international support before, during and after operations: aided by State Dept. representative (in implementation as well).	International settin state of morale of entire Army: civilian political and social situation: state of resources and equipment: planning of related Army Cmdrs. Communication down: clear statements of the state of the war and the task of the Army.	National value: embodiment of national ethics and values: outlined under leadership, which at this level is grounded in the manifest expression of ethics and values.
CORPS	Strategic interpretation: transform strategic design into operational plans for Div: co-ordinate support activities determining when to assign support groups to Div, when to transfer them, and when to keep them at Corps: maintain political admin relationships with local community: operate within collegial relationships in strategic command.	Immediate strategic objectives: next stages of operation with respect to the ends to be achieved and support likely to be required: taking into account assumptions about: advance, withdrawal, or holding; attack or defense; political circumstances, recourses.	Strategic opportunities: social and political background to the next steps: enemy strength and deployment: civilian political and social situation: inform Army Staff of strategic opportunities and problems of implementing strategic design: discuss strategic design with Div Cmdrs: send communications calculated to win support of civilian population.	Military political aims: keep focus of attention of Div Cmdrs on the political aims of the war, and on how to convey those values to the troops and to the civilian population through the activities of the troops: express these values consistently in treatment of civilian population and in negotiations with civilian leaders (GS).
DIVISION	Strategic implementation: highest level of unified team and lowest level of comprehensive military function: dual role: independent operation within Army strategy, and active renegotiation of that strategy: alter battle tactics and the structure and deployment of Bdes and Bns within strategy.	Control of 2nd and 3rd order effects: full-scale tactical planning for constituting his forces within strategic plans, in such a way as to take 2nd and 3rd order effects into account: continual evaluation of extent to which 2nd and 3rd order effects may require consequential modifications to strategy.	Unfolding of strategy: picture of strategic design and its purpose, threat force and its courses of action, local civilian situation: provide Corps Cmdr with picture of soundness of strategic design or of need for modification: communicate strategic design unequivocally to subordinate Cmdrs.	Role and purpose of Army: maintain Div policies and a social system imbued with an understanding of the purpose of the Army and its role in combat, and its values and ethics with respect to the treatment of civilians and PoWs.
BRIGADE	Battle command: general command of battle: ensure Bns effectively deployed and resourced: continual collateral interaction with neighbouring Bde Cmdrs, and mutual readjustments: keep alternative deployments and alternative task-force arrangements continually under review: redeploy and reorganise Bns and task forces as required.	Planned alternatives: planning and evaluation of alternative systems of deployment, flow of resources, intelligence, personnel, replacements to the field.	Alternative possibilities: needs Div strategic framework, position and circumstances of other Bde Cmdrs, availability of resources and support units, and disposition of threat forces: organises running account of tactical situation: informs Div on battle situation: proposes collateral adjustments to colleague Bde Cmdrs: issues tactical instructions.	Ends-means conflict: basic ethical and value dilemma "when do the ends justify the means?" Conflict between the demands of the general policy systems and the human demands of the people concerned; eg. "to obey the rules - or to behave with humanity".
BATTALION	Direct command: weld Bn into cohesive force of people familiar with one another: keep a steady trend extrapolation of the course of battle: adapt both the deployment of Coys and the arrangement of materiel and personnel between Coys so as to make most effective arrangements of resources under rapidly changing conditions.	Tactical plans: knowing how to use Staff, how to get best allocation of materiel, personnel, and specially assigned sections to each Coy in the light of battle tactics and situation: gets resources in line with controlled rate of supply: decides optimum distribution of ammunition, fuel, spare parts, replacement equipment, maintenance support to Cmdrs.	Operation trends: receives written instructions on tactical assignment, and how it relates to other Bns; regular first-hand observations of field, and verbal information from Coy Cmdrs in the field: uses Staff to construct picture of trend of operation, and informs Bde and Coy: emergency demands to Bde for resources.	Personal exemplary: embodiment of everything the Army stands for: sets example, for officers and troops alike, in own behavior and in handling of appeals and summary justice, with respect to human concern, loyalty and courage, including treatment of civilian population and PoWs.
COY	Operating methods: determines which of given methods to use in particular situations of attack, defense, reconnaissance; e.g. particular use of mortar, rifle, red-eye squads: deals with immediate problems in action on the spot.	Action plans: which combination of concrete direct operations to assign in deploying his various sections: eg. creating a loading plan: gets resources as distributed by Bn Staff in course of action: ammo, fuel repair parts, maintenance support.	Aggregated data: immediate objective and resources in terms of allowing immediate translation into methods of direct operation: continuous first-hand observation of action: gives verbal instructions and reports.	Personal behavior: continuous expression of fairness, justice and good conduct in Coy Cmdrs' behavior: in assignments to individuals and sections, in disciplinary action, and in first-hand expression of approval or disapproval: fair handling of differences between NCOs and men.
SQUAD	Direct operations: foot soldiers, gunners, vehicle operators, engineers, signals, repair technicians, etc. etc., engaged in direct physical tasks. The non-reflective nature of the mode of work calls for continuous first-hand face-to-face contact with comrades and with squad and team leaders.	Task plans: ensure that equipment is in order: plan a workable task sequence.	Instructions: clear and specific instructions in concrete terms of just what is to be done by each person - communicated verbally face-to-face in platoons, squads or teams.	Human relations: the fairness and justice of the barrack room: Pln and squad leaders express ethics and values in actions and in approval and disapproval: behavior must be suffused with positive human values if the loyalty of the soldier is to be won.


Maturation bands (Modes) showing the normally expected rate of growth of officers in Level of Capability.
SLOPE (PER ANNUM)
LEVELS OF WORK
50 Yrs
40 Yrs
30 Yrs
20 Yrs
17 Yrs
14 Yrs
10 Yrs
8 Yrs
7 Yrs
5 Yrs
4 Yrs
3 Yrs
2 Yrs
20 Mths
16 Mths
1 Yr
9 Mths
6 Mths
3 Mths
1 Mth
1 Wk
1 Day
VII A
VII B
VII C
VI A
VI B
VI C
V A
V B
V C
IV A
IV B
IV C
III A
III B
III C
II A
II B
II C
I A
I B
I C
D
ARMY
CORPS
DIVISION
BRIGADE
BATTALION
COMPANY
6 STAR
5 STAR
4 STAR
3 STAR
2 STAR
1 STAR
BN.
COY.
MODE VIII
MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I


JOINT CHIEFS OF STAFF
SLOPE (PER ANNUM)
LEVELS OF WORK
50 Yrs
40 Yrs
30 Yrs
20 Yrs
17 Yrs
14 Yrs
10 Yrs
8 Yrs
7 Yrs
5 Yrs
4 Yrs
3 Yrs
2 Yrs
20 Mths
16 Mths
1 Yr
9 Mths
6 Mths
3 Mths
1 Mth
1 Wk
1 Day
VII A
VII B
VII C
VI A
VI B
VI C
V A
V B
V C
IV A
IV B
IV C
III A
III B
III C
II A
II B
II C
A
B
C
D
ARMY
CORPS
DIVISION
BRIGADE
BATTALION
COMPANY
WO. NCO. SPECIALIST PRIVATE
Region of special assignments for high level potential
MODE VIII
MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I
GENERAL
LIEUT GENERAL
MAJOR GENERAL
BRIGADIER
COLONEL
LIEUT. COL
MAJOR
CAPTAIN
LIEUT
W04
W03
W02
W01
NCO
(General)
(Lieut General)
(Major General)
(Brigadier)
(Colonel)
(Lieut Col)
(Major)
(Lieut. Colonel)
WAR COLLEGE
LIEUT - CAPT
(DCS)

E. Summary of Main Conditions

1. Sustain the Army seven-level command system, and extend it to TDA as well as to TO&E organisation, to help to ensure that commanders are operating at the next higher level of abstraction than their subordinates so that rational order can be maintained by virtue of command structure.

2. Ensure senior leadership sets 20- to 25-year, 12- to 15-year, 6- to 8-year, and 3- to 4-year contexts, thereby giving the necessary vision to allow for power down.

3. Establish lean information systems which get the needed information to each command level in a form appropriate to that level and the situation.

4. Employ state-of-the-art technology for communication and for education and training.

5. Establish collegial modes of functioning at strategic command levels, and consultative modes at other command levels, to ensure that differences of view contribute to solutions and understanding and are not sources of conflict.

6. Develop a range of institutions, such as NM5, for infusing unit cohesion.

7. Differentiate the present OER system into two separate processes: performance appraisal by immediate commanders, as part of the on-going mentoring process; and cumulative assessments of potential by commanders-once-removed as the foundation for selection and career development of officers.

8. Firm establishment of individual mentoring as part of the development of officers at all levels.

Conclusion

It will be clear from the above that this report describes a number of pieces of work still in progress. In broad terms, we can conclude that Stratified Systems Theory with its emphasis on the interplay between the individual and the institution has significant implications for understanding and improving the effectiveness of military systems.

Our specific objective of testing the possible application in the military of our technique for assessing current and potential capability has been met. It is clear from the work at the British Army Staff College that the approach is acceptable to officers and as relevant to the deployment of capability in military as in industrial and commercial settings. Several ways in which this approach might eventually prove helpful to the officer career development system have been indicated by the research.

The follow-up of the civilian cohorts and the independent validation (see Appendix D) both indicate a firm basis for the approach and suggests that longitudinal studies in the United States military at all levels would be of value.

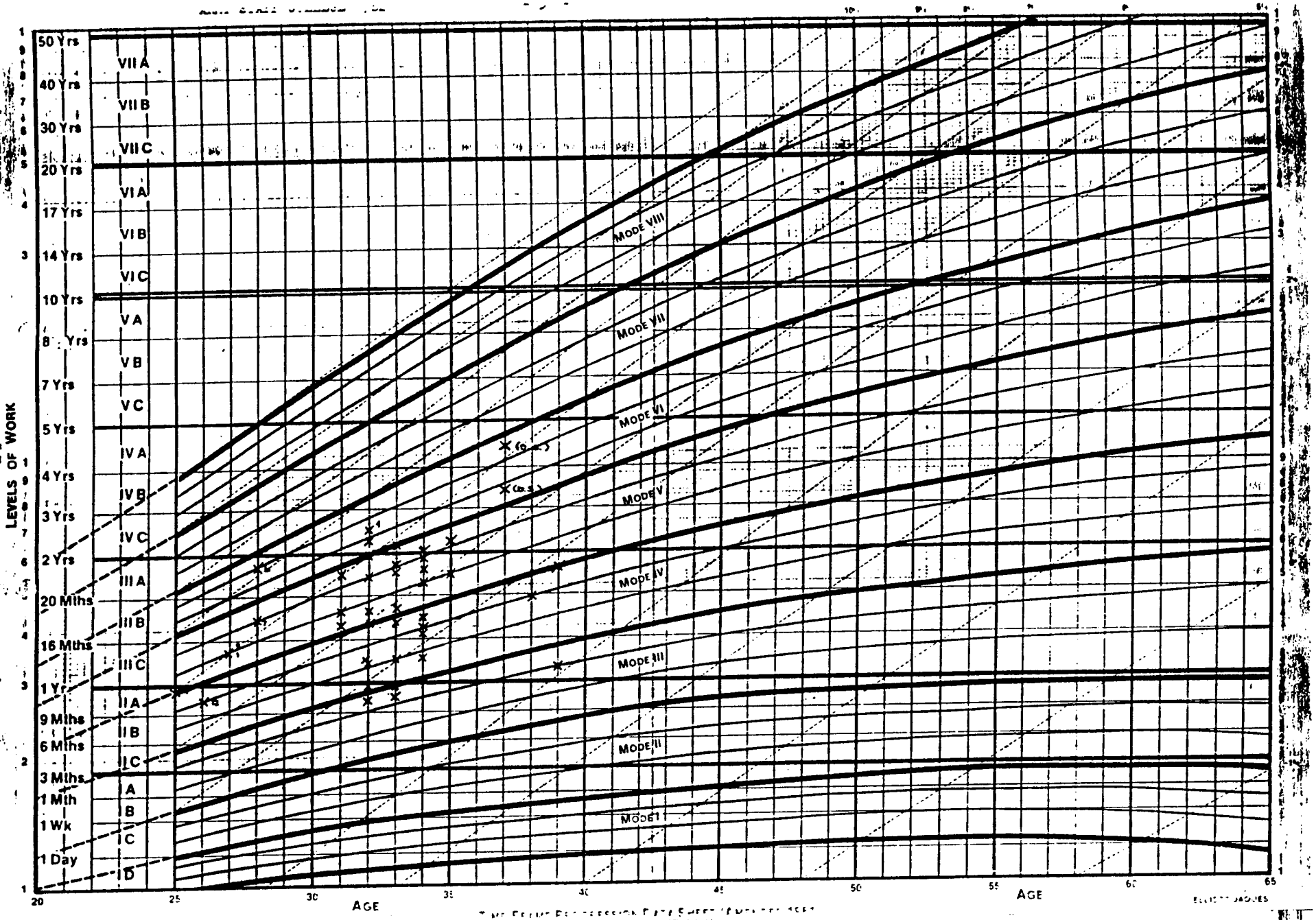
The first three years of examining the implications of Stratified Systems Theory for military systems seems to show considerable value for the military from this approach. Our current work includes studies of command and leadership, of the optimum number of levels for command, of collegial modes of functioning at strategic command level and consultative modes at others, of unit cohesion and of level specific information systems.

At this stage we feel that we have demonstrated significance for the military of a model which encompasses individual capability, development and institutional structure within one framework. Because of the focus on the interplay of individual and institution, Stratified Systems Theory integrates psychological, sociological and structural insights in one complex model. This model can then be used to predict and describe organisational relationships, successes, shortcomings and stresses.

The model is analytic. Unlike much social science, which moves from the descriptive to the general, Stratified Systems Theory uses an abstract analytic framework to predict organisational reality. Its application in industrial and commercial settings has been well attested over many years. We hope that our continuing work in the United States military will demonstrate its value in that setting.

APPENDIX A

Army Staff College Chart


LEVELS OF WORK
50 Yrs
40 Yrs
30 Yrs
20 Yrs
17 Yrs
14 Yrs
10 Yrs
8 Yrs
7 Yrs
5 Yrs
4 Yrs
3 Yrs
2 Yrs
20 Mths
16 Mths
1 Yr
9 Mths
6 Mths
3 Mths
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1 Wk
1 Day
VII A
VII B
VII C
VI A
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III C
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II C
I A
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I D
MODE VIII
MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I
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35
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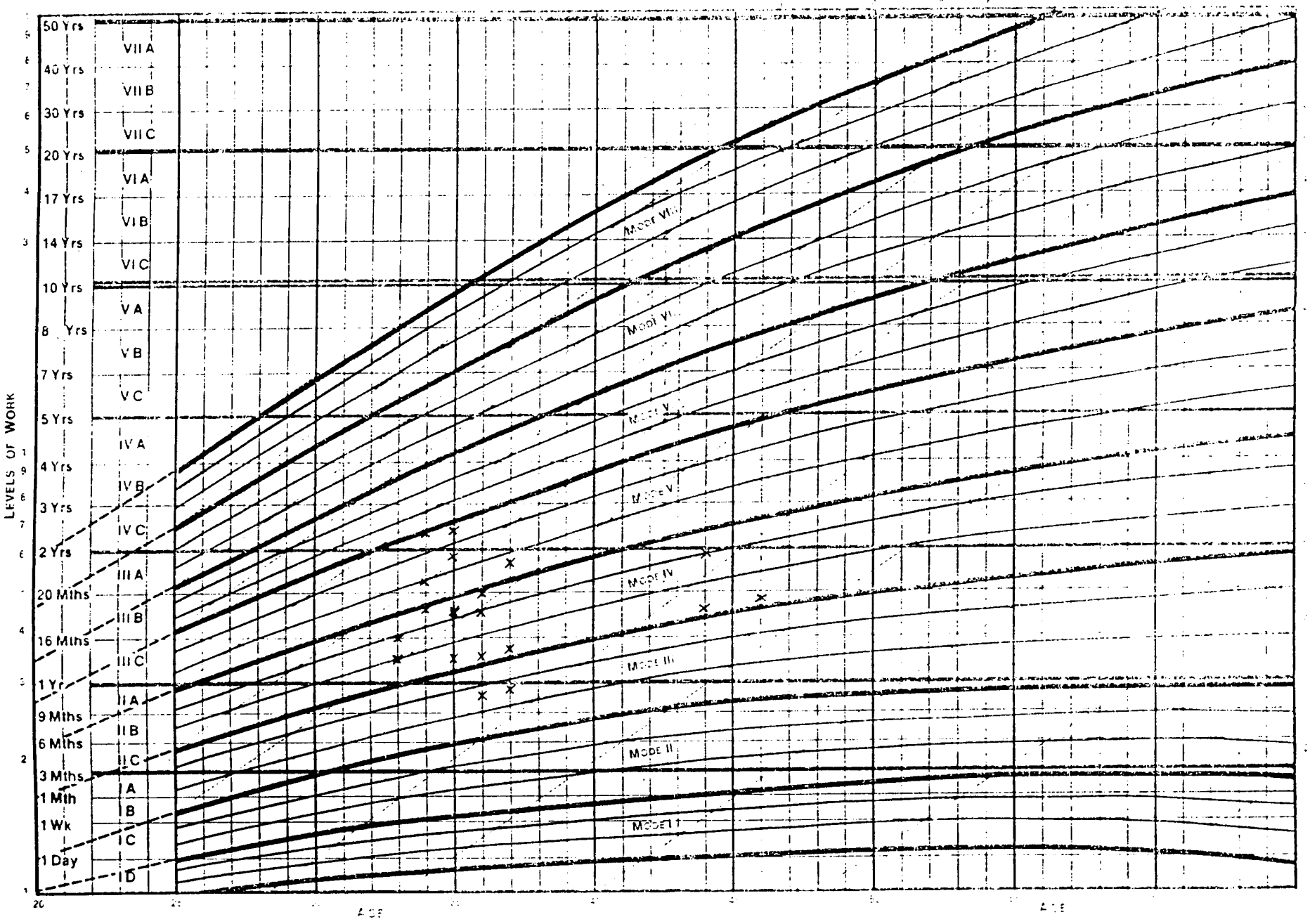
AGE
AGE
ELLIOTT JAQUES

APPENDIX B

RAF Staff College Chart


LEVELS OF WORK
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20 Yrs
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14 Yrs
10 Yrs
8 Yrs
7 Yrs
5 Yrs
4 Yrs
3 Yrs
2 Yrs
20 Mths
16 Mths
1 Yr
9 Mths
6 Mths
3 Mths
1 Mth
1 Wk
1 Day
VII A
VII B
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VI A
VI B
VI C
V A
V B
V C
IV A
IV B
IV C
III A
III B
III C
II A
II B
II C
I A
I B
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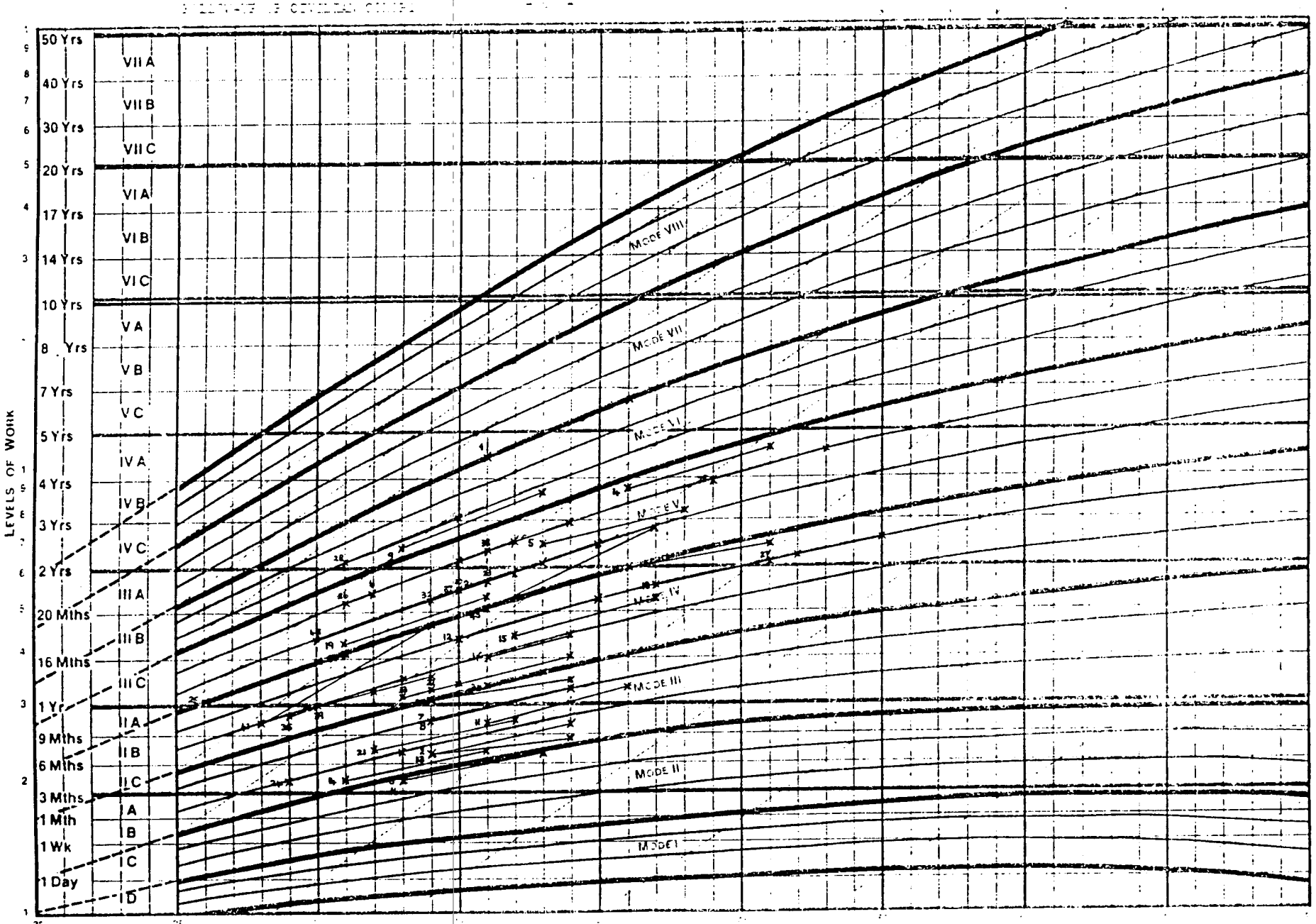
MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I
AGE

APPENDIX C

Follow-up of civilian cohort

43 subjects in all


LEVELS OF WORK
50 Yrs
40 Yrs
30 Yrs
20 Yrs
17 Yrs
14 Yrs
10 Yrs
8 Yrs
7 Yrs
5 Yrs
4 Yrs
3 Yrs
2 Yrs
20 Mths
16 Mths
1 Yr
9 Mths
6 Mths
3 Mths
1 Mth
1 Wk
1 Day
VII A
VII B
VII C
VI A
VI B
VI C
V A
V B
V C
IV A
IV B
IV C
III A
III B
III C
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II B
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D
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MODE VII
MODE VI
MODE V
MODE IV
MODE III
MODE II
MODE I

APPENDIX D

Validation Methods of Assessing Management Potential

IDENTIFICATION OF MANAGERIAL POTENTIAL THROUGH CAPABILITY ASSESSMENT

A. ALDRED and C.D. SUTTON

Norsk Hydro Fertilizers Limited, Felixstowe, Suffolk

SUMMARY:

For successful career development planning it is essential to identify people who possess high managerial potential at an early stage. Possible methods of identification used in the Fertilizer Division of Fisons Limited (now Norsk Hydro Fertilizers Limited) between 1976 and 1981 were correlated with an assessment of then current staff. The best predictor of potential was a measure of Managerial Capability, assessed through a technique developed at Brunel University. When combined with an organisational "acceptability" factor and an intelligence measure, sixty per cent of the variation of managerial ability could be accounted for.

INTRODUCTION:

A common problem in organisations is that, by the time potential senior managers emerge from, usually specialist, junior line management jobs, it is impossible to give them a broad enough experience to train them properly for the most senior posts in the organisation. The obvious answer of identifying potential senior managers at a very early point in their careers is full of difficulties. Apart from the very real dangers inherent in creating an elite group of crown princes, the basic problem is simply the lack of objective measures of managerial potential.

Measures of managerial potential used in our organisation included Assessment Centres, Intelligence Tests, Personality Inventories and Dynamic Strategy Assessment - a technique for assessing current and potential management capability developed by Gillian Stamp of BIOSS at Brunel University.

As our organisation lacked any quantified assessment of the value of the various instruments used in career development over a number of years, and as it was particularly interested in data collected in the early stages of Stamp's application of the capability assessment technique, it was decided in 1981 to analyse the available data in an attempt to quantify the predictive value of the tests used.

VALIDATION CRITERION

Since an immediate answer on predictive value was needed, it was not feasible to lock the data away for several years and then validate on objective data of managers' performance untainted by self fulfilling prophecy. Nor had enough time elapsed to indicate the validity of the predictions of managerial potential in the early stages.

Instead, a small team from the Personnel Department considered each person for whom career development data existed and subjectively assessed the highest level in the organisation that he or she was likely to attain if there were no constraints on promotion other than ability. That is, each individual was considered and the sum of the information available from level already achieved, from tests, from career development interviews, from job performance, (judged by his immediate manager and by more senior managers) was all mentally weighted and assessed. The individual was then assigned to the highest organisational level at which it was considered he had the ability to perform competently.

The levels used were the current salary-bands which, for the staff concerned, ranged from 16 (Graduate Entry) to 26 (Senior Director). This level was called "Considered Potential" and clearly was only valid for the management culture and known senior management preferences which prevailed at the time the subjective assessment was made.

DATA AVAILABLE:

Considered Potential assessments were made on 223 individuals; additionally the following data was available for most, but not all individuals:

Table 1

Data Available

	Test	Factors	Individuals
1.	AH5 Group Test of High Grade Intelligence (A.W. Heim)	2 parts and total	244
2.	Watson Glaser Critical Thinking Appraisal Form YM (G. Watson and E.M. Glaser)	5 parts and total	228
3.	Perception and Preference Inventory - PAPI (M.M. Kostick)	20 vectors	241
4.	Self Description Questionnaire (SDQ), Work Preference Questionnaire (WPQ), Job Climate Questionnaire (JCQ). (Measures of achievement motivation designed by S. Fineman).	3 values	215 207 210
5.	Acceptability Factor (Subjective score, made at the same time as the Considered Potential, of likely senior managers' views on the acceptability of the individual for a senior appointment i.e. personality as distinct from technical competence).	1 value	223
6.	Assessment Centre Rating (A summary rating of overall performance)	1 value	78
7.	Dynamic Strategy Assessment (Managerial Capability mainly assessed by Dr. G. Stamp. Values - Current Capacity, Potential Capacity and Type).	3 values	108

RESULTS

Initially all the available data were correlated with Considered Potential. The significant coefficients which resulted are shown in Table 2. More relevant parts of the correlation matrix and the number of pairs involved are given in Appendices 1 and 2.

These results showed that only a few factors were well related to Considered Potential and of these the Dynamic Strategy results were clearly outstanding.

Table 2 - Simple Correlation

Test	Correlation Co-efficient	Comment
1. AH5 (total)	0.39	Total was higher than either part
2. Watson Glaser (total)	0.35	Individual parts had coefficients from 0.14 to 0.37
3. Kostick PAPl Vector L	0.18	) Perception of leadership role
Kostick PAPl Vector P	0.18	) Need to control others
Kostick PAPl Vector S	-0.18	Sociability
Kostick PAPl Vector W	-0.24	Need for rules and supervision
4. Work Preference Questionnaire	0.22	Work Preference only was significant
5. Acceptability Factor	0.25	
6. Assessment Centre	0.16	
7. Dynamic Strategy Assessment		
(a) Current Level of Capability	0.64	Type was not significant
(b) Predicted Level of Capability	0.73	

A multiple regression was then carried out. The factors for this were chosen partly by inspection of the single correlation results and partly from the conviction that managerial potential was likely to contain a personality factor as well as a requirement for at least a threshold level of intelligence. The factors chosen were therefore Predicted Level of Capability from the Dynamic Strategy Assessment, AH5 Total, since this was the best intelligence measure, and Acceptability as the starting point for a personality factor.

The equation produced was:

$$\text{Considered potential} = 0.0575\ \text{AH5} + 1.18\ \text{Predicted Capability Level} + 0.198\ \text{Acceptability Factor} + 13.7$$

Where $S = 1.2$; $R = 0.75$ and $R^2 = 0.56$

Inspection of the fitted values for Considered Potential from this equation and their variance from the original values suggested that for two of the individuals there were reasons for a larger variance. For both the Dynamic Strategy Assessment had been made in difficult personal circumstances and was therefore suspect.

When these two values were omitted, the equation changed to:

$$\text{Considered potential} = 0.036\ \text{AH5} + 1.32\ \text{Predicted Capability Level} + 0.267\ \text{Acceptability Factor} + 13.8$$

Where $S = 1.06$; $R = 0.77$ and $R^2 = 0.6$

An attempt was made to reduce the subjectivity of the Acceptability Factor by replacing it with Kostick PAP1 vectors. From simple correlation of the 20 Kostick vectors with the Acceptability Factor ($n = 217$) only three were significant:

S (sociability)	$r = 0.20$
R (theoretical nature)	$r = -0.23$
D (interest in detail)	$r = -0.16$

When these vectors were substituted in the multiple regression programme instead of the Acceptability Factor, the equation which resulted was:

$$\text{Considered Potential} = 1.5\ \text{Predicted Level} - 0.18\ \text{Kostick D} + 15.9$$

Where $S = 1.09$, $R = 0.75$ and $R^2 = 0.57$

DISCUSSION

The aim of conducting this analysis of assessment instruments was to discover which of those in use over a period of five years were most useful in practice for identifying potential high-performing senior managers.

For this purpose the most important finding of the analysis was that the assessments of potential in our organisation required a combination of a high level of capability as measured by Dynamic Strategy Assessment and "acceptability" (in terms of perceived behaviour) within the organisation's culture.

The capability to work at different organisational levels is clearly different from intelligence as measured by an instrument such as the AH5 and the results of this analysis show that intelligence was only slightly related to Considered Potential. Intelligence alone is not a good predictor within an above average population but was a useful refinement of the capability measure.

The Watson Glaser Critical Thinking Appraisal added nothing to the assessment of general intelligence from the AH5. In this context there appears to be no value in attempting to further refine the measurement of intelligence.

The assessment of acceptability was based on the culture of the business at a particular period of time and views of acceptability will change, especially if there are major changes in what sort of behaviour is perceived by an organisation as an indication of effective management. This does not invalidate an attempt to assess this quality as it will always be important at the point of decision as to whether an individual is offered an opportunity to develop his or her managerial potential. This quality is probably the main factor assessed by selection interview or performance appraisal.

It would have been useful to find a standardised measure to substitute for "acceptability" and in this respect failure to find such a measure from the Kostick PAPI was disappointing.

It was also disappointing to find that achievement motivation as measured by Fineman's questionnaires did not figure as a significant factor in assessing

potential for senior management, perhaps because it cannot be easily associated with an observed behaviour pattern which makes up the subjectively assessed "acceptability" factor.

An assessment of Capability, however, which is independent of organisational culture, is a most powerful and reliable instrument to assist decisions which involve assessment of managerial potential at an early stage.

Stamp's approach to the assessment of Capability measures differences in the way individuals steer their action and the scale of context in which they are able to act. Capability in this sense is the individual's own ability to define his or her framework of operation in both time and space. This approach emphasizes the active involvement of individuals in the construction of their world and the importance of individual differences in translating intention into action. In a business context it is particularly related to the time period over which individuals have the ability to plan their actions, the breadth or span of control they have the ability to exercise and the level of uncertainty about decisions they are able to tolerate. Thus requirements of work at different levels in a large organisation are seen to demand different levels of capability.

The recognition of complementary phenomena of, on the one hand, levels of work differentiated by the time-span associated with them and, on the other hand, individual levels of capability to carry responsibility at these levels, are the outcome of forty years of research initiated by Elliott Jaques (1965 and 1976).

In the last ten years Stamp has developed a technique for assessing the individual's current capability to work at a given level. On the basis of evidence that this capability develops over time in accordance with regular individual growth curves (T. Kohler to be published) it is therefore also possible to predict the level at which individuals will be comfortable and competent at the height of their powers - our predicted level of capability. Details of the assessment technique and the extensive links between Stamp's work and other work on management style and development have been published elsewhere (Stamp 1978, 1980, 1981 and 1983). Briefly, Dynamic Strategy Testing uses self-description, a semistructured discussion of the subject's career history and aspirations

and a problem solving task. Throughout, the interest is not in success in problem solving but in the analysis of strategies generated and put into action during the process.

Assessment requires a minimum of one hour spent with each individual, and protocols require skilled analysis. Whilst this may appear to be an expensive way of assessing potential, the time and skill level required are by no means excessive and may be fitted into a rigorous selection procedure. Our results demonstrate that it was markedly more effective than the other measures of managerial potential used in our organisation.

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APPENDIX 1

CORRELATION RESULTS
and CORRELATION MATRIX

Correlation co-efficients

	AIIS (total)	Watson Glaser (total)	SDQ	JCQ	WPQ	Kostick PAPl L	Kostick PAPl P	Kostick PAPl S	Kostick PAPl W	Assessment Centre Rating	Predicted level of Capability	Acceptability
Watson Glaser (Total)	.52	-										
SDQ	0	.12	-									
JCQ	-.09	-.19	.04	-								
WPQ	-.02	.21	.28	.06	-							
Kostick PAPl L	-.11	-.04	.17	.18	.21	-						
Kostick PAPl P	-.01	-.01	.19	.06	.17	.50	-					
Kostick PAPl S	.02	-.05	-.04	.02	-.18	-.10	-.05	-				
Kostick PAPl W	-.04	-.01	-.31	-.08	-.23	-.20	-.39	-.09	-			
Assessment Centre Rating	-.06	.04	.08	-.07	.05	.22	.18	.06	.11	--		
Predicted Level of Capability	.47	.43	.24	-.10	.17	.19	.16	-.19	-.09	.22	--	
Acceptability	-.02	.01	-.07	.23	.02	.07	-.01	.20	-.02	.16	.10	-
Considered Potential	.39	.35	.15	.03	.22	.18	.18	-.18	-.24	.16	.73	.25

APPENDIX 2

CORRELATION RESULTS
and CORRELATION MATRIX

Numbers of Pairs

	AH5 (total)	Watson Glaser (total)	SDQ	JCQ	WPQ	Kostick PAPl L	Kostick PAPl P	Kostick PAPl S	Kostick PAPl W	Assessment Centre	Predicted level of Capability	Acceptability
Watson Glaser (Total)	224	-										
SDQ	211	212	-									
JCQ	203	204	207	-								
WPQ	208	209	210	205	-							
Kostick PAPl L	234	222	212	206	208	-						
Kostick PAPl P	234	222	212	206	208	241	-					
Kostick PAPl S	234	222	212	206	208	241	241	-				
Kostick PAPl W	234	222	212	206	208	241	241	241	-			
Assessment Centre Rating	78	78	78	78	78	78	78	78	78	-		
Predicted Level of Capability	108	87	81	80	81	103	103	103	103	52	-	
Acceptability	218	199	194	191	191	217	217	217	217	77	94	-
Considered Potential	218	199	194	191	191	217	217	217	217	77	94	212

APPENDIX E

Some Implications of Differences in the Capacity to Carry Responsibility

Some Implications of Individual Differences in the Capacity to Carry Responsibility

Dr. G. F. Stamp, Research Fellow, Brunel University, Uxbridge, Middlesex England.

Introduction

Differences between people in their capacity to work and carry responsibility at different levels within an organisation are generally accepted. However, individual differences are sometimes used in blanket fashion to apply to particular groups, for example, to women or to members of other cultures. A recent case study underlined for us the complex nature of the whole issue of individual differences particularly in members of non-Western cultures. It also gave us the opportunity to refine a model of individual differences and organisation structure which has been developed over the past thirty years. [1]

The opportunity arose when we were invited by the local subsidiary of an American company in Southern Africa to work with them on a programme designed to encourage the development of black members of staff into supervisory and managerial roles. Our approach to individual development has always set it in the context of the level of work at which someone can currently take responsibility and their view of the world or the level at which they will be competent and comfortable and their characteristic way of acting or the kind of work which best suits them. Focus on the person is therefore complemented by considering the nature of the various levels of work which will provide the setting for growth in the person's capacity to assume and exercise responsibility. In this particular case study we also took account of the cultural relativity theories of management [2] and the extensive cross-cultural work on differences in attitude, cognitive style, and

[1] E. Jaques, A General Theory of Bureaucracy (Heinemann Educational Books Ltd., London, 1976)

E. Jaques, Levels of Abstraction in Logic and Human Action (Heinemann Educational Books Ltd., London, 1978)

G. Stamp, Levels and Types of Managerial Capability, Journal of Management Studies (1981) 18, 3.

[2] G. Hofstede, Culture's Consequences - International Differences in Work-Related Values (Sage Publications, Beverly Hills.London 1980)

modes of thought.[3]

Our interest, however, was specific; we had been asked to help develop tools for spotting supervisory and managerial potential in black men and women in a particular company. We were concerned, therefore, with the practical application of ideas about differences in cognitive style and attitude in the context of management of an industrial company. In his pioneering work on the significance of cultural differences in management Hofstede[4] has distinguished four significant dimensions. At this stage our own material is not sufficiently extensive to warrant consideration of them all. However, the distinction he makes between one perspective which emphasizes competition, achievement and a calculative link to the organisation and another which emphasizes collaborative effort and a moral link to the organisation, has been a strong influence on our thinking about the relevance of our model for this particular case study.

Although the two aspects of our model - the individual and the organisational - are complementary, for ease of exposition I shall first present our ideas about individual differences and indicate how they were refined by the case study. I shall then go on to set them in the context of our model of organisation structure and to show how that also was given a new emphasis.

Section One - Individual Differences in the Capacity to Carry Responsibility

Different levels of work imply the need for people who are best suited for each level and are competent and comfortable to work at those levels. In order to think about individual differences in the capacity to do work and carry responsibility at different

[3] See for example:

H. C. Triandis and W. W. Lambert (eds.) Handbook of Cross-Cultural Psychology, Vol. 1., Perspectives (Allyn & Bacon, Boston 1980)

A. Marsella, R. G. Tharp, and T. P. Ciborowski (eds.) Perspectives on Cross Cultural Psychology (Academic Press Inc., New York, 1979)

[4] Hofstede op. cit.

levels in an organisation, we must have a clear definition of what we mean by 'work'. For Jaques[5] work is 'the exercise of discretion within prescribed limits'. Because this very concise definition is essential to understanding individual differences it must be elaborated. Prescribed limits exist in the world outside the person; they are rules, regulations, policies, practices or physical limits set by the nature of the work, the tools or the equipment.

The discretionary content of work is quite different. However closely the limits of the task are prescribed, each person will always have to use his or her own judgement in organising their work. They will have to think, judge, sense, feel, use their intuition and, above all, tolerate uncertainty and anxiety while awaiting the outcome of their work. Individual differences in the capacity to work at various levels arise from this discretionary content; that is to say from the way each person keeps an eye on all that is happening around them, balancing what they see as relevant with their intention to achieve a particular end.

Our earlier research suggested that these differences in exercising discretion are not simply an attribute of the person but are a function of the relationship between the person and their environment.[6] Each person's picture of the world is created by the knower and the known together. People do not simply receive information, they do not simply adapt, they are not even simply interacting with their world. They are constantly transforming it by their thoughts and their actions. This idea of a relative

5 E. Jaques, Work, Creativity and Social Justice, page 82, (Heinemann Educational Books Ltd., London, 1970)

6 This interactive or contextual perspective is now common currency in psychology, for example:

L. Vygotsky, Thought and Language (M.I.T., Cambridge, Massachusetts, 1962)

N. Bolton, Concept Formation (Pergamon Press, Oxford, 1977)

H. C. Triandis, Reflections on Trends in Cross-cultural Research, Journal of Cross-Cultural Psychology, Vol. 11, No. 1, page 36. (1980)

reality growing from the mutual transformation of the person and their world, emphasizes the importance of culture as the mediator between the raw material of experience and the person's own constructed world.[7]

Our model for understanding individual differences in the patterning of reality is based on ten years of statistical experimental work which gave rise to a matrix of fifteen different modes.[8] The matrix reflected five levels of context. With each extension of context to a new level a new way of functioning becomes available. Thus, at the first level of context there is one fully-fledged mode of functioning. Thereafter, as each new level of context emerges, it is accompanied by a new way of functioning.

7 See for example:

Marsella op. cit.

D. Price-Williams, Towards the idea of a Cultural Psychology, Journal of Cross-Cultural Psychology, Vol. 11, No. 1, pp 75 -88, (1980)

See also: R. Feuerstein, Instrumental Enrichment: An Intervention Program for Cognitive Modifiability, (University Park Press, Baltimore, 1980)

8 D. J. Isaac and B. O'Connor, Experimental Treatment of a Discontinuity Theory of Psychological Development, Human Relations, Vol. 22, No. 5, pp 427 - 455 (1969)

D. J. Isaac and B. O'Connor, Use of Loss of Skill Under Stress to test the Theory of Psychological Development, Human Relations, Vol. 26, No. 4, pp 487 - 496 (1973)

D. J. Isaac and B. O'Connor, A Discontinuity Theory of Psychological Development, Human Relations, Vol. 29, No. 1, pp 41 - 61, (1975)

G. P. Stamp and D. J. Isaac, Further Experimental Treatment of a Discontinuity Theory of Psychological Development (in press).

G. P. Stamp, Levels and Types of Managerial Capability op. cit.

Table I

Extension of Context	Modes of Functioning A	B	C	D	E
5	X	X	X	X	X
4	X	X	X	X	
3	X	X	X		
2	X	X			
1	X				

The extended levels of context can be thought of as a process of abstraction i.e. drawing away from concrete work. The modes of functioning as abstracting i.e. the relationship with the object of work at that particular level of context.

This purely theoretical matrix provided the framework for gathering individual psychological material. This material gave content to the matrix and made it possible for us to make two links: first, the persons' level of capability to the extent of the context they could encompass and, therefore, the level of work at which they would be competent and comfortable. Second, the persons' type of capability to modes of functioning and, therefore, the kind of work which best suited them.

For the purposes of the case study we wanted to set this model derived from Western society in the context of other modes of thought and action.[9] We therefore used the original card-sorting task but combined it with the subjects' self-description of their way of approaching work and with an opportunity for them

[9] For example:

R. Horton and R. Finnegan, Modes of Thought, (Faber & Faber, London, 1973)

R. Horton, African Traditional Thought and Western Science, Africa, 37, 50 and 155 (1967)

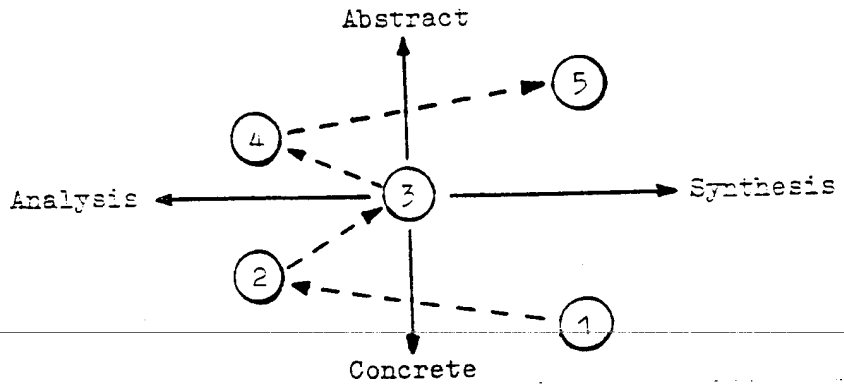
to tell a story based on combining a number of pictured items.[10]

Consideration of the material which emerged from the interviews led us to feel that individual level of capability (abstraction), could more generally be thought of as the person's view of the world and individual type of capability (abstracting) as the way they preferred to act. Together they could be described as their working mode, that is to say, a systematic cluster of behaviours apparently characteristic of the person in various work settings.[11]

Views of the World

Views of the world are defined by two dimensions: one representing distance from the concrete, the other an emphasis on creating wholes or separating into parts.

Table II Views of the World



10 This approach was based in the work of A. R. Luria, Cognitive Development: Its Cultural and Social Foundations, ed. M. Cole, Trans. M. Lopez-Morillas and L. Solotaroff (Harvard University Press, Cambridge, Massachusetts 1976) and Vygotsky op. cit. Our version of the technique is at a preliminary stage. Its purpose is to elicit different patterns of complexity in the creation of a narrative.

11 See K. M. Goldstein and S. Blackman, Cognitive Style: Five Approaches and Relevant Research (John Wiley & Sons, Inc., New York, 1978)

G. P. Stamp, Management Styles (to be published in the Leadership and Organization Development Journal 1983)

(1) (Concrete Synthesis)

In this view of the world everything is related to everything else. All are part and parcel of each other and, if one part is affected, an automatic reaction occurs in the others. Knowledge is experiential and comes from direct touch and feel contact with the world. 'A solidarity exists between the various dimensions which constitute....(the) structure'.[12]

Within this view of the world there is only one fully-fledged mode of functioning. It is pragmatic in the sense that the person works directly with external reality and intuitive in that they build up an experiential sense of what is happening by focusing on the particular task of the moment. The person who prefers to work in this way could be called a proceduralist and will always prefer to demonstrate their work rather than tying the processes down in words.

First view of the world [P] Key: P = Proceduralist

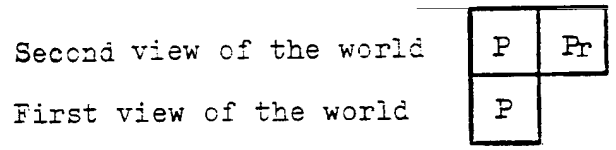
(2) (Concrete Analysis)

Within this view of the world single issues are discriminated from the whole and different ways of approaching them on their own or in clusters can be considered. These alternative possibilities give rise to a sense of ambiguity and the possibility of choice between options.

Within this second view of the world there are two modes of functioning. The first is the pragmatic and intuitive proceduralist working now in a wider context. The second is still pragmatic but also logical. The person who prefers to work in this way - the practitioner - likes to be directly involved

12 P. Freire, Education: The Practice of Freedom, page 104 (Writers and Readers Publishing Co-operative, London, 1976)

with tasks but also brings an awareness of alternatives and new possibilities to bear. The practitioner tends to base his active approach to the solution of problems on an understanding of the subtleties of concrete situations and, particularly, their human implications and he chooses between alternatives in the light of practice. He is therefore very successful at making quick decisions on the basis of the information available and, as a consequence, making the most of current situations.



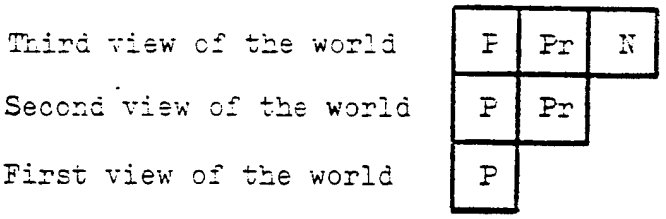
Key: Pr = Practitioner
P = Proceduralist

(3) (Synthesis)

This view of the world is the fulcrum of the model. It therefore has two aspects; the systematic analysis of concrete events in a chain like sequence and the synthesis of abstract elements based on a series of connections.

The proceduralist and the practitioner are now working in an extended context and they are joined by a third way of acting characterised by a steady oscillation between being with experience and standing back from it to see its direction or trend.

The practitioner within this level seeks to build systems and sequences by logical extrapolation from what has been given, searching carefully for all the links in the chain. This serialist approach can readily be put into words at every stage of the process. However, the person who prefers the third mode of acting - the networker - holds incoming information in a general overall pattern until the shape and extent of the sequence is clear. He might well not be able to put into words the process or even the solution to a problem once he has achieved it. It is interesting to note how often this intuitive approach is undervalued and explained away in apparently "logical" terms by those who use it.

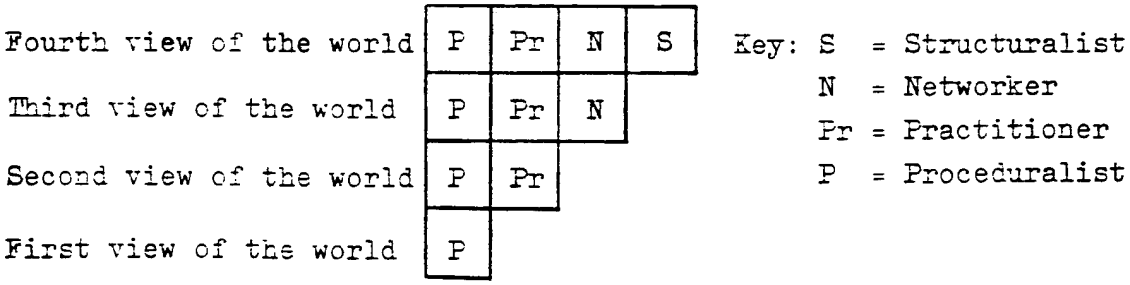


(4) (Abstract Analysis)

This view of the world stands beyond the concrete to reflect on practice rather than being directly engaged in it. This detachment from the concrete has the double consequence referred to above: it may lead to the creation of general ideas but it may also give rise to a lack of contact.

Within this view there are four ways of acting. The proceduralist, the practitioner and the networker are all now working in a further extended context and are joined by a reflective and logical mode. The person who prefers to act in this way - the structuralist - likes to bound his experience by filtering it through conceptual frameworks, by carefully ordering priorities and evaluating alternative courses of action. He likes to discriminate clearly between what is relevant to his concerns and what is not and he will define the former by discarding the latter.

The structuralist often has a high measured IQ and prefers to reason deductively, testing hypotheses against a pattern of previous assumptions. He is very self-contained in his work and likes to use an essentially theoretical approach. He will often excel in research and staff or consultancy roles.



(5) (Abstract Synthesis)

In this view of the world all the dimensions are interwoven so that, if one point is changed, there are ripples of change throughout.[13] By contrast with the direct, taken for granted concrete synthesis of the first view of the world, the fifth embodies a conscious awareness of interconnections.

The proceduralist, the practitioner, the networker and the structuralist are all now working in a very extended context and they are joined by a fifth way of acting which is reflective and intuitive. The person who prefers to act in this way - the originator - always looks for the unusual and the unexpected, seeking to create new patterns of connections between previously unrelated material. He is often poor at routine work and tends to take an original approach to a problem even when this may not be appropriate. The word most commonly used to describe originators is 'flair'.

Fifth view of the world	P	Pr	N	S	O
Fourth view of the world	P	Pr	N	S	
Third view of the world	P	Pr	N		
Second view of the world	P	Pr			
First view of the world	P				

Key: O = Originator
S = Structuralist
N = Networker
Pr = Practitioner
P = Proceduralist

Views of the world (extension of context - Table I) and preferred ways of acting (modes of functioning - Table I) are linked in Table III below.

Table III

Modes of Functioning

Preferred way of acting

Extension of Context / View of the world	P	Pr	N	S	O
abstract synthesis	P	Pr	N	S	O
abstract analysis	P	Pr	N	S	
synthesis	P	Pr	N		
concrete analysis	P	Pr			
concrete synthesis	P				

Key: P = proceduralist
Pr = practitioner
N = networker
S = structuralist
O = originator

Inevitably, this matrix suggests a rigidity which the model does not intend. What I want to illustrate is that it is possible, for example, for someone to prefer to act in a pragmatic and intuitive way within the most complex world view although they will have access to other modes of acting. There is now a great deal of evidence that most people have a strong preference for a particular way of acting although they may have access to others depending on the complexity of their view of the world.[13]

13 See for example:

C. G. Jung, Psychological Types (Routledge & Kegan Paul, London, 1921)

D. A. Kolb. Learning and Problem Solving in D. A. Kolb, I. M. Rubin and J. M. McIntyre, Organizational Psychology: A Book of Readings (Printice-Hall Inc., New Jersey, 1971)

I. I. Mitroff and R. H. Kilmann, The Four-Fold Way of Knowing: The Varieties of Social Science Experience, Theory and Society, Vol. 10, No. 2 (1981)

I. B. Myers, The Myers-Briggs Indicator Manual (Educational Testing Service, Princeton, New Jersey 1962)

M. Belbin, Management Teams - Why They Succeed or Fail (Heinemann London 1981)

Section Two - The Structure of the Organisation

In order to look at the context for the expression of different views of the world and ways of acting in it, we must have a picture of the expectations placed on staff at different levels of work. Our model of organisation structure was developed originally by Jaques[14] and focused on differences in the scale and scope of work at different levels. In the context of our case study we used the model to look at each level of work from both a technical point of view focused on instrumental concerns of production and a social point of view reflecting relationships between people.[15] Each level is described below and they are then drawn together in a table.

Level One - direct output

People working at this level are directly, physically involved with concrete objects of work one at a time. For example, they may be machinists or assembly line workers. They are potentially or actually related to each other as a community of operatives.

[14] The model is rooted in extensive empirical studies initiated by Elliott Jaques and developed by him and his colleagues particularly D. J. Isaac.

E. Jaques, A General Theory of Bureaucracy, op. cit.

E. Jaques, Levels of Abstraction in Logic and Human Action op. cit.

R. W. Rowbottom and D. Billis, Stratification of Work and Organisational Design, Human Relations, Vol. 31, No. 1, pp 53 - 76, (1977)

The complete model encompasses eight discrete levels, three concerned with strategy, two with general management and three with direct operations. For the purposes of this paper, I shall describe the five necessary to look at the work of companies organised on a national scale.

[15] This is a widely used distinction - see for example: I.C. Bernard, The Functions of the Executive (Harvard University Press, Cambridge, Massachusetts, 1966)

Level Two - the first level of oversight

The superintendent or foreman is one step removed from direct physical contact with the object of work. He[16] is responsible for supervising the way the operatives do their work, for an aggregate of tasks and for giving special attention to those tasks which are causing difficulty.

From a social point of view he is in a difficult dual role. On the one hand, when he is in direct physical contact with the concrete object of work, he can appear as just another operative. On the other, he is responsible for organising operatives.

Level Three - unit management

The manager at this level who may be responsible for a medium sized factory, is two steps removed from the direct object of work and is thus in contact with staff only. He is responsible for linking together the work of the supervisors and the operatives and for responding to the trends of tasks and problems as they emerge by developing systems of work.

From the social point of view this level represents the direct management of the production tasks of the whole organisation. As such, it is the concrete local expression of what keeps the business in being. Because the unit is small enough to allow for mutual recognition between the manager and all his staff, it can readily encourage a feeling of belonging and of loyalty to both the local and the national business unit.

Level Four - general management

The manager at this level may be either a general manager of a large factory or the divisional manager of a particular function. He must stand beyond the concrete concerns of the first three

16 For the sake of brevity, the male pronoun will be used. It should be taken that, in each case, the statement could equally apply to a woman.

levels and focus his work not on direct output tasks but on providing the resources necessary to achieve the output. He is responsible for linking together a number of level three units and for generating new policies and procedures which can be applied to their work.

From a social point of view he is working in an area where, on the one hand, he has to compete with colleagues for what may be scarce resources and, on the other, is obliged to collaborate with them in order to achieve output.

Level Five - comprehensive management

This is the level of total business activity and the role of the Chief Executive Officer whose object of work is the organisation itself. From a social point of view this level links together all the connections in all the levels below. As the third level is the local unit, so the fifth is the national unit, more complex and more distant but still capable of generating loyalty and a sense of belonging.

Table IV

Levels of Work

	Technical	Social
5	Comprehensive Management	The complete business unit
4	General Management	Competition and collaboration
3	Unit Management	The local unit
2	The first level of oversight	Dual role of supervisor
1	Direct output	Community of operatives

Before moving on to look at a few of the implications of this model of organisational structure and individual differences for the development of black staff, I shall draw together in the table below levels of work, views of the world and ways of acting in order to demonstrate the links between them.

Table V

	Level of Work	View of the world	Characteristic Way of acting
5	Comprehensive Management	Abstract synthesis	Originators, Structuralists, Networkers, Practitioners, Proceduralists.
4	General Management	Abstract analysis	Structuralists, Networkers, Practitioners, Proceduralists.
3	Unit Management	Synthesis	Networkers, Practitioners, Proceduralists.
2	First level of oversight	Concrete analysis	Practitioners, Proceduralists.
1	Direct output	Concrete synthesis	Proceduralists.

Section 3 - Some implications

Against the background of the level of work, world view and ways of acting summarised in Table V we are now in a position to return to the question of how best to spot and develop the potential of black staff. The models emphasize two points: first, a person's world view and way of acting (mode of working) is the outcome of a complex interaction between them and their environment mediated by the cultures in which they live and are educated (which may not necessarily be the same). Second that, at every stage, their capacity to carry responsibility must be understood against the background of the work setting in which they are placed.

One of the specific problems of the case study was the difficulty in selecting black staff for supervisory posts and supporting them once in post. If we look first at the second level of work, we recall that it is characterised by a dual role which requires the supervisor to be both a part of direct operational tasks and apart from them in order that a number of such tasks can be surveyed at any one time and resources deployed accordingly. The ambiguity of the role is therefore considerable and the strain in it well documented.[17] The strain is obviously greater when the supervisor comes from a background with a tight social framework where each person is closely linked to many others and sees their identity not as private property but attached to a web of relationships. The expectations of the supervisory role include the severing of such connections (at least in the work setting) and a standing apart from the community of operatives in order to organise their activities and, when necessary, discipline them.

If a man or a woman from such a background is to undertake this work competently and comfortably they must, at least, have the potential to take a view of the world which can work with separate elements, handle ambiguity and clusters of tasks. But, even if they are able to take this view and, therefore, to carry responsibility at the second level, their preferred way of acting may suit them to a different type of work. For example, they might prefer to work as a cost clerk in an accounts department rather than as a supervisor and this might be the route which would give a better opportunity for the development of their potential.

The question of preferred type of work is not confined to black men and women but it is, perhaps, particularly important in their case because of the exceptional strains in the supervisory role for people from a tight social framework when they have to stand apart from their fellows if they are to supervise them properly.

17 See the discussion by R. L. Kahn, Organizational Stress: studies in role conflict and ambiguity (John Wiley & Sons Inc., New York, 1972)

As we looked at the question of support for supervisors, it gradually became clear that the nature of the unit - the third level of work which encompasses both direct operations and supervision - could be of particular significance in the development of black men and women. Because of its manageable size, its climate of mutual recognition and its role as the local expression of what the business is all about, the unit is a very powerful focus. It can act as the gathering point for that sense of the group which is of universal importance but perhaps especially so for people from backgrounds which emphasize a collective view of society. These people may feel that their sense of belonging has been greatly weakened once they have been promoted beyond the first level of the community of operatives. The unit, lying as it does midway between direct operations and the most senior management, can also act as a focus for the particular contribution which black staff can make to management through their special sensitivity in seeking and achieving consensus and sustaining a sense of community.

I turn now to consider two of the specifically individual implications of the model in Table V for the development of potential among black staff. It is gradually being realised that education and assessment procedures in the industrial world tend to favour analysis and rationality. Two of the many outcomes of this tendency are of particular relevance in this context.

a) There may be a problem in assessing the potential of people for the highest levels of work. Most people involved in selection are looking for those who will be able 'to see the wood for the trees' but they are not always able to discriminate between the analytic view of the world appropriate to the general management of resources and new developments at the fourth level and the synthetic view required for the comprehensive management of the total business unit. The analytic view, encouraged by education and more amenable to measurement of, for example, critical thinking, is precisely what is required for ordering the various alternatives to manage the structure of links between the local and national units. But it cannot encompass the multi-dimensional connections necessary for management at the fifth level.

The emphasis on analytic skills has pricrity in education but it may mask the potential of black men and women for working at the highest levels. This potential especially in young men and women may be expressed in constantly raising questions or emphasising the whole and connections within it. This may be heard not as the potential for working with abstract synthesis, but as a loose and undisciplined view of the world quite unsuited to senior levels of management.

b) The same emphasis tends to work against recognising the potential of those who prefer a pragmatic way of acting. These people are, as a rule, not as likely to achieve good grades in exams or present as well at interview. When asked to talk about their work they are most likely to reply 'Come with me and I will show you what I do'.[18]

The general preference for the theoretical over the pragmatic, leads to the widely held assumption that pragmatic ways of acting are not part of more complex world views. It also contributes to the failure to see potential among those who prefer to be directly immersed in experience and an overestimation of potential in those who are readily articulate. This is a problem in fully industrialised settings where, as we have shown, potential for high level work tends to be equated with the capacity for analysis. It is exacerbated in the case of black men and women because of the tendency to see the pragmatic as bound to experience in a limited way and not as one possible but preferred way of acting.

Conclusion

The most general implication to be drawn from the above is the importance of developing an appreciation of different views of the world which acknowledges that they are the themes which give meaning to people's worlds and their actions within them.[19] This understanding is not simply a matter of detached scientific investigation. It requires a sensitive entering into the world of the other - at his invitation - in order to converse with him and learn from him the steps by which he constructs his world.

[18] Levels and Types of Managerial Capability ibid.

[19] P. Freire, Pedagogy of the Oppressed, (Herder & Herder, New York, 1972)

Such an approach could be called cultural analysis[20] - a collaborative analysis of the views of the world of members of one culture assisted by members of another. The purpose of such an analysis would be the enhancement of mutual understanding and conversation between cultures for any one of a number of reasons. One could be to contribute to the transition of men and women from pre-industrial cultures into the industrial and commercial organisations of a free market society. The transition could then be seen not as unilateral and even enforced development but as an opportunity for each to learn from the other and acknowledge their interdependence.

20 See also cultural psychology advocated by D. Price-Williams op. cit.

"A fully developed cultural psychology should provide the screen against which our psychological studies of our own culture can be interpreted", page 85.

Gillian Stamp
14.2.83.