A statistical analysis of the structure of language found in the essay writing of a sample of technical college students and public school boys.

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S U M M A R Y

The theoretical framework which determined the nature of the objectives and organisation of the research was provided by the model of 'elaborated' and 'restricted' codes developed by Professor Bernstein. The process by which this model was first enunciated and then refined is described up to the point at which, it is suggested, there emerged certain weaknesses in its design. One of these weaknesses, the failure of the model to account satisfactorily for the influence of context upon linguistic performance, provides the point of departure from which the research begins.

Three hypotheses are formulated and then defined operationally in terms of the prediction of the movement of scores on certain items of language structure. The premises, linguistic and socio-linguistic, upon which the choice of items for analysis is based, are discussed, as also, briefly, is the model of grammar, Scale and Category, used in the analysis. The predictions of the hypotheses are:

(a) that, on a number of linguistic items taken as indicators of elaboration of code, the scores of middle-class public school boys will show a general superiority over those of technical college students of a similar age from a working-class background;

(b) that, when the corpus of essay-writing is classified by its eliciting titles as occurring within certain registers or styles and analysed as such, in spite of their overall inferiority the working-class subjects will be shown on certain essays to possess, as a group, a more definitive style of technical explanation;

(c) that, because of this greater definition of style, a comparison of scores obtained by the two groups on the essay titles concerned with technical explanation will show some of the social class differences in scores on the overall comparison to have disappeared.

The language structure of forty-seven subjects on eight essay topics is analysed. The sample is controlled for age, sex, and parental socio-economic status. Adjustment is made for the effect of verbal intelligence test scores upon performance by the use of analysis of covariance.

All three hypotheses are confirmed, the first two, (a) and (b), wholly so, the third (c) partially so.

The conclusion of the research is that the general picture of a lower level of elaboration in working-class language need not exclude the possibility of extreme stylistic variations occurring within it. Furthermore, it is suggested that such variations may enable working-class subjects to reach a higher level of elaboration in particular areas of their language. A number of modifications of Bernstein's original hypothesis arising out of this suggestion are proposed.

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A C K N O W L E D G E M E N T S

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CHAPTER I

REVIEW OF THE LITERATURE

The field of socio-linguistics, within the scope of which this research lies, is concerned with the study of the relationship between language ability and environmental variables. More particularly, this research is designed to study one area of interest within this field, that concerned with the analysis of the relationship between language ability and the variable associated with social class. This is a new area of study. It is also possibly unique in that, in this country and to an extent even in the United States, its major theoretical formulation, establishing the terms of reference of almost all research workers in the field, has been the work of one individual, Professor Bernstein of the Institute of Education of the University of London. His theoretical contribution, in terms of the extended sequence of papers first setting forth and then later elaborating the original concepts (1958, 1959, 1961, 1963, 1965, 1970) has been substantial. At the level of empirical validation his contribution has been less in evidence. Until recently, it consisted of only three papers (1961, 1962a, 1962b) and these have, of late, become the object of severe methodological criticism (Coulthard 1969). The lack of balance in this contribution, of a precise theoretical framework with a slender empirical base, has been accentuated by weaknesses in the experimental design of the research projects

which have ensued to the point at which the incongruence between theoretical formulation and empirical validation has now become a characteristic of work in this field. Nor has there been the unifying influence of a major empirical break-through. The development of the literature is the story of a succession of mainly small-scale investigations struggling with a rigid conceptual framework. It is the story of exploration in breadth rather than in depth.

The antecedents of Bernstein's theoretical work lay in the observation of the effects of special environments upon language skills. Studies of the language development of institutionalised children by Little and Williams (1937), Williams and Mcfarlane (1937), Fleming (1942), Goldfarb (1943a, 1943b, 1945), Brodbeck and Irwin (1946), Moore (1947), Roudinesco and Appell (1950) had indicated that these children are often grossly retarded in vocabulary, complexity of sentence structure, and type and power of abstraction. Kellmer/ Pringle and Tanner (1958) found that in a group of institutionalised children the extent of this backwardness in language was greater than that found in any other aspect of development. It is to the study of institutionalised children that we owe the important finding that verbal skills are particularly sensitive to the influence of environmental variables.

Linguistic differences occur in the normal social environment and at the same time, therefore, there were a number of studies of children designed to measure differences in language development between different socio-economic status groups:

Descoeudres (1921), Stern (1930), McCarthy (1930), Buhler (1931), Day (1932), Davis (1937), Schulman and Havighurst (1947), Irwin (1948a, 1948b), Templin (1957), Sampson (1956, 1959). These researches covered a wide area of linguistics, encompassing phonology, syntax and semantics but they ranged too widely and too disparately to provide either a consensus of experimental approach or a general concept of linguistic depression.

The most significant finding in the study of the relationship between social class and language development in the decade prior to Bernstein's formulation of his theoretical model lay not in the realm of linguistic analysis but in the simple observation of a particular relationship between the scores on verbal and non-verbal intelligence tests of working-class children. Here the work of Nisbet (1953) had been especially informative. In the study of verbal intelligence test scores he had come to the same conclusion that Kellmer Pringle and Tanner had reached in their study of institutionalized children, that verbal ability has a special sensitivity to the influence of environmental deprivation. He had investigated the effect of family size on the I.Q. of a sample of five thousand Aberdeen children. One of his conclusions was that the environment of a large family constitutes a handicap to verbal development and that this verbal retardation affects general mental development. More importantly, in a later study (Scott and Nisbet, 1955) it was revealed that the negative correlation between size of sibship and I.Q. is lower for non-verbal than for verbal tests. Evidence for the suggestion of a similar differential impact of environment upon verbal and non-

verbal ability can be found in the work of Venables (Report to the Crowther Committee : 1959). In 1957 she administered two intelligence tests, one verbal, the other non-verbal, to a large sample of technical college, day-release students (ONC and Craft apprentices). Only 8% of the technical and 1.5% of the craft students came up to the standard of university students on the verbal test. On the non-verbal test, 40% of the technical and 12% of the craft students were of equal intelligence to the University students. The technical college students, as a sample, were characterised by a comparative homogeneity of social class background : they were, the vast majority of them, the sons of skilled and semi-skilled manual workers. If the depression of their verbal ability scores represented, as Venables believed, a 'culturally induced verbal deficiency' then the factors which were the cause of it were most probably those environmental variables most closely associated with parental socio-economic status.

In a similar study, Bernstein (1958) gave a verbal and non-verbal intelligence test to over 370 working-class youths. The depression which Venables had noticed on the verbal scores was apparent and it became a massive one when related to scores on the higher ranges of the non-verbal test. In this relationship there is further possible evidence for the workings of class and subculture upon the patterning of abilities for, as Wiseman (1964) has argued, children of high ability are most sensitive to their environment. In a second study, Bernstein (1961) compared the verbal and non-verbal scores of 61 post office messenger boys at a day release college with those of 45 pupils of the same age

from the Upper school of one of the six major public-schools. The relationship between verbal and non-verbal scores which had been found to be characteristic of working-class samples was not apparent in the performance of the public-school group. Moreover, all members of the working-class group were confined to the average range of the verbal test. Bernstein's conclusion was that:

> "either the mode of intelligence is a cultural factor or the lower-working class are genetically deficient in a factor which enables the exploitation of complex verbal relationships."

The importance of Bernstein's work is that he took the deficit in the scores on verbal intelligence tests of working-class adolescents as indirect evidence of an impoverishment in the structure of their language. Quantitative differences in the frequencies of linguistic items in the language of middle and working class samples had been found before, notably in the researches cited above. Bernstein's contribution to the theoretical work in this field is that he saw these quantitative differences as indicating qualitative differences in the processes of communication. The often remarked upon linguistic differences between the middle and working classes result, he says,

> "from entirely different modes of speech, which are dominant and typical of these strata(1961)."

The dominant mode of speech of the middle class is the 'formal (1958)', later termed the 'elaborated' code (1962) that of the working class the 'public' (1958) later termed the 'restricted' code (1962). The different communicative strategies of the two modes are expressed in their grammatical structure. In the elaborated code speech becomes 'an object of perpetual activity (1961)' through which,

> "a theoretical attitude is developed toward the structural possibilities of sentence organisation" (1961)

In the restricted code speech is characterised by a 'rigidity of syntax (1961)' and there is a 'limited and restricted use of structural possibilities for sentence organisation (1961)'. Structural predictability was made the defining characteristic of the two codes (1961, 1962a, 1965).

Bernstein was at pains to point out that the two codes are not by definition class-based. In ideal terms, their use is a function of the social relationships which exist. A restricted code, he says,

> "will occur in any social structure that maximises identification with others at the cost of the significance of individual differences (1961)";

an elaborated code in any social structures that require an 'orientation to symbolise intent in a verbally explicit form (1962a)'.

The elaborated code user will encounter 'social structures' which require either code : in this sense he will be the possessor of both codes. For the restricted code user such an eventuality will be unlikely. He will encounter less formal, more implicit structures whose articulation in inter-personal relationship does not require the strategies of an elaborated code. He is limited to a restricted code. But his limitation is more than a mere function of the social relationships which he is likely to encounter. Differential access to the characteristics of the elaborated code is controlled from the beginnings of the socialisation of the child. Two distinct forms of language use emerge, says Bernstein,

> "because the organisation of these two strata is such that different emphases are placed on language potential (1961)."

These emphases are experienced in the processes of socialisation. The symbolic system which is the major vehicle of these processes is that of the spoken language. The child, as Bernstein puts it,

> "learns his social structure and introjects it from the very beginnings of speech (1961)."

Differential access to the elaborated code is thus controlled by, and, in a sense, controls the different patterns of socialisation.

If Bernstein's thesis had extended no further than the assertion that the differences in the structure of language of subcultural

groups are of a consistency to warrant discussion in terms of subcultural 'modes' of speech it is doubtful whether it would have had the repercussions upon educational thinking which it has since enjoyed. The terms of reference were, in fact, much wider. What intrigued Bernstein, and it is the main point at issue in the first theoretical paper (1958), was the problem of the relationship which exists between characteristic modes of speech of groups and classes and their characteristic modes of perception. At this point it is interesting to note that the direction which his thinking was to take had already been foreshadowed in a little-known but pioneering work by Schatzman and Strauss (1955). They had described the difficulty that poor rural respondents had experienced in giving a sequential account of an Arkansas tornado. Their suggestion was that differences in the organisation of perception and thought between different status groups are expressed through different modes of communication and that these can be located in different linguistic and communcative strategies. In essence this suggested connection between patterns of perception and patterns of communication comes very close to resembling the broad outline of Bernstein's theoretical model except that in the latter the relationship of cause and effect between the two is described more explicitly and with greater precision. It is the culturally determined forms of the spoken language which, he proposes, in the process of their learning,

> "elicit, reinforce, and generalise distinct types of relationships with the environment and thus create particular dimensions of significance (1961)."

Bernstein's conception of the relationship between language and thought was a deterministic one. Once the emphasis of the early processes of socialisation is placed, he believed, then the resulting forms of speech progressively orient the speakers to particular orders of meaning. There was a partial retreat from this linguistic determinism in the second theoretical paper (1959) where he seemed prepared at one point to concede that language use,

> "facilitates development in a particular direction rather than inhibiting all other possible directions."

only for the argument to be stated more bluntly and unambiguously than it had ever been before. Referring, in passing, to the consequences of limitation to a restricted code for the patient in a psycho-therapeutic relationship, he says,

> "Another important protective function of the public language (i.e. restricted code) is that other forms of language use ... will not be directly comprehensible but will be mediated through the public language."

By the time he came to publish the first experimental papers his line of thought had hardened to the point at which the only role given to intelligence to play is:

> "to enable the speaker to exploit more successfully the possibilities symbolised by the socially determined forms of language use." (Research Note, 1961)

The assumption was thus that limitation to a restricted code or access to an elaborated code through the processes of early socialisation are powerful determinants of the character of the thought processes of the working - and middle-classes. As an assumption it owed a great deal to the conclusions of the linguistic school of thought associated with the writing of Whorf, known as 'linguistic relativism', a school of thought which believed that the language spoken by an individual will affect his perception of the world and his subsequent behaviour. Whorf (1942) himself has written that :

> "The forms of a person's thoughts are controlled by inexorable laws of pattern of which he is unconscious. These patterns are the unperceived intricate systematisations of his own language -----"

Bernstein has been criticised by Lawton (1968) for adopting the notions about the relationship between language and thought of a school of thinking whose theories have never been empirically validated on a wide scale and had already been heavily attacked by Lenneberg (1953) before the publication of the first theoretical paper (1958). Whorf had developed his thinking with reference to different cultures, notably those of the American Indian. What Lawton finds to emphasise in his critique is that, without empirical evidence or further theoretical elaboration, Bernstein extended the assumptions of the Whorfian school from the area of culture to that of sub-culture and social structure. There has been a

tentative attempt to disengage from these assumptions in more recent papers (1965, 1969a, 1969b, 1970) which will be discussed in more detail below. Nevertheless, it is the early papers which have enjoyed the most publicity and their avowed linguistic determinism has had an inordinate influence not only upon research into social class differences in language structure but also upon the general debate about the various constraints upon the educability of the working-class child. This influence is all the more significant because of the very extensive psychological and cognitive correlates which Bernstein attributed to differential access to the use of an elaborated code.

In the first theoretical papers (1958, 1959, 1961) a correlation is suggested between certain psychological and cognitive orientations and specific grammatical and lexical elements whose frequency of occurrence is taken as one of the defining characteristics of a restricted code. The typical unit of a restricted code is, he says, a "short, grammatically simple, syntactically poor sentence" articulated by simple and repetitive conjunctions which does not facilitate the communication of ideas and relationships requiring either precise formulation or logical modification. The large number of idiomatic traditional phrases emphasise the solidarity of group relationships at the expense of the logical structure of communication and specificity of feeling and operate:

> "on a low causal level of generality, in which descriptive, concrete, visual and tactile symbols are employed, aimed at maximising the emotive rather than the logical impact (1961)."

The limited and rigid use of adjectives and adverbs hampers the qualification of objects and the modification of processes while the expression of processes as a whole may be difficult because of the 'crude, simple verbal structure around which the sentence is built" (1959). Finally, the large number of sociocentric sequences, statements aimed at stimulating a sympathetic circularity, in social relationships, discourages the prolonged analysis of events and processes.

The cognitive correlates of limitation to a restricted code are partly, therefore, a question of ability and, partly, a question of orientation. An abstract, analytical style of thinking necessitating complex modification and qualification will be difficult to achieve within the structural possibilities of a restricted code. However, long habituation to the use of other more concrete, more descriptive styles of thinking utilising only the structural possibilities which are readily at hand will bring with it a different set of priorities, an implicit system of preferences for types of language use which will make an attempt to think in a different way unlikely to occur.

The psychological and social psychological correlates are equally as extensive but linked more to general semantic elements rather than to particular lexical and grammatical items. Because of this they are introduced at a level of generality which makes them less susceptible to empirical validation. Thus, for instance, a number of lexical and grammatical reasons are put forward to explain the lack of ability to make individual qualifications within

a restricted code but then this lack of ability is itself used as an explanatory variable to account for other psychological and social psychological features. Because 'subjective intent' cannot be expressed through individual qualification there will be an impersonality of emotional expression which will open the way to 'a form of social behaviour that is controlled by a rigid, explicit, authoritarian social structure'; the articulation of 'tender' feelings will be discouraged; 'tough' responses will be elicited for tenderness will be found threatening and embarassing; the experience of guilt will be minimised. At the same time direct correlations are suggested between these psychological features and items of language without the intercession of an intervening variable. When, as Bernstein puts it, a confounding of reasons and conclusions occur there will be direct psychological repercussions:

> "the authority or legitimacy for the statement will reside in the form of the social relationship which is non-verbally present (1961)."

In a similar way, in the second theoretical paper (1959) pronoun usage is suggested as a cause of impersonality of expression while, in the same paper, an attempt is made to enumerate the social counters which minimise the experience of guilt.

The psychological characteristics of the behaviour of the restricted code user are, thus, a failure "to symbolise intent in a verbally explicit form" (1962a) and, partly as a consequence of this, a tendency towards an impersonality of emotional expression: both of them characteristics which induce a third, what might be termed social psychological features of behaviour, a preference for a

particular form of social relationship, in particular, one "where meaning is implicit" (1959).

From these correlates, cognitive, psychological and social psychological, are drawn a number of implications for the understanding of causes of educational under-achievement among working-class children. As the character of the educational process becomes more analytic at the secondary stage, the working-class child is penalised because his language tends to restrict him to more concrete levels of thinking. Moreover, it is difficult for different styles of thinking to be communicated to him by the teacher because there is no mechanism in the restricted code for the recognition of specific and formal differentials in status upon which the traditional relationship between pupil and teacher rests. Further, even if the transfer of styles of thinking could occur the effect upon the child might be disastrous for the attempt, which is what it would amount to, to substitute a different use of language would be:

> "an attempt to change his (the working class child's) basic system of perception, fundamentally the very means by which he has been socialised (1965)."

This is Bernstein's thesis as it has stood since 1961. There have been no fundamental changes since then although there has been a slight withdrawal, already mentioned, from the more extreme stated consequences of limitation to a restricted code. Nevertheless refinements of the theory have followed in later papers (1963, 1964, 1965, 1969a, 1969b, 1970). These refinements reflect not so much a revaluation of the basic postulates as a tendency to alter the direction of their application. More particularly, there has been

an attempt to establish a closer connection between the patterns of the codes and the different patterns of the socialisation of children. There was an early attempt (1963) to suggest that associated with parents limited to a restricted code is a specific form of authority relations. In status-oriented families, he asserts, inter-personal aspects of the mother-child relationship will tend "not to be raised to the level of verbal elaboration" and "the areas of discrete intent will not be areas of elaborated speech", in fact, he concludes : "In terms of what is said verbally a restricted code is a status-oriented code."

This early identification of code and processes of socialisation has been eroded by the fact that, whereas Bernstein's model has remained, on the whole, dependent upon a single dichotomy between restriction and elaboration, the developing study of the sociology of the family has produced the possibility of a multiplicity of types of family systems of communication and control. The consequences of this incongruence are possibly two-fold. If the notion of a direct relationship between codes and processes of socialisation is to be maintained, then a subclassification of the codes seems necessary to achieve theoretical descriptions of a comparable delicacy. It is this which Bernstein has tried to do in a recent paper (1965), where he distinguishes two modes of an elaborated code : one facilitating the verbal elaboration of inter-personal relations; the other facilitating the verbal elaboration of 'relations between objects'. The two modes, while both possessing the general features of an elaborated code, would differentiate separate ranges of experience and would presuppose learning

to manage different role relations. An individual might possess one mode, or he might possess both. This distinction between modes has since been extended to the restricted code as well.

A further development has been the introduction of the distinction between the exploration of means and the exploration of ends. With object or person-oriented codes distinguished according to this second criterion, the theory has reached a very complex stage of sub-classification. A consequence of this is that the possibility of a direct relationship between code and processes of socialisation may have to be rejected. Recently (1970) Bernstein appears to have abandoned the sub-classification of the codes in favour of a concession that they may simply be differently focussed according to different family types.

All the above-mentioned correlates are correlates, either directly or indirectly, of aspects of language use, whether lexical, grammatical or semantic. Coulthard (1969) has criticised Bernstein for, at times, appearing to offer the correlates themselves as a basis for the definition of the codes. Yet Bernstein's early experimental papers (1962a, 1962b) are concerned with the analysis of language samples and there seems little doubt that, whatever his theoretical definitions of the codes, he sought their objectification in linguistic data.

The first experimental paper (1962a) reports a research project in which, using a sub-sample of the sample tested for verbal and non-verbal intelligence in the previous year (1961), he analysed what he termed the verbal planning procedures of middle -

and working - class boys in a tape-recorded, relatively undirected discussion on the question of capital punishment. The assumption made was that the level of verbal planning can be measured by hesitation phenomena in speech according to the techniques of Goldman-Eisler (1961). The prediction that the working-class subjects would use a longer mean phrase length, spend less time pausing and use a shorter word length was supported. The success of the prediction was taken as evidence that two different linguistic codes were in operation, producing differences in verbal planning behaviour of a qualitative nature.

In the second experimental paper (1962b) Bernstein used the categories of traditional grammar to analyse the same language samples. The social class differences found, especially those concerned with the modification and qualification of nominal and verbal elements, with the frequency and quality of subordinating and coordinating conjunctions, together with the evidence of differential pronoun usage were those that might have been predicted from the discussions in the theoretical papers. The middle-class subjects were observed to use a higher proportion of subordinate clauses, complex verbal stems, passive verbs, total adjectives and uncommon adjectives, uncommon adverbs and conjunctions, 'of' as a proportion of 'of', 'in' and 'into', the personal pronoun 'I', and the phrase 'I think'. The working-class subjects used a higher proportion of total personal pronouns, 'you' and 'they', and what Bernstein called sympathetic circularity sequences.

There is confirmation of the evidence of these findings in two

studies by Lawton (1963, 1964) of the written language of twelve - and fifteen - year - old middle - and working - class boys and the spoken language they produced in a group discussion. The study of the language of the group discussions (1964) was a deliberate replication of Bernstein's second paper (1962b), in which Lawton adopted the same experimental techniques and design, taking the same topic of discussion, leaving the discussion itself relatively unstructured and using, to analyse it, virtually the same categories of traditional grammar with only one major addition, a measure of the depth, as well as of the simple amount of subordinated clauses. Not surprisingly, within an almost identical framework, Bernstein's evidence was confirmed. The results of the two studies were very close : in all cases except one the social class difference between the groups was in the same direction and there was the additional refinement that social class differences were more striking when examined for depth or degree of subordination on the score which Lawton introduced than when measured on the simple index of subordination.

Of more specific relevance to this research is the analysis of the written language which Lawton (1963) undertook. This work contained a peripheral extension of the main thesis. Lawton quoted Vijgotsky's (1962) remarks concerning the autonomous nature of written language to suggest that the act of writing might require a form of verbal planning closer to that of the elaborated than to that of the restricted code. For the working-class boys, he believed, the act of writing would pose problems in the nature of a kind of translation and they would write less because of this.

This prediction was confirmed. It seems unfortunate that Lawton did not develop the application of his prediction that mode of discourse, whether spoken or written language, would have a differential effect upon social class differences in language use any further than mere differences in level of output between groups. However, in the data elicited from the same subjects on four thirty-minute essays and two sentence completion tests he did find that the measured social class differences, although running in the same direction, were slightly greater than those found in the analysis of the language produced in the group discussions. It is again unfortunate that in the broader perspective in which he later placed his researches, Lawton (1968) did not venture to generalise upon the basis of these findings about the idiosyncracies of the written language of working-class children.

The large amount of work entailed in linguistic analysis necessarily places a limit upon the size of samples used by researchers in this field. Lawton, for instance, used only twenty boys selected from two schools to obtain the social class contrasts he required. This makes it all the more valuable when a team of research workers are able to undertake larger-scale investigations of big samples. The research and intervention project begun by Hess, Shipman, Brophy and Bear (1968) at the University of Chicago was important not only for this reason. It also involved the first major application of Bernstein's hypothesis to the language of adults. The analysis undertaken was part of a much wider research into the effect of home and material influence upon the cognitive development of urban negro pre-school children. A

research group of 163 negro mothers and their four-year-old children were selected to provide variation along four dimensions: socio-economic background; type of housing; economic dependency status and intactness of family. As part of the project it was decided to study mothers' language styles and the relationship between mothers' language and their children's cognitive behaviour. The theoretical framework of the research was the thesis of Bernstein as it had been developed by 1964 : that the behaviour which leads to cultural deprivation is socialised through family control and communication systems with each of which specific linguistic codes are associated. The linguistic categories used in analysis bear a marked similarity to those of Bernstein's experimental papers although with the added delicacy of a measure of structural complexity more extensive than a simple index of subordination and of a general language elaboration factor. There was also what proved to be a crucial addition of an abstraction scale, a measurement to tap an abstraction factor in maternal speech. The speech sample was taken from the mothers' response to three tasks requiring descriptive techniques and in the course of its analysis strong and sometimes dramatic support seemed to be offered to Bernstein's hypothesis. The middle-class mothers spoke in larger sentences, exhibited a wider range of adverbs, manifested a larger repertoire of complex verbal types, used more complex syntactic structures and displayed more abstract concepts in their language usage. Significantly, for the validation of Bernstein's central thesis, of all the maternal language variables it was the abstraction factor which was the dominant predictor of the child's ability to achieve abstract categorisations. However, there are

weaknesses of design in the Chicago study, discussed below, which raise the possibility that conclusions drawn from these findings about adult language patterns may be over-generalised.

Using the resources of the Sociological Research Unit of the Institute of Education, Bernstein has himself initiated a research and development project similar to that at Chicago. Four general areas of enquiry have been opened : the study of social class differences in the way mothers prepare children for the experience of infant school; the study of patterns of maternal communication and control; the sociolinguistic analysis of the speech of young children; and, finally, the development of an exploratory language programme for working-class infant school children and an evaluation of its effect.

The aims of the project thus quite clearly offer an indication of two developments in Bernstein's thinking since the publication of the early theoretical papers : his growing concern with the exact nature of the relationship between the restricted and elaborated codes and different patterns of socialisation and the general weakening of his early linguistic determinism. The pre-occupations of the small-scale investigations that have emerged from the analysis of the data from a large sample of mothers and children strongly reflect these two developments. Their concern has been with social class differences in maternal communication and control (Bernstein and Brandis, 1968), in maternal answering strategies (Robinson and Rackstraw, 1967), in conceptions of the uses of toys (Bernstein and Young, 1967), and of the relevance of language to socialisation (Bernstein and Henderson, 1969). Evaluation of the

language programme is still in its early stages. Already, however, it has made an appearance in a few of the papers, notably those of Robinson and Creed (1968) and of Coulthard and Robinson (1968) and their conclusion is one of moderate support for the notion that children, whose life chances would normally presage a restricted code, may, by a few simple tasks, be equipped with an elaborated one.

The work done so far at the research unit has had a distinctively psychological bias. This bias may be partly the effect of the confusion of definitions which Coulthard (1969) has pointed to in Bernstein's elaboration of his theories, wherein different definitions, sociological (1962a), linguistic (1962b) and psychological (1964), are offered for the codes at different times; or it may be traced to the composition of the research unit, containing, as it does, a number of psychologists. Robinson (1966) suggests that one explanation may lie in the characteristics of the data collected at the unit. While the psychologists have used standardised tests and have operated with small samples of subjects and variables, the linguists have had to deal with large quantities of data and manufacture their indices before proceeding to further analyses. The intractability of linguistic data is a recurrent theme in a description of the literature in this field.

Despite the difficulties involved in handling linguistic data, some results have emerged from the work at the unit. The children in the project were set a number of tasks designed to evoke different styles of verbal response. Robinson and Rackstraw (1967) took a

section of the response data, that concerned with the general mode and strategy of answering behaviour, and made what was largely a content analysis of it. They found that the middle-class children, especially those with high intelligence test scores, used more abstract structures and words, less self-referential speech, more precise words, and were more likely to summarise in their answers. These differences, the authors believe, are consistent with Bernstein's thesis that the 'elaborated code' can achieve greater economy in communication, greater abstraction and precision of expression, and a more objective perspective.

A more fruitful line of investigation, and, because it is concerned with grammatical analysis, one more closely related in design and intention to the present study, is that of Hawkins (1969). Using the data of the unit's research project, Henderson (1970) found a clear preference among middle-class children for taking up open-set choices within the nominal group. This means that in their responses they were tending to choose nouns rather than pronouns. The choice of the noun is a choice of greater explicitness of classification and differentiation but it also opens the path to the choice of adjectives and entry into the possibilities of modification, bringing with them the potentiality of greater specificity in the ascription of attributes. One of the 'blanket' characteristics which Bernstein assumed to typify the restricted code is its reduced "orientation to symbolise intent in a verbally explicit form." Hawkins (1969) clearly saw in the general trend among the middle-class children toward the use of the noun and in the contrasting trend among the working-class children toward the

use of the pronoun an opportunity of providing a linguistic correlation for a psychological characteristic of the codes. Operationalising the distinction made by Hasan (1968) between the cohesive and exophoric use of pronouns, Hawkins found that the working-class children were not just using more pronouns, but more pronouns of the exophoric kind, pronouns, that is, which rely heavily for their interpretation upon the surrounding context.

The work of Hawkins, Robinson, and Rackstraw, Lawton and of Bernstein himself appears to confirm the predictions of his theory in certain areas of language use. Even with respect to this limited confirmation a number of attenuating factors must be mentioned.

At a practical level, some of these studies have been criticised for the crude and arbitrary nature of the categories used in their analyses. Bernstein, for instance, isolated only four structural features. He discovered that a restricted code has fewer subordinate clauses, fewer complex verbal stems, fewer passives and more personal pronouns. Four features, as Coulthard (1969) has remarked, do not seem enough to make predictions about the "structural alternatives used to organise meaning" (1962b). More disturbing is the tendency, which occurs in Bernstein's (1962b) work and is reproduced in Lawton's (1963, 1964) replication of it and in the Chicago study (1968), to introduce lexical considerations in the form of the number and variety of adjectives and adverbs into an ostensibly structural analysis.

At a different level, certain of the more critical characteristics of the theory have had unfortunate repercussions upon the empirical studies which have attempted to validate it. To begin with, Bernstein's intention was an ambitious one, to provide a unified theory which would account for some of the socio-cultural causes of poor educational performance. The consequent width of reference of the psychological characteristics which are claimed to result from differential access to the elaborated code has made the task of finding linguistic correlates of them in the detailed analysis of spoken and written language a difficult one. Bernstein (1962a) himself, in his investigation of the psychological definition of the codes, which he presents in the introductory statement as differences in the "orientation to symbolise intent in a verbally explicit form", did not search for a linguistic correlation in a structural item of speech. Instead, he found it necessary to interpolate a mediating variable not mentioned previously, the "different verbal planning orientations" which, it is assumed, determine whether or not intent is symbolised in "a verbally explicit form", and which, in the shape of the hesitation phenomena which, again it is assumed, are related to them, became the item of analysis. In the results, there is no proof that elaborated code speakers succeed in symbolising intent verbally where restricted code speakers fail. Indeed, as Coulthard (1969) has pointed out, no attempt is made to measure this global characteristic.

It is not only in the width of their reference that the original theoretical constructs have left an ambiguous imprint

upon research in the field. Their linguistic 'extremism' has been noted with regard to Bernstein's deterministic notion of the relationship between language and thought. It is also characteristic of another of his notions, that users of the two codes utilise verbal planning procedures of a qualitatively different order, that in his own words, differential access to the codes establishes:

> "different kinds of regulation which crystallise in the nature of verbal planning (1965)."

This notion is at the root of Bernstein's broad differentiation of the codes and in the interpretation of his findings (1962b) he claimed to have found confirmation of it. Hawkins (1969) has made a similar claim in relation to his own findings on pronoun usage. He has found, he says, that the two groups he studied "are using pronouns in a different kind of way". (Coulthard, 1969) has criticised the drawing of these conclusions. For it to be warranted, he asserts, the social class groups contrasted would need to be much more clearly separated by their frequencies than they are in either study. What is demonstrated, he suggests, is merely that on any particular variable so far studied the working class "as a group" has performed worse than the middle class. Coulthard's criticism thus places in doubt the interpretations of two of the more important pieces of empirical work.

Another aspect of Bernstein's theories which has influenced empirical research is what appears to be his naive notion of the relationship between language and the context in which it is used. This notion has had two repercussions. Firstly, it allowed

Bernstein to suggest that the two codes can be defined by their structural predictability, an idea which he has put forward throughout his theoretical and experimental work and which has been criticised by Lawton (1968) as, at this stage, an unnecessarily severe criterion of definition. Significantly, the concept of structural predictability has been found too difficult to operationalise. At the time he was writing, Lawton felt able to remark that :

> "predictability as a test has never been applied to working-class and middle-class speech samples."

Secondly, through Bernstein's lack of an understanding of the possible effect of situational variables upon language use, it has led to weaknesses of experimental design in Bernstein's own work and in that of Lawton and, through its provision of their conceptual framework, has contributed to the methodological weaknesses of a number of research projects. The problem of controlling situational variables which may affect the use of language is a complex one. Halliday, McIntosh and Strevens (1964) have made a useful distinction between dialect, a variety of language distinguished according to its user, and register, a variety of language distinguished according to its use. Corder (1966) has said that in studying language varieties :

> "what we are trying to do is to find groupings of sets of linguistic features which can be shown to correlate with features, personal and impersonal, of the situational context."

This is the area covered by the concept of register variation. An individual or group will have access to a number of registers, the defining linguistic features of which will tend to co-occur with certain aspects of the situation in which they are produced. Halliday et al (1964) have claimed that registers are defined by their 'formal properties', and have gone on to discuss the possibility of a classification along three dimensions : that of the 'field' of discourse, the area of operation of the language activity (in situations in which the language is the central activity, the field relates to the topic being discussed); that of the 'mode' of discourse, which concerns those linguistic features which correlate with the medium in which the text has been produced (the primary distinction on this dimension being that between spoken and written language); and finally that of the 'style' of discourse, which refers to those linguistic features which correlate with variations in the social relations among participants. Philp (1969) has discussed the usefulness of looking at registers along these three dimensions, while introducing a sub-classification of the third. He distinguishes between the 'personal' style of discourse, those linguistic features which are a consequence of the relationships between the participants, and the 'functional' style of discourse, those linguistic features which correlate with the function of the language in the situation, that is, what the speaker is trying to do by means of his language, whether, for instance, to instruct, narrate, describe, etc.

The usefulness of this classification of four dimensions of register variation is two-fold. By offering a theoretical framework within which to classify the effects of situational variables upon

language use, it allows us to look systematically at the weaknesses of design which have led from the failure to control for these effects. By forming a critical theoretical perspective against which to place Bernstein's notions of the function of language, it enables us to search in the research works which have failed to validate his theories for the foundations of a possible future critique of his theoretical model.

Robinson (1965) has found three reasons to criticise the empirical investigations of Bernstein and Lawton : that there was a failure in both studies to allow for the influence upon language scores of differential knowledge of the topic discussed; that speech, the medium of communication used, did not offer the best opportunity for working-class boys to display any 'elaborated' code they may have possessed; that the social situation provided by the experimenters was not one that would be likely to evoke utterances in elaborated code from working-class boys. In terms of the classification of register variation above his criticism is thus that they failed to control for the situational variables which may have influenced the field, mode and personal style of discourse of the working-class boys. Lawton's work offers another and rather more dramatic example of failure to allow for variables influencing personal style. The case in question concerns not his working-class sample but his group of twelve-year-old middle-class boys among whom the discussion about capital punishment degenerated into a heated argument, producing an unfortunate deflation in adjectival and adverbial scores.

In some studies there has been a failure to control for factors affecting functional style. In the Chicago study the concrete and

descriptive nature of the language elicited by the tasks allotted to the sample of mothers forced the discontinuance of scoring on an abstraction scale after only one of three maternal language protocols had been analysed. Where the field of discourse is concerned solely with the topic (i.e. when language activity is the only activity involved) it is clearly closely related to functional style. This is apparent in the work at the Sociological Research Unit where one of the tasks given to the children, an explanation of the workings of a toy elephant, intended to stimulate them to use explanatory language, produced such small amounts of data that it had to be removed from the discussion of the results of an analysis of the language samples on the basis of form-class 'switching' by Henderson (1970).

Not all failures have been in the direction of lack of control. In their study of maternal communication strategies Robinson and Rackstraw (1967) found that for some of the questions asked of their mothers the structure of the actual question turned out to be a major determinant of the mode of answer leaving little opportunity for variation in answering behaviour to occur, and rendering inadequate an analysis of the level of generality at which answers were given. Similarly, in their study of the perceptual and verbal discriminations of "Elaborated" and "Restricted" code users Robinson and Creed (1968) found it necessary in their analysis of the verbal correlates of their discriminations to impose severe constraints upon the choice of the mode of expression only to find that this was successful only at the cost of limiting the range of

verbalisation. The experiment involved, at the end, simply a test of ability to produce explicit verbal labels. In both of these studies, then, constraints in the area of the field and mode of discourse had placed limitations upon the analysis of the style of discourse.

It is also in this area of contextual dependence that the most criticism has been levelled at Bernstein's formulations from those researches which have failed to validate his theories. The direction of these criticisms seems significant. The most prominent linguistic definition of the codes found in Bernstein's papers is, as has been mentioned, that of structural predictability. In the case of an elaborated code, he has said,

> "the speaker will select from a relatively extensive range of alternatives, and the probability of predicting the organising elements is considerably reduced. In the case of a restricted code the number of these alternatives is often severely limited and the probability of predicting the elements is greatly increased (1965)."

The idea that restricted code users may have access to a number of different registers does not seem incompatible with the belief that their language is structurally more predictable. However, if the delineation of registers is to be sought in their "formal properties", in their syntactic and semantic structure, then the increased structural predictability of the restricted code user's language would make it seem unlikely that he would possess the variety of verbal repertoires

necessary for what Davies (1969) calls extensive "registral switching". If he should be found to possess these verbal repertoires then the concept of restriction of code would need to be revalued.

The influence of different tasks or topics in stimulating different functional styles of discourse has been remarked upon. When they broke down their social class groupings into individual responses, Hess, Shipman, Brophy and Bear in the Chicago study found a picture of bewildering complexity. Social class consistency did not appear to extend to the individuals comprising each group. Intercorrelations of language scores within each social class group showed the same pattern; mothers within each group were inconsistent across speech samples. There was also little or no inter-class consistency: where the correlation was positive for each social class group on a particular scale it was just as likely to be negative as positive for another group.

Henderson (1970) in her study of form-class switching among five-year-old children found a clearer pattern emerging although with the benefit of only a limited amount of data. She found that the tasks allotted acted selectively in the production of all the form-class measures she studied and that more middle class children achieved form-class switching (i.e. significant proportional changes in the percentage of form-class used on different tasks) than working-class children on every measure. The fact that the majority of the children who achieved significant switching on token and type nouns allocated these form-classes to one particular task might be

taken as an argument for the existence of a distinct register evoked by this task and the fact that switching on these items was rather less in evidence for the working-class children might also be taken as an argument in favour of the existence of a reduced verbal repertoire among the latter. However, when the direction of allocation of two other form-classes, token verbs and type adverbs was analysed, a different pattern emerged. Working-class children tended to allocate the highest proportion of their token verbs and of their type adverbs to one task, whereas no such consistency emerged among middle-class children. The two tasks were chosen because they were intended to elicit different functional styles : one, narrative speech; the other, descriptive speech. For two of the form-classes at least, the working-class children would appear to have a more distinctive functional style. It is perhaps, dangerous to draw too powerful an implication from such a limited study. Henderson herself has acknowledged the inadequacies of her data, limited as it is by the small sample of children involved, the inefficiency of a range of contextual samples of comparable size, and by the scarcity of some form-class items in the children's speech.

Where Henderson had partly failed, Lawton (1965), in a similar kind of analysis, was rather more successful. Taking the sample of boys written and spoken language he had analysed in essays and group discussion, he interviewed each individually, categorising his questions according to whether they were intended to stimulate abstract or descriptive styles of speech and presenting them in a

structural form so that the speech sample for each boy could be divided into the categories of "abstraction" and "description" from the position of the sequence in the structure of the interview. Tighter control was thus exercised along all four of the dimensions of registral variation. Lawton's main purpose was to study what he termed "code-switching", the extent of linguistic adjustment made to the difference in context between the "description" and "abstraction" sequences, measured by the differences between scores on the two categories. Two predictions were made : that all the boys would make some linguistic adjustments; but that the middle-class boys would make greater adjustments than the working-class boys, that is, that their facility in code-switching would be greater. The first prediction was confirmed : on all measures except those relating to adjectives and adverbs a majority of boys scored higher on abstraction than on the descriptive sequences. The second prediction was confirmed by the fact that the middle-class twelve-year-old boys reached a higher average degree of code-switching on all nine measures, and the fifteeen-year-old middle-class boys made greater adjustments on seven measures. The social class differences in scores which emerged were smaller than those of the two previous reports on written work and group discussions.

This research raises a number of problems. The consistent patterns of alteration in scores and the lowering of social class differences in the more structured situation indicate the danger of generalising about children's language on the basis of only one context. As Lawton concluded, "assuming the existence of two codes,

objective linguistic measures of these cannot be considered as absolutes but will vary according to the situation in which the language is employed."

A further problem arises if we accept Bernstein's original socialogical location of the codes, that use of the codes is not necessarily associated with social class, but that in an industrial society such an association will have a high degree of probability. The picture which Lawton presents, of working-class boys switching from restricted to elaborated code, clearly runs against the main hypothesis. The difficulty, however, in the acceptance of Lawton's interpretation of his findings is that the criteria he uses for the definition of elaboration and restriction are contextual in nature. Language is categorised as elaborated merely if it occurs in an abstraction sequence. The fact that he calls attention to the increased use of subordination and more complex constructions in these sequences as evidence of elaboration of code is no substitute for a vigorous and systematic linguistic definition. Indeed, a less extreme conclusion might have been expressed in terms of the concept of register. In these terms, the movement of both social-class groups in the same direction could be taken as indirect evidence of the existence of an "abstraction" register and the reduced social-class differences which still remained as a sign that access to this register was more limited for the working-class boys.

One of Lawton's conclusions, that working-class children will generally make a more limited linguistic adjustment to changes in context, is brought into question by a further study by Robinson (1965).

Lawton had not applied the concept of code-switching to his analysis of written language. Robinson adapted a technique similar to that which Lawton had used with the interview data to the analysis of two letters written by a sample of middle- and working-class boys and girls aged between twelve and thirteen; one, addressed to a friend, was intended to encourage the use of a restricted code, the other, addressed to a school governor, that of an elaborated code. Again, the definition of elaboration and restriction was contextual. In terms of the dimensions of register variation an attempt was being made to study the linguistic correlates of alterations in the imagined relationships between the participants. The formal and informal letters were intended to evoke a formality and informality of personal style. If Bernstein's hypotheses were correct there should have obviously been significant lexical and grammatical differences of the type he describes between the middle- and working class samples in the situation which Robinson believed required the use of an elaborated code. Such differences did not occur. The statistically significant differences found in the "formal" letters were few in number and failed to exceed chance expectation. Differences of the type suggested by Bernstein were found in the "informal" letters but these were mainly in lexical items. In the crucial area of grammatical structure the differences were confused and disparate. The pattern here is rather different from that which appeared in Lawton's interview data. The absence of clear differences in the "formal" letter would presuppose that, if contextual criteria can be taken to define an elaborated code, such a code is no less available to working-class than to middle-class children. Yet the

inference he draws about the likelihood of its occurrence in working-class language is not very different from that of Lawton. In the letter to the school governor the choice of topic was limited and the form of discussion restrained. Under these conditions virtually no social class differences appeared. In the letter to a friend the number of topics and their manner of discussion was optional for each subject and it was in this letter that social class differences, albeit somewhat confused, emerged. Evidently, what was lacking in the "informal" letter was a suitable control over the factors affecting, in terms of register variation, the field of discussion. Where such elementary control over the type of subject matter does not exist, among working-class children, it seems, an elaboration of language is unlikely to appear.

Researches such as these have compelled Bernstein to modify his original model and to withdraw from some of his more extreme theoretical positions. The linguistic definitions of the codes have been particularly badly eroded. It is doubtful, for example, whether the notion of distinct socio-cultural orientations to different types of verbal planning will long survive the experimental failure to divide speakers by their language scores into separable groups and the simultaneous observations that within any group of speakers, of whatever social class, there is a wide range of ability. Logical consistency would seem to require that with the linguistic definitions must go the linguistic determinism. If groups of working - and middle-class subjects cannot be separated by their language scores then, according to the theory, they cannot

be completely separated by the extent to which they can achieve access to the orders of meaning of the elaborated code. Of equal importance and of more relevance to this research has been the growing awareness of the influence of context upon language use. Recently this has been acknowledged by Bernstein (1969a), who has conceded that :

> "it is clear that context is a major control upon syntactic and lexical selections, consequently it is not easy to give general linguistic criteria for the isolation of the codes."

This concession brings into the open the problem of competence and performance for it could be argued that the depression in working-class language scores that have been found have been the consequence not of a lack of innate ability but of a failure to draw upon the reservoir of this ability under certain situational constraints. This is an argument which Bernstein now seems prepared to use. In a recent discussion of an unpublished finding of Turner that, in certain contexts, working-class children, when compared with middle-class children, use fewer linguistic expressions of uncertainty, he has said that such evidence,

> "does not mean that working-class children do not have access to such expressions, but that the eliciting speech context did not produce them (1970)."

He is anxious to emphasise that :

> "because the code is restricted it does not mean that the speakers at no time will use elaborated speech variants. Only that the use of such variants will be infrequent in the socialisation of the child in his family (1970)."

To talk in terms of movements between codes in the absence of a generally accepted linguistic definition of those codes seems to be to make a rather extreme statement of the situation. A more moderate standpoint is that put forward in this review, namely, that subjects whose language in "formal" terms might be regarded as sub-standard may, nevertheless, possess a verbal repertoire large enough to allow what, in terms of their own language, might be regarded as extensive switching between registers. This leaves open the viability of the codes but it still does not answer the earlier question of why, in certain contexts, the restraints are such that working-class subjects draw only lightly upon their linguistic reserves. Bernstein's answer is that the reason lies in the inability of working-class subjects to handle complex role-play. "Different modes of speech", he has said, "issue from different role relations. Individuals may be unable to produce appropriate speech modes because they are unable to deal with the role relation necessary for the appropriate communication (1970)."

Exactly how this could be applied to the mode of written language is not made clear. All the same, to say as Bernstein later does, that :

"If you cannot manage the role, you cannot produce the appropriate speech",

represents another considerable retreat from linguistic determinism, which had produced an earlier statement to the effect that,

"The ability to switch codes controls the ability to switch roles (1965)."

The failure to correlate code and procedures of socialisation has, it has been said, ensured that the location of the codes in the socio-economic structure has remained an ideal rather than a reality. This is a crucial failure in a model designed to explain the nature of the constraints upon the educability of working-class children and the consequent theoretical modification has been hastened by the fact that the concept of class has never been defined by Bernstein in a completely satisfactory way. In his writing, for instance, the terms 'working class' and 'lower working class' have alternated quite unsystematically. Indeed, as Lawton (1968) has remarked, the traditional sociological concepts of class, established through different terms of reference, are of limited value in a comparatively new field. Certainly, the research into social class differences in familial control and communication structures under Bernstein's aegis at the Sociological Research Unit and by Hess et al (1968) at the University of Chicago would seem to bear out Lawton's remark. The emphasis of the conclusions of both studies seems to be in the direction not of class but of sub-culture and the observation of Hess et al that:

> "when other variables are controlled for, social class appears to be of only limited relevance as a predictor except on a broad group basis. This supports the view that social class is an umbrella variable, which in simple correlations often masks the effect of covert variables associated with social class status",

is in this regard, not dissimilar from that of Bernstein (1970) that :

> "from the point of view of the influence of the family upon children's responsiveness to school, we need to start, not with social class as our independent variable, but with an understanding of those variables which we believe to control the social antecedents of educability."

Most of the inquiries into social class differences in language use have been concerned with young children : Robinson and Rackstraw (1967); Robinson and Creed (1968); Coulthard and Robinson (1968); Hess et al (1968); Hawkins (1969); Henderson (1970); or subjects in early adolescence : Lawton (1963, 1964, 1965, 1968); Robinson (1965, 1968); Smedley (1968). Where adults have been introduced into the analysis, these, universally, have been mothers of young children, and the analysis of either their language or their conceptions of its relevance has been a subordinate one, the interaction being merely to provide evidence for more general investigations of patterns of maternal communication and control, Hess et al (1968); Robinson

and Rackstraw (1969); Bernstein and Henderson (1969); Bernstein and Brandis (1970). Large-scale explorations of the language behaviour of adults, as studies in themselves, do not exist. There are certainly no studies of adult grammatical structure although Labov (1963) has done a phonological analysis of a sample of adult speech. What he found was that a large majority of his respondents showed patterns of stylistic variation consistent with the status of some phonological variables as prestige markers and of other as stigmatised forms. The pattern of stylistic variables was closely associated with the pattern of social stratification in New York city and there were a number of examples of what Labov called fine stratification : a great many divisions of the socio-economic continuum in which stratification is preserved at each stylistic level. At the phonological level, the relationship between stylistic variation and socio-economic structure was shown to be one of remarkable complexity. Whether adult grammatical structure would prove to be as sensitive to differences in socio-economic status it is impossible to say.

The neglect of the language of late adolescence and early adulthood is even more surprising in view of the fact that the original sample of language which Bernstein (1962b) analysed was taken from the group discussions of post office messenger boys on day-release at a local college of further education. From the evidence gathered for the Crowther Report (1959) it seems that, for the educationally less-successful working-class child of the post-war generation, any acquaintanceship with formal education beyond the system of selective secondary education will most probably have occurred after enrolment at a local technical college

on a part-time day-release basis. As the chapter heading of Volume One of the Crowther Report put it, the area of Further Education has been an area of "neglected educational territory." And yet it is an area, also, of distinct and idiosyncratic characteristics, an area where the adolescent, in the process of sociolisation into his occupational role, enters into reciprocal role relationships in an educational setting with teaching staff who, as Venables (1967) has pointed out, have, most of them, come up through the same system, "struggling up the same sort of ladder."

Now, as far as its implication for the study of the classroom situation are concerned, the hard core of Bernstein's theory lies in its explanation of the educational failures of working-class children, as, in origin, failures of communication. The teaching situation of the lower working-class child, he has said:

> "is often persecutory and exposes him to a persistent attack on his language and so his normal mode of orientation. He is bewildered and defenceless in this situation of linguistic change (1961)."

Most of the research reviewed has been concerned with the production rather than with the comprehension of language. Hence the hypothesis of communicative failure is still awaiting confirmation. Cherry (1968) has attempted to evaluate the extent to which information is successfully communicated from teachers to pupils of various social backgrounds and the degree to which

communication is effective among children from different social backgrounds. An apparent paradox in her findings is that treatment of the data with analysis of covariance removed the social class differences in the comprehension of the teachers' speech samples but not those found in the comprehension of the children's speech samples. In any case, Bernstein's notions were worked out in relation to the situation of the school classroom and whether an extrapolation can be made from this situation to others more typical of the technical college, to that of the workshop, say, with its craft instructor and apprentices, is a matter, largely, of speculation. Future research may reveal an identity of experience and a homogeneity or origins between instructor and apprentices which will not allow the extrapolation to be made.

Behind this debate about the extent to which the experience encountered by the working-class adolescent at a technical college is a novel one lies the much wider debate about the influence of formal education upon the pattern of abilities of the under-privileged. Dockrell (1966) has investigated the relationship between patterns of abilities and two environmental variables; socio-economic status and type of secondary education for twelve- and fourteeen-year-olds. What he found was that the patterns of abilities of working-class children appear to be sensitive to variations in educational experience. In the grammar school their verbal abilities develop most rapidly; in the technical school their numerical, spatial and other non-verbal abilities. The middle-class children in the technical school in Dockrell's study showed the same direction of change as the working-class children but in their case the differences were not significant.

Dockrell's conclusion is that environmental influences, specifically educational influences, affect the developing patterns of abilities if "they provide a stimulus and make a demand that is new."

A similar investigation has been undertaken by Venables (1961) into alterations in the patterns of abilities of technical college students. As already mentioned, she gave a group of part-time day-release ONC engineering students a verbal and non-verbal intelligence test in their first year at technical college, and half-way through their third year. Three of her findings are particularly pertinent to this research : firstly, there was a discrepancy in the sample, already discussed, between the verbal and non-verbal scores (of the 182 involved in the test/re-test situation 140 had higher non-verbal scores); secondly, the gap between the two scores tended to narrow during the intervening two-and-a-half-years; and thirdly, and most relevantly, the approximation of the scores stemmed from gains over the intervening period on the verbal tests. On the first occasion the mean verbal score of the test/re-test group was 11.1 points lower than that of third-year students tested for the first time, on the second occasion 2.98 points higher. On the non-verbal test the mean improvement in score was much less, only 2.73 points. Now, although statistically significant gains were made on the verbal test at all levels of initial score, a detailed analysis of the results of the two tests revealed that improvements in verbal ability were greater, the greater the initial difference in level of score between the two tests and it was this relationship between initial verbal and non-verbal scores, rather than the factor of

formal academic success which appears to be the important discriminating element (the greatest average gain was evidenced among the academically successful group with the lowest initial verbal scores).

These findings offer up new and exciting grounds for empirical exploration for they do more than just indicate a measure of intellectual growth in late adolescence; they suggest that among the type of student tested it may be of a dramatic and unexpected kind. Have we evidence here of a substantial carry-over from the routine handling of technical concepts to the general refinement of verbal skills? Dockrell (1966) saw reflected in the growth in verbal scores of the working-class grammar-school children their possible acquisition of an elaborated code. Such a view would pre-suppose an increase in competence in every department of language use. But could such widespread repercussions result from the mere transfer of technical knowledge? Would there, to put it another way, be a general refinement of verbal ability or would there simply be disproportionate gains in specific verbal skills? Bernstein and Henderson (1970) have reported that middle-class mothers, relative to the working class, place a greater emphasis upon the relevance of language in inter-personal relationships; whereas the working-class mothers; relative to the middle-class, place a greater emphasis upon its relevance to the transmission of basic skills. If this is the basis of the aesthetic of working-class language with which Bernstein makes great play, then, will it not be a determining factor, influencing the nature and direction of any increase in verbal skills? Robinson (1967), taking a point from Bernstein and developing it further, has suggested that the development of the

speech of the working-class child will be towards adult working-class speech, any increase in skill taking the form not of a reduction but of a refinement of its already pronounced 'concrete and self-referential' nature. In this case, the proclivities of sub-culture, accentuated, perhaps, by the character of the learning situation and by the nature of the knowledge transmitted in college and factory, might ensure that any growth in the facility of verbal repertoire would be of only a limited and idiosyncratic kind. Might not a technical student be given the key to an extensive and 'elaborated' technical register while the door to the verbal explication of emotions and attitudes, to the symbolisation of intent, remains closed? It is to the answers of these questions that the structural analysis of the language of working-class adolescents in college and at work may be found to provide some hidden clues.

CHAPTER II

THE DESIGN OF THE EXPERIMENT

(i) Statement of Hypotheses

Halliday (1969) summarised Bernstein's own reappraisal of his original theoretical model when he said that the deficiencies in the language attainment of the working-class child arise out of the fact that:

> " - - - - some of the functions of language have not been accessible to him. The restriction is a restriction of the range of uses of language."

The idea that impoverishment of language development may be a question of the availability to the child of different functions of language seemed to offer a new perspective upon Venables' observation of the way in which the relative depression of the verbal scores of working-class adolescents was modified over a period of extended education. The significance of this observation is increased by the knowledge that the recognition of this depression, particularly in relation to the higher working-class scores on non-verbal tests, was the first empirical finding of Bernstein (1959) and the one which stimulated his later research into language structure. The inference which Venables draws from the observed alternation in the relationship of the verbal and non-

verbal scores among her engineering apprentices is that it arises out of:

> "a subsequent experience of the need for verbal skill in a learning situation which they (the apprentices) have come to value" (1965).

This comes close to Halliday's explanation of restriction of code although without necessarily being stated in the same terms. It is the relevance to him of a particular function of language which, Venables seems to be saying, is what is made apparent to the engineering apprentice.

This linguistic definition which Bernstein offers for the restricted and elaborated codes is a structural one. In terms of his model, the significance of Venables' observation is that it raises the question of whether the changes in the relationship between verbal and non-verbal ability among engineering apprentices can be taken as indirect evidence of a simultaneous increase in the facility with which language is used at a structural level. There is also a further question: if an increase in facility were to occur, in which aspects of language use would it be most apparent? Robinson (1965) has said that a divergence of coding ability may be characteristic of working-class boys of school-age, who are given plenty of opportunity, in the classroom, to write in an elaborated code but little practice in speaking with it. His claim to have found evidence of elaboration in the written language of 'restricted code' users rests unfortunately on the response of his subjects to only two essay topics, the formal and informal letters he set them to write. Lawton (1963) used a

wider range of topics to write on but his social class samples were small and he made no attempt to search for stylistic adjustments from topic to topic. It is difficult, in fact, to reconcile Robinson's suggestion with Lawton's (1968) own claim that, for all encoders, the verbal planning procedures involved in writing are closer to those of an elaborated code. The evidence which might be adduced in favour of Robinson's suggestion, - the response of working-class adolescents to the task of producing two different types of letter-writing - is also limited. Yet the general prevalence of the written examination system together with the traditional emphasis upon literacy rather than oracy in the classroom would seem to add weight to Robinson's belief that if elaboration of code is to occur as a result of experiences within the formal educational system it will be evidenced in the written language.

This minor hypothesis forms the point of departure from which the present research began. The motivation behind the construction of the research project lay in the desire to take Bernstein's model of 'elaborated' and 'restricted' codes in the light of the theoretical modifications proposed in the foregoing discussion and then to test its applicability to the analysis of the written language of working-class secondary modern school leavers who, in the process of industrial training, have undergone some form of technical education. Three hypotheses were formulated:

(a) that an analysis of the written language of working-class subjects of the kind in question would show their performance on a number of linguistic items indicative of 'elaboration' of language to be inferior, as a group, to that of middle-class subjects of a comparable age;

(b) that, despite this relative inferiority the working-class subjects would be shown to possess, where the eliciting titles demanded it, a more definitive 'functional style' of technical explanation;

(c) that, as a consequence of this greater command over technical register, a comparison of the mean scores obtained by the two social class groups under the technical titles would show the working-class subjects to perform as well as their middle-class counterparts on linguistic items indicating 'elaborated' language, where the need to express technical concepts required them to do so.

These were hypotheses, stated at a certain level of generality. Below the grammar used in the analysis is discussed. After that discussion the hypotheses are re-stated in the form of detailed predictions of performance on specific items of language structure.

(ii) The Sample Used

The sample studied consisted of two groups of adolescents, controlled for age and parental socio-economic status. The working-class subjects in the sample were young men working as operatives in car factories and attending a college of further education on a part-time day-release basis as part of a general course of industrial training. The middle-class subjects were young men in the science courses of the sixth form of a major public school.

Originally, both groups had contained over forty subjects. If such numbers had survived intact the months during which the written material was collected the final language corpus would

have presented a massive and probably intractable task of analysis. As it happens, in the working-class group, the ordinary processes of industrial absenteeism cut down the numbers involved from week to week while; in the middle-class group, a similar effect was produced by the pressure of external examinations. At the end of the period of testing, there remained twenty-five working-class subjects and twenty-two middle-class. The severity of this reduction does not alter the fact that the total sample of forty-seven remaining was, for a piece of individual linguistic research, a large one, larger than Lawton's (1963, 1964, 1965, 1968), which numbered only twenty, and larger even than Bernstein's (1962a, 1962b), which contained no more than twenty-five. The mean age of the final working-class group was 17.1 years; of the middle-class 17.5.

For the social class grading of the two groups the criterion used was the location of the father's occupation on the Registrar General's Index of Occupational Classification (1966). All the fathers of the operatives were manual workers, the majority of these, as technically semi-skilled workers, falling into class four of the Index. Only twelve could be placed unequivocally in class three manual, as workers having had a specific training for a skilled occupation.

By the same method of classification the fathers of all the public school boys were placed in either social class one or two.

The social class division between the two groups was thus clear and decisive. The need to have a very definite division of this kind was by no means a purely academic one. It has been mentioned by Lawton (1968) that research in the field of socio-

linguistics has lacked the framework of an unambiguous definition of social class. In the discussion above it has been shown that Bernstein did not always seem certain about the exact sectors of the working-class to which limitation to a restricted code applied. It has also been remarked how the terms 'working-class' and 'lower working-class' have alternated in his writings, with the latter term seeming at the end to carry more of the burden of code restriction. Lawton (1963, 1964, 1965, 1968) used the same method of classification as was used in this study. Yet he felt that the pupils he studied came from 'respectable' rather than 'rough' working-class families. His justification for that feeling was confined to remarks about the reputation of the secondary modern school they were drawn from and to pointing out that four out of five of his fifteen-year-old group stayed on at school for a full year after the compulsory leaving age. In the resumé of his experimental work Lawton (1968) pointed to the narrowness of his class differential (the independent school he took his middle-class group from was comparatively inexpensive and characterised by a high staff turn-over) as a modifying factor in any conclusions he might have drawn about social class differences in language performance. Robinson (1965) admitted an equally narrow class differential in the sample which he studied. He classified his subjects according to the placement of parental occupation in the Hall-Jones (1950) social class categories. Children were retained for the experiment when father's occupation fell within the middle-class categories 4 - 1 of that index. This meant that the children of lower professional, lower managerial and clerical fathers were included in the middle-class group. These

occupational levels were absent from this study. Robinson's subjects also came from the same school, a 'creamed' comprehensive, in an area in which a small percentage of children went to grammar schools. The class differential in this study was clearly wider than in either of these two previous researches.

Both of these researches had introduced factors other than the grading of father's occupation into either the classification or description of the social class characteristics of their samples. Robinson added mother's occupation as an extra criterion of classification while Lawton brought the educational experience of the child as an associated element into the social class description of his working-class sample. In view of this precedent and of the tendency of Bernstein, already mentioned, in his later writing, to place limitation to a restricted code in the lower working-class it was decided to introduce a number of additional variables into the description of the working-class sample.

In his critique of Bernstein's work, Lawton (1968) made a distinction, which he did not himself operationalise, between the non-transitional working-class, where the father will be in a manual occupation and have had no experience of either selective education or skilled occupational training and where the mother will also have had no experience of selective education or skilled occupational training nor any experience of a non-manual occupation, and the transitional working-class, where the father will have had some experience of selective education or will possess some certificate of occupational skill or where the mother will either have had some experience of selective education or have been employed in an occupation superior in status to that of the father. The implication of Lawton's critique would seem to be that, if there is a class-bound limitation to a restricted code, it will most

likely to be found in the non-transitional working class. Using, therefore, Lawton's classification as a guide, a questionnaire was submitted to the working-class group in order to find out more about the social class background from which they came. In the absence of a questionnaire direct to the parents, conclusions drawn could only be in the most tentative form. Replies to questions about the nature of parents' education and occupational training could not necessarily be relied upon as being accurate. Evidence about father's occupation had already been collected. In the questionnaire the respondents were asked to recall their mother's occupation and, if she was not working, any occupation she may have held in the past. Unsatisfactory though this method was bound to be, the nature of educational and occupational training experience was assumed from the nature of the occupational history described. Following Lawton's study, the educational experience of the subject was also investigated. He was asked the type of school he had attended, the age at which he had left, and, if the school had practised a system of streaming, the stream in which he had ended his final year. He was also asked the size of his family and whether his parents owned or rented their house.

The purpose of these questions was to provide more evidence than had been available in previous researches about the class background of working-class adolescents whose written language bad been analysed. Lack of systematisation, itself partly a product of the lack of a workable definition of social class in the field of socio-linguistics, rendered their total effect a purely illustrative one. However, from the answers an interesting

picture emerged. The number of fathers involved in skilled occupations has already been listed. As far as the mothers were concerned, evidence of specific occupational training could be found in only three cases. All of the three mothers in question were nurses. There was no other evidence of experience in a non-manual occupation in the whole of the sample. On occupational and educational criteria the majority of these families failed to satisfy Lawton's definition of transitionality. They were also quite large. The mean number of siblings reported by each respondent was 4.0. And more significant still, in view of what Zweig (1961), Willmot and Young (1960), Lockwood, Goldethorpe *et al* (1969) and others have said about the function of home ownership in the translation of material advancement into status aspiration, all except one of the families reported lived in rented accommodation. Of the young men themselves, no evidence could be found of educational aspirations such as those which had characterised Lawton's group of fifteen-year-olds. All had attended secondary modern schools. Where streaming was in operation, as it was reported to have been in eighteen out of the twenty-five cases, all except three had ended up in the lower streams. No-one had stayed on beyond the statutory leaving age. Nor did anyone possess a formal examination qualification. Asked at the end of the questionnaire whether their parents had influenced their choice of occupation a majority, eighteen out of twenty-five, said that this had not been so. Asked also whether, if the firm had not sent them, they would have gone to the college of their own accord, a large minority, twelve out of twenty-five, replied with a categorical 'no'.

It had originally been hoped to take a comparable sample solely from the Science courses of the public school in question as it was expected that sixth-formers with a pronounced scientific 'bent' would be better able to write on the necessary technical topics. However, some 'arts' and mixed 'arts and science' people were included in the original sample of forty to allow for natural wastage during the collection of material. Unfortunately, the processes of wastage worked rather more heavily upon those doing pure science courses with the result that only eighteen of the final twenty-two could be classified as being involved in a predominantly 'scientific' course of study. Despite this, the technical topics were handled without the appearance of any difficulty by everyone in the group. All of this group were taking their study to Advanced level. All possessed at least one qualification in English Language; and a large number, fifteen out of twenty-two, also possessed a qualification in English literature. All except one intended to go on, finally, to enter University in the succeeding year.

In terms of formal educational experience, it would have been difficult to have acquired two groups further apart than those used in this analysis. The operatives attending the college of further education were evidently a 'conscripted' body. It would be difficult to sustain against this research the charge that Ravenette (1963) made against that of Venables (1961), that the working-class students concerned were a highly motivated and selected sample of their class. Nor can the charge fairly be made which Lawton levelled against his own research, that the

group whose language was analysed was representative of an 'upper' or 'transitional' section of the working-class.

The two groups were tested for ability on the AH4. This test is divided into two parts, the first tests verbal ability with a numerical component, the second spatial. The mean scores for the two social class groups were as follows:

	WORKING-CLASS	MIDDLE-CLASS
AH4 Part 1	25.6	51.6
AH4 Part 2	35.9	54.0

Two points about the pattern of these scores need to be singled out for emphasis. Both emerge from a comparison of the pattern of scoring here with that obtained by Bernstein (1960) from his two social class groups. Using the Raven's Progressive Matrices Test, 1938 and the Mill-Hill Vocabulary Scale form 1 Senior, Bernstein found that among his working-class sample the language scores obtained on the latter were depressed in relation to the higher ranges of the Matrices test. Although the dichotomy of abilities presented by the separate parts of the test used here is not strictly comparable to that produced by the use of two separate tests, the pattern of scoring showed a remarkably similar pattern of relative depression of verbal ability. Bernstein indicated the relationship between his two test scores by means of a histogram. This is reproduced on the following page, together with one constructed along similar lines to clarify the similarity of verbal/non-verbal relationships in the scores of this study. The analogy is not a perfect one and yet the resemblance, particularly with regard to the scores in the high ranges of the non-verbal test, is clear.

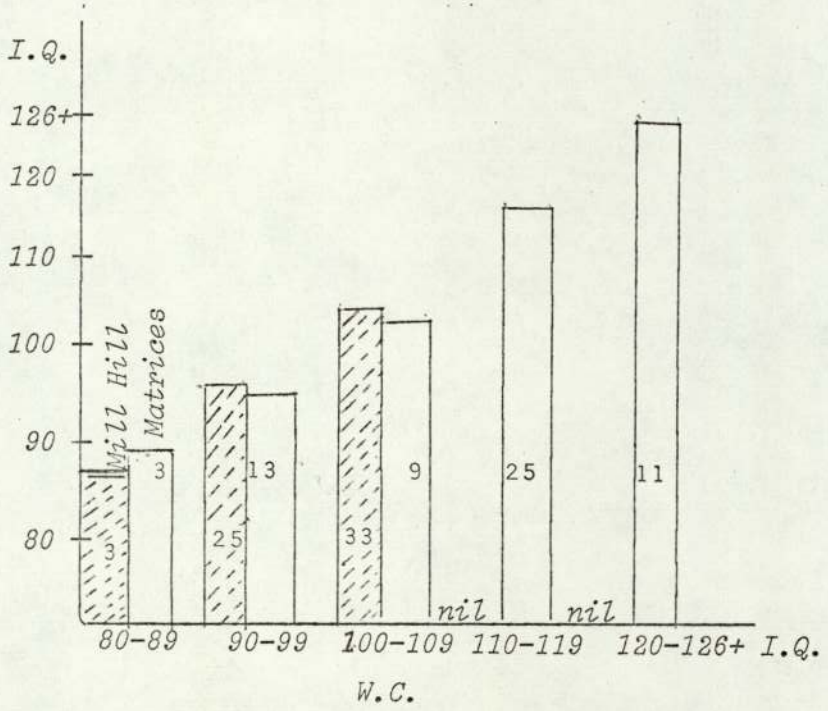

TABLE A

A reproduction of Bernstein's histogram in his article "Language and Social Class (A Research Note)", showing the mean matrices and Mill Hill scores obtained by his working-class subjects. The blocks representing the Mill Hill scores are shaded. The figure within each block refers to the number of scores within each range.

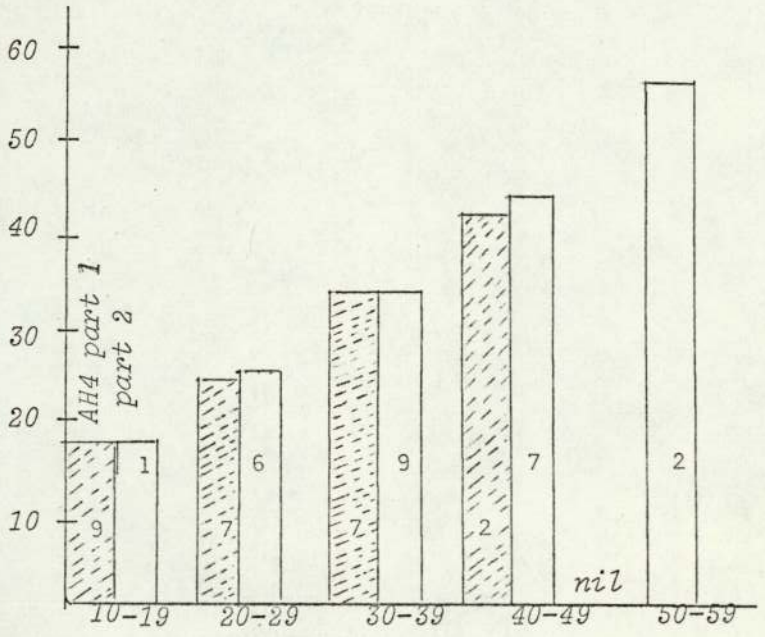

TABLE B

The histogram indicates the mean scores obtained by the working-class subjects on the AH4, parts 1 and 2. The shaded blocks represent the scores obtained on part 1. The figure within each block refers to the number of scores within each range.

A second point needing to be emphasised is that the relationship between the working-class scores in this study existed at a much lower level of ability than that encountered by Bernstein. While there was a difference between the mean scores of his social class groups of 18.3 on the verbal test, on the non-verbal test the means of the two groups were very much closer, the difference being only 3.04. On the test used in this study, a test ostensibly designed to cover the lower ability ranges, the social class differences in mean scores were of a greater magnitude. The difference between the means of the verbal/numerical section was as high as 26.0. More surprisingly, this massive superiority of the middle-class group was only moderately reduced on the non-verbal section, the difference there being 18.0. Such a large difference on the second section places the marked inferiority in verbal skills within a total picture of inferiority in ability as a whole. This was not true to the same extent of Bernstein's working-class sample and the fact that it was no so reinforces a point made earlier about the working-class in this study in contrast to that of Venables or of Lawton, that it is, in no sense, highly selected. The point can now be made again, this time in contrast to the sample which Bernstein used. Ravenette (1963) has suggested that, in the latter case, the sample was more highly selected than was realised at the time. Again this criticism can scarcely be applied to this study.

Bernstein allowed for the influence of intelligence upon linguistic ability by controlling the ability scores of small subsamples of his original sample. The use of small samples has its own very strong attractions for the researcher into linguistic structure but to have used this method would have been, it was felt,

to have robbed this particular research of much of its worth. In any case, the discrepancies in scores between the two social class groups was so large that the overlap between them would have allowed only the smallest of sub-samples to have been matched on their ability scores. It was, therefore, decided to proceed to the linguistic analysis without further controls but to partial out the influence of the verbal/numerical scores upon the linguistic results by means of analysis of covariance.

(iii) Procedure (a) The Presentation of the Essay Titles

The subjects were at first given nine essay titles to write under. Originally, a time limit of thirty minutes had been set for the completion of each essay. The difficulty the operatives found in writing more than a sentence or two within an unfamiliar discipline made this time limit seem unnecessarily severe and it was extended to fifty minutes. The essays were finished and handed in over a period of six months, as the school and college timetables permitted. No situational controls were exercised other than those which usually prevailed in the classrooms concerned when written work was being produced.

The written language was, thus, controlled along the four dimensions of register variation mentioned above, the dimensions of field, mode, personal and functional style of discourse. It was the last dimension, that of functional style, which formed the basis of the classification of the corpus of language produced. Along this dimension, the titles fell into three categories according to the functional style which they were intended to elicit. The functional styles anticipated were classified as:

(i) Imaginative Descriptive, probably the earliest style of writing taught in the classroom, in which the writer is asked to describe the more sensuous aspects of an adventure or an experience in the form of a loose narrative; the titles which were chosen to provoke this form of writing were: (a) "The City at Daybreak"; (b) "What the world might at first look like to a man who had been blind but had just been given his sight"; (c) "A walk across a disused aerodrome on a hot summer's afternoon".

(ii) Opinionative Discursive, a style of writing which occurs almost universally at the secondary level, in which the writer is asked to assume an attitude towards what is, generally, a societal phenomenon and define it in the form of a reasoned argument: the titles in this category were all modified forms of essay questions taken from previous 'O' level English Language papers; they were: (d) "The Pleasure of Making Things"; (e) "Speed: the fascination of danger"; (f) "The World in Fifty Years' Time".

(iii) Technical Explanatory, a style of writing which, it was believed, was more widespread in technical education than in the schools, in which it is incumbent upon the writer to describe the interrelationship of the component parts of a piece of machinery in such a way as to reveal how it is enabled to perform its functions, the titles in this category were: (g) "A Workshop Lathe: what it looks like and how it works"; (h) "Describe the appearance and function of any piece of machinery which you choose, showing how the way it is constructed enables it to perform

its function"; (i) "Describe how the way a bicycle is constructed enables it to perform its function". For some reason not very clear, the response of the working-class subjects to the third technical explanatory title (i) was unsatisfactory. A large number did not attempt to write upon it. It was therefore removed from the analysis. Fortunately the responses of both groups to the other two technical explanatory titles, (g) and (h) was substantial enough to compensate for the quantitative loss of this removal. This was especially the case with the working-class subjects, who wrote almost as much on the remaining titles in this category as they did on the three titles (d), (e) and (f) of the opinionative discursive category.

(iii) Procedure (b): The System of Grammar used in the Analysis

The grammar used for the analysis was the 'Scale and Category' or systemic model developed by Halliday (1961, 1963, 1963, 1964, 1964, 1965, 1967a, 1967b, 1967, 1968, 1969, 1970), McIntosh and Strevens (1964), Huddleston (1965), Hudson (1967) and Sinclair (1965). The fundamental categories of this model are those of 'unit', 'structure', 'class', and 'system'. The relation of these categories to each other and to the data involves three distinct scales of abstraction, those of 'rank', 'exponence', and 'delicacy'.

The unit is the basic category set up to account for the stretches of language that carry grammatical patterns. There are five units, the sentence, clause, group, word and morpheme, which lie along the scale of abstraction known as the 'rank scale' in a fixed, inclusive, hierarchical relationship according to which an

occurrence of any unit is said to consist of one, or more than one, complete occurrence of the unit next below it such that every sentence is said to consist of one or more than one complete clause, every clause of one or more than one complete group, every group of one or more than one complete morpheme. Although this relationship is regarded as being fixed the model does allow for a phenomenon known as 'rankshift'. This happens when a given unit does not operate in the structure of the one above it but is, as it were, 'shifted' down the rank scale to operate in the structure of one either below it or of equal rank.

The relationship of the categories of structure, class and system to that of unit is determined by the second scale of abstraction, that of exponence. The category of structure is the one that accounts for the various ways in which an occurrence of one unit may be made up out of occurrence of the unit next below it. Sentences are made up of clauses, clauses are made up of groups, and so on. But not all combinations of groups can make up clauses. Each unit possesses a structure of its own in the form of a linear progression of elements ordered in 'places' which determine the value that a particular clause has in a sentence, a particular group in a clause, and so on. Each element is the place of operation of one member of the unit next below. It follows from this that the lowest unit, the morpheme has no structure; if it carried structure, there would be another unit below it. Elements of structure are variable in depth of detail, or delicacy, the third scale of abstraction. Primary structures

are those which distinguish the minimum number of elements necessary to account comprehensively for the operation in the structure of the given unit of members of the unit next below: (M) H (Q) of the class nominal of the unit group is a primary structure. Subsequent, more delicate differentiations are then stated as secondary structures. These are still structures of the same unit but they take account of finer distinctions recognisable at the same rank: (d o e n) is a secondary structure, a more delicate statement of M, an element of the primary structure of the class nominal of the unit group.

The elements of structure are thus the points of exponence. However, not all forms of the unit next below may expound an element of structure. The existence of different elements within a structure implies a choice from the units immediately below. To handle the notion of choice the last two categories of class and system are introduced. A class is any set of items having the same possibilities of operation in the structure of the unit next above. A class is therefore defined by its mode of operation in the structure next above. There are five elements of clause structure, S P C A and Z. The class 'verbal group' of the unit group is that set of items that can operate at P, or as predicator, in clause structure; the class 'noun', of the unit word, is that class of word that can operate at h, or as head, in the nominal group. Class, like structure, is variable in delicacy, and, as class is always defined with reference to the structure of the unit next above, more delicate

classes may be seen as the product of more delicate structures.

The last category, that of system, is the one introduced to explain why one class is chosen to operate at a particular element in structure in preference to another. At each place in structure there is a small fixed set of possibilities of exponence. Such sets of possibilities are called 'the terms' of the system. For example, there is a place in a certain structure in English where the choice lies between the items 'who', 'whose', 'what', and 'which'. These four items form a system, tied to the place in structure where they, and they alone, can occur.

This is a general description of the model as it had been developed by the beginning of 1967. The methods of grammatical analysis used in this research were decided upon in November of that year in consultation with Professor Sinclair and were tested successfully in a small pilot project in the following year. The collection of the data under discussion began a year later, at the end of 1969. The methods of analysis had been proved to be effective and, for practical purposes, it was felt necessary to 'freeze' them at the point to which they had been developed at the beginning of the pilot project. This means that the framework of analysis in this research is based upon the systemic model as it had been worked out by the beginning of 1967. The size of the body of data being analysed meant that there was no time available for incorporating revised or new categories into the description and for re-working the data once the main analysis had begun. Changes have been made in Halliday's description since the beginning of 1967. Fortunately for this research, these changes have taken

the form of a new emphasis upon certain points, in particular, upon the category 'system' (hence the increasing use of the term 'systemic grammar') rather than a fundamental re-structuring of the model as a whole. The new theoretical developments contain nothing which is necessarily in conflict with the description of the model which has been given above.

(iii) Procedure (c): The Operational Definition of the Hypotheses

Research of this kind requires the selection of certain linguistic items for analysis. The entry into the process of analysis of an element of selectivity necessitates that the criteria of selection be made explicit. In this case, the criteria were determined by the nature of the hypotheses. All of the latter involved, in varying forms, an inter-class comparison: hypothesis (a), in the form of a prediction of social class differences in the overall language means; hypothesis (b), in the form of a prediction of social class contrasts in the degree of adjustment made in moving from register to register within the overall means; and finally hypothesis (c) in the form of a prediction of consequent social class differences in one of the 'registral' means. Two concepts merged in the formation of these hypotheses: the idea that differences in mean scores would occur between the two groups which would be a function of differences in social class background; and the idea that differences in mean scores would occur within the two groups which would be a function of the different titles presented. Three main criteria were used to select linguistic items in support of the first notion: whether the item had been suggested as a distinguishing characteristic of either of the two codes by Bernstein

in his theoretical paper; whether the item had been established as a discriminating variable by empirical studies of social class differences in language usage; and finally, whether the item had been generally accepted as a measure of maturity of language development. The criterion used in support of the second notion, in support of what has been termed 'registral switching' was whether the item had been predicted as having a high or low frequency in technical or scientific writing. A final limiting criterion covering both notions was whether the item could be isolated and objectified satisfactorily within the framework of the model of grammar used.

The linguistic items suggested by Bernstein as distinguishing characteristics of the restricted code can be divided roughly into two sets according to whether they were formulated as correlates of either one or other of the two major psychological concomitants of limitation to a restricted code. The psychological concomitants were seen as an inability to express refined logical relationships and a failure to express 'subjective intent' 'in a verbally explicit form'. The linguistic correlates of the former were placed squarely in certain well-defined areas of structure: the noun, verb, adverb and sentence. Those of the latter were less easy to locate and it was in searching for these that Bernstein tended to confound grammatical and lexical considerations, producing finally a number of nebulous items which it has been found difficult to isolate for analysis: frequent 'categoric statements'; 'large number of idiomatic phrases'; symbolism 'of a low order of generality'. Only in the pronoun and what he termed the socio-centric sequence did Bernstein eventually find readily isolable correlates of the failure to elaborate 'subjective intent'.

The advantage of Scale and Category grammar is that it allows an analysis to proceed along different levels at different degrees of delicacy. The influence of previous theory and research in suggesting analyses at different levels of penetration made the concept of delicacy a valuable asset. This can be seen in the process by which a method of analysis was chosen for the nominal group. Bernstein pointed to their limited and rigid use of adjectives as a reason for the failure of restricted code users to make elaborated qualifications in their concuptualisation. Bernstein himself (1962b), Lawton (1963, 1964) and Henderson (1969) pursued this theme in a number of studies which indicated that the nominal group is an area of social class contrasts in usage. Further to this, Hawkins (1969) has drawn attention to a tendency in the nominal group usage of working-class subjects for the pronoun to be substituted for the noun with greater frequency than is found among middle-class subjects. This is an important finding for previous research has been concerned largely with the adjective and it isthe noun which is the focus of adjectival modification. If a trend exists away from the noun among working-class subjects then the possibilities of modification by adjectives are curtailed. In Scale and Category grammar the primary structure of the nominal group is (M(ODIFIER), H(EAD), Q(UALIFIER)), in which the modifier and qualifier are optional elements. The analysis could have been done at this level of structure but the need to distinguish between the noun and the pronoun as heads of nominal groups and to recognise the fact that the adjective when it occurs as head is susceptible to only a very limited form of modification carried the investigation into the secondary structure of the nominal

group where the distinction could be made between the pronoun-headed, adjective-headed, noun-headed and ordinal-headed nominal group. The secondary structure of the modifiers of the noun- and ordinal-headed nominal group is (D(EICTIC)) (O(RDINATIVE)) (E(PITHET)) (N(OMINAL)). Only the noun- and ordinal-headed nominal groups, which were potentially modifiable by this structure, were chosen for analysis. There was a second advantage in proceeding to the more delicate secondary structure. Deictics (words like *the, a, some, no*) are very common in everyday speech and it was feared that their presence would inflate unnecessarily any count of modifiers which included them. They were therefore excluded from the analysis. Qualifiers were not mentioned in Bernstein's early formulation of his two codes. However, being, as Quirk (1962) has said, 'more explicit and therefore less ambiguous than the modifier' and consequently 'a very useful tool for making precise identification and definitions' they fit the theory admirably. Moreover, Coulthard and Robinson (1969) have found their occurrence to co-vary with that of complex modification, suggesting that they might provide a useful measure of complexity. Like modifiers, they may also be sub-classified but no compelling reason was found for doing so. They were therefore included in the analysis as they occurred. The final analysis was, thus, of the noun- and ordinal-headed nominal groups with their qualifiers and all their modifiers apart from the deictics.

Another suggestion made by Bernstein was that the crudeness of the structure of the verb in restricted code use was a reason for the difficulty found by those limited to the code in the description of processes. Bernstein (1962b) and Lawton (1963, 1964) followed this hypothesis up with a count of an item called 'complexity of verbal stem', formed from a count of the number of units in the verb

stem minus the adverbial negation. Predictions were confirmed in these counts and in a similar one in the Chicago Study (1968) but Professor Sinclair (1967) at the University of Birmingham advised against a replication of the use of this measure in an area of linguistic controversy from which a satisfactory definition of 'complexity of verbal stem' had yet to emerge. Bernstein made no other predictions about the verb but in his empirical work (1962b) he did find social class differences in the use of the passive voice, a finding given subsequent confirmation by Lawton (1963, 1964) who concluded that the absence or low frequency of the passive:

> "is probably symptomatic of a limited control over language use" (1968).

Evidence suggestive of this conclusion has come from other directions, notably from researches using the transformational model of grammar. Studies of the time taken to encode the passive (Miller and McLean, 1964) or of the short-term memory space occupied by its transformation from the active (Savin and Perchonock, 1965) might both be taken as indirect evidence for Lawton's conclusion. Following this evidence it was decided to make a count of the number of passives in the corpus. In terms of Scale and Category grammar this represented an analysis of the system of voice in the secondary structure of the verbal group.

Parallel to the limited and rigid use of adjectives by the restricted code user, reducing his power to qualify objects, Bernstein pointed to a similar limitation and rigidity in his use of adverbs, reducing in the same way his power to modify processes. Here, difficulties arose in translating the terminology of previous research

into that of Scale and Category grammar. In studying the adjective previous research had, in terms of this grammar, been studying a class of word operating in the structure of the nominal group. In other words, where lexical considerations had not entered in to confuse the issue, previous analyses of the adjective had been, without the researchers' awareness of the fact, analyses of the structure of the nominal group. The same pattern is not apparent in previous research into the use of the adverb. The adverb is not a modifying word. In Scale and Category grammar it is described as a class of word which normally operates as head of an adverbial group. As such, it may co-occur with only a very limited number of modifiers and qualifiers. It is not the only form of adverbial group for prepositions may also be the heads of such groups. In counting adverbs, previous research (Bernstein, 1962b), Lawton, 1963, 1964; Hess *et al* (1968); Henderson (1969); Robinson (1965)) had amounted not so much to a study of the internal structure of the adverbial group as to a simple frequency count of the occurrence of those adverbial groups with adverb heads. In Scale and Category grammar, the significance of the occurrence of adverbial groups is that they are exponents of the structural element Adjunct in clause structure. Because of this, the ratio of adjuncts to clauses provides a convenient measure of elaboration of code. However, if the analysis of clause structure had been carried out at this level of reasoning a certain amount would have been lost in the delicacy of description. An important point is that the adjunct can be sub-classified into linking and binding adjuncts (words like *and, if, because, when*) which explicate the relationships between clauses, and lexical adjuncts. The linking and binding adjuncts were removed from the

analysis. The main reason for this was that of the three types of adjunct the lexical adjunct is the only one whose position can be varied frequently within its surrounding clause (e.g. *The spokes are connected to the rim* contrasted with *To the rim the spokes are connected*). It was hoped that positional variation, as an optional element, might provide another measure of linguistic complexity. The analysis of the clause was thus carried out at the secondary degree of delicacy.

Bernstein drew attention to the 'short, grammatically simple, syntactically poor' sentence structure of the restricted code, articulated by 'simple and repetitive' conjunctions as another factor particularly inhibiting the communication of ideas and relationships needing 'precise formulation' or 'logical modification and stress'. As a focus of interest length of sentence had one notable advantage. A number of previous investigators (McCarthy, 1930; Day, 1932; Davis, 1937; Templin, 1957; and Harrell, 1957) had identified it as a reliable measure of linguistic development. The one problem with the sentence as an item of analysis, however, is that it is difficult, in practice, to define and it was Bernstein himself (1962b) who excluded a comparison of differences in sentence length as no reliable method of distinguishing the samples on such a basis could be found. A measure of sentence length was included by Lawton (1963) but he regarded it as being of doubtful validity for two reasons: first, no-one, he said, had yet provided a definition of a sentence which eliminated the investigator's subjective judgment; and second, mean sentence length may mask important differences in internal sentence structure. In the area of sentence structure Bernstein made no attempt at a qualitative analysis of the subordinating conjunctions although his remarks on the sentence in

his theoretical papers had suggested such a direction for his investigations but he did make a count of the number of subordinate clauses in his two samples and this quantitative analysis produced predicted differences. Lawton (1963, 1964, 1965) followed suit, dividing the total number of subordinate clauses (by the total number of subordinate clauses) by the total number of finite verbs and using this as his index, but he found that social class differences were more striking when sentence structure was examined for depth or degree of subordination. Lawton did this by using a modified form of a weighted index of subordination devised by Loban (1961) in which subordinate clauses are divided into categories and assigned a system of points partly according to their order of dependence.

Previous research had thus concentrated upon the frequency and depth of subordinations used by different social class groups. At first, in the earlier stages of this research it was thought that all that was needed in this area of structure was a simple replication of the analytical procedures of earlier investigations in the field. The greater sophistication of the tools of analysis used here put such a replication out of the question. Part of the reason for the greater sophistication of Scale and Category grammar lies in its possession of the concept of rankshift, the process by which a unit is enabled to function in elements of structure other than those of the unit next above it in the rank scale. Traditional grammar does not have such a concept. What emerges clearly from the work of Bernstein and Lawton is that in making a frequency count of subordinations by means of traditional grammar they were, in fact, making a count of bound clauses operating not only in elements of sentence structure but also in elements of other areas of structure as well. To have made a count of bound clauses involved in the

system of subordination would not, therefore, have presented a true parallel to the earlier investigations. Paradoxically, at least in the analysis of frequency of subordination, it was necessary, in order to replicate the work of previous researchers, to alter their method of analysis. The frequency count made here was of bound clauses as a whole, regardless of their area of operation. In this sense, this research does not contain an analysis of subordinated clauses as such.

In looking at the depth rather than the frequency of subordinations it was easier to see how the structuring of this research could be developed along the lines laid down by previous investigators. The concept of depth of subordination is shared by both traditional and Scale and Category grammar. As a result, it was not necessary to make more than a minor departure from the lines of previous work and this departure was made because of criticism largely unconnected with the model of grammar used. Lawton had used, as we have said, a weighted index of subordination. It was decided not to follow him in this respect as the use of the weighted index employed by him tends to involve a partly subjective evaluation of the comparative complexity of clauses. In this research, a count was made, merely, of those clauses occurring beyond the first order of dependence without attaching a further weighting. The decision to omit from a count of subordination in depth those clauses occurring at the level of first-order dependence was originally Lawton's. He had felt that to have included them would have been to have inflated the depth score at an unnecessarily low level.

The method of analysis so far discussed went no deeper than the primary structure of the sentence where the primary classes of

the clause, the free and the bound clauses, operate. The bound clauses can be further sub-classified into three types: additioning, conditioning, and reported clauses. These categories could have been operationalised and the analysis could have then proceeded at the secondary degree of delicacy. Whether any benefit would have accrued from this operationalisation it is difficult to say. The important consideration in rejecting it as the next step in the analysis of the sentence was that Bernstein's remarks about the structure of the sentence had pointed in other directions. He had mentioned specifically the quality of articulation as an area of possible social class contrasts in usage. The 'simple' and 'repetitive' conjunctions of the restricted code, be suggested, did not facilitate precision of thought. Because of this suggestion and because neither Bernstein nor Lawton had followed it up in any of their empirical studies, it was decided to make an analysis of the subordinating conjunctions, the conjunctions introducing the subordinate clauses and explicating their relationship with their superordinate clauses, which were found to occur in the corpus. To do so meant avoiding the step which would have come next if the logic of the model of grammar used had been observed. It was necessary, momentarily, to depart from the model of grammar in order to find an exhaustive categorisation of the means by which the bound clauses were subordinated. Five categories were set up: those clauses introduced by a binding adjunct (words like *if, because, although)*; those introduced by a *wh*-item (words like *which, whose, whom*); those introduced by a preposition (words like *in, by, with*); those whose subordination was articulated by the form or absence of a predicator element in

their internal structure (e.g. *The spokes are attached to the rim, making a peculiar shape./ The feet on the pedals, the cycle is about to move*): these clauses were given the blanket designation, predicator-bound clauses; and last, those subordinate clauses which can occur only when there is a certain class of verb called a 'reporting' verb in the superordinate clause (e.g. *I imagine that he'll go./ I think the light is on*). Three points need to be made before we leave the description of these categorisations. The categories are categories of subordinating elements rather than of subordinating conjunctions for not all of the categories involve the use of the latter; they clearly run across the sub-classification of subordinate clauses mentioned above because although additioning clauses are generally introduced by *wh*-items this is not always the case and a similar lack of parallelism is evident with the conditioning clause which may be introduced by a binder, a preposition, or by the form or absence of the predicator in their structure; only the reported clause offers a direct parallel; finally, following the suggestion of Halliday, Henrici *et al* (1966) that *wh*-items and binders increase and non-finite clauses reduce the explicitness of the text, it was hoped to pursue Bernstein's remarks about the sentence structure of the restricted code along the lines of the implicit/explicit dichotomy. The prediction was later made that more of the 'explicit' subordinating elements, the *wh*-items and binding adjuncts and reported clauses, would be found in the writing of the middle-class sample.

As we have said, bound clauses not only function as elements of sentence structure. Like other units they may be rankshifted, that is, they may operate as elements within the structure of other

clauses (e.g. *What we want* in *What we want is Watneys*) or they may be 'shunted' down the rank scale to act as constituents of units below them (e.g. *Attached to the back of the frame* as a clause operating as a qualifier within a nominal group in *The spokes run to the centre of the wheel attached to the back of the frame*). As an index of linguistic development the complexity of items rankshifted would seem to be more relevant than the fact of rankshift itself. This, at least, would appear to be the implication to be drawn from the results of the study of nominal group structure made by Coulthard and Robinson (1969). The count made in this research of qualifiers in the nominal group was, in effect, a count of rankshifted items because most of the material operating at that element is rankshifted. Not all of it, however, consists of rankshifted clauses. Words and groups are also found there and in larger numbers. But it is the greater length of most rankshifted clauses which would seem to make their movement along the rank scale a sign of greater complexity. This is a crude assumption but, whatever its foundation, the rankshifted clause, particularly that operating as a clause element or as a qualifier within the nominal group, has come to be regarded as a linguistic item likely to discriminate between the social classes (Turner and Mohan, 1970). It was decided, therefore, to make a separate count of the clauses operating as elements of other clauses and of those functioning as qualifiers within nominal groups.

A further advantage in making an examination of rankshift is that rankshifted clauses may operate within units which are themselves rankshifted. This produces a 'layering' or 'embedding' of rankshifted items analogous to the 'depth' order in the subordination of clauses. There are a number of possibilities of occurrence. A clause may be rankshifted to operate as the qualifier of a nominal

group which is itself qualifying the noun head of a nominal group operating as an element in clause structure (e.g. *The vice holds the whole extent of the wood I have described*); or a clause may be rankshifted to operate as the qualifier of a nominal group which is not itself rankshifted but which is operating as an element in the structure of a clause which is (e.g. *The vice holds the wood that contains the material I have described*). It was the latter type of clausal rankshift which we were most anxious to count. Only those structures involving a succession of rankshifted clauses were included in the count. Thus, of course, if a clause was rankshifted and this was all the layering that was involved then the clause was not counted. To be counted, a clause had to be operating as an element in another rankshifted clause or functioning as a qualifier of a group which was operating within the structure of a rankshifted clause. These two types of clause together were labelled as 'deeply embedded clauses'. A weighted scale was not used.

An inability to make precise or elaborate modifications and qualifications is not the only consequence of limitation to the use of a restricted code. The language of a restricted code is the language of implicit meaning in which it is difficult to verbalise 'the experience of separateness and difference'. As Bernstein said, it is:

> "primarily a means of making social not individual qualifications" (1959).

There would seem, at first sight, to be an element of falseness in the attempt to separate the linguistic factors producing this set

of psychological characteristics, which we have subsumed under the general heading of a failure 'to elaborate subjective intent in a verbally explicit form', and those factors determining the level of conceptualisation. Logically, one would expect the one to be affected by the other. All the same, the division is one which Bernstein suggested himself, by implication, when he put forward direct linguistic correlates fo the implicit nature of the restricted code. The difficulty has been that many of these correlates, the categoric statements, the traditional idiomatic phrases, the individual qualification occurring through 'expressive' symbolism, have not been easy to objectify. Since the first papers a number of items have been re-formulated and there have been additions to the list. In 1959 a correlate of emotional impersonality was introduced in the form of the infrequent use in the restricted code of impersonal pronouns as subjects of sentence; and in 1962 Bernstein investigated successfully the item which he termed the 'sympathetic circularity sequence'. Lawton (1963, 1964, 1965) also examined pronoun usage and operationalised the distinction between ego-centric and socio-centric sequences. These items were originally proposed with the medium of speech in mind. They were not considered relevant to a study concerned wholly with written language and were not included.

What seemed to be a more appropriate correlate presented itself in the form of the modal auxiliary (*can, could, may, might, must, need, dare, ought to, shall, should, will, would, is/was to, used to;* with the proviso that *need* and *dare* are only modal in their negative forms) for the use of the modal auxiliary:

> "is the chief means by which one can make a hypothetical statement" (Turner and Mohan, 1970).

As such its presence should be a useful indication of the existence of the theoretical attitude towards sentence organisation which Bernstein deemed to be necessary for subjective intent to be made verbally explicit. The modals of 'possibility', *could, may, might,* are also means of expressing tentativeness. They would not be expected to be very frequent in a test characterised by categoric statements. A count was therefore made of the modal auxiliaries from which were subtracted the *will* and *shall* of futurity. This return to the level of the verbal group was, nevertheless, spoiled by a methodological fault which will be discussed later.

The finding of Halliday, Henrici *et al* (1967) in their analysis of scientific tests that there tends to be a positive correlation between the occurrence of the modal auxiliary *may* and sentence adverbs of doubt and certainty offered the possibility of acquiring another correlate of the hypothetical and the tentative in language. Greenbaum (1969) distinguished two sub-classes of sentence adverb: 'style disjuncts', which:

> "refer to what Poldauf has called the form of the communication, expressing either that the speaker is making a rough generalisation or that he is being frank in what he is saying," words such as *seriously, frankly, briefly;*

and 'attitudinal disjuncts', which:

> "express the speaker's attitude to what he is saying, his evaluation of it, or shades of certainty or doubt about it," words such as *clearly, probably, disappointingly.*

Davies' (1967) description of clause-comment adjuncts which, he says:

> "involve the expression by the speaker of an attitude towards what he himself is saying," comes very close to Greenbaum's

description of attitudinal and style disjuncts. Davies used the term adjunct in the sense in which it is used in Scale and Category grammar. The analysis had merely to go beyond the primary structure of the clause. There was no need, in this case, to depart from the model. As Davies' particular location of the adjunct within the model of grammar was accepted it was decided also to accept the terminology of his description. From here onward, the elements of clause structure carrying the grammatical function outlined above will be referred to simply, in Davies' terms, as 'comment adjuncts'.

* *

In the first hypothesis, hypothesis (a), only one independent variable, that of the socio-economic status of the encoder, was foreseen as operating upon the dependent variables of linguistic structure. In the second hypothesis, hypothesis (b), the operation of a second independent variable was foreseen, that of variations in the nature of the titles presented to the encoder. In the third hypothesis, hypothesis (c), this second independent variable was predicted as being powerful enough in its influence to moderate the impact of the first. It is difficult to measure the relative strengths of two independent variables unless they can be observed in operation upon the same dependent variables. It was necessary, therefore, to direct the search for linguistic indicators of technical register towards those areas of language structure which, it had been predicted, would discriminate most clearly between the two social classes. Only in this way, it was believed, could the third hypothesis be implemented.

To begin with, changes were expected in the handling of the structure of the nominal group when the technical titles were being dealt with. Quirk (1962) has pointed to the tendency toward heavy pre- rather than post-modification of the noun in technical writing, a characteristic also noted by Leech (1966), who found that the type of advertising copy which exploits heavy pre-modification tends to be that which is found in press advertisements concerned with the communication of technical information. It was predicted, therefore, that the technical writing in the corpus would be characterised by a decrease in the use of post-modification or qualification within the nominal group. On the same grounds, it was predicted that those clauses rankshifted to function as nominal qualifiers would share in this decline and as they were expected to contribute to the category of deeply embedded clauses it was predicted that this also would suffer a decline under the technical titles.

Changes were also anticipated within the verbal group. Svartirk (1966) has found scientific texts to contain a high proportion of passives. This is an interesting finding because it is what might be predicted from the theoretical work in this area. Sinclair (1965) has said that many of the typical instances of the passive voice occur where it is unnecessary or undesirable to specify the performer of an action. It is in scientific and technical writing that an impersonality of expression of this kind might be expected to be most in evidence. The prediction was, therefore, made that, as part of the greater linguistic adjustment to the technical titles, there would be an increase in the technical writing in the use of the passive construction.

It was not believed that the technical writing in the corpus would be characterised by a searching for a tentativeness or hypotheticalness of expression. On this assumption it was predicted that a characteristic of the technical writing would be the lower frequency of modals.

In looking at the structure of the clause in scientific writing Halliday, Henrici *et al* (1966) have drawn attention to the frequency with which the lexical adjunct is placed at the beginning of the clause. Nineteen per cent of the finite clauses with overt subject which they looked at had this feature. The same authors also found that adjuncts of place had a greater tendency than had many other adjuncts to occur in this initial position. On the assumption that technical writing is characterised by a high frequency of place adjuncts and from the general belief that the technical writing of the corpus would, structurally, be closely enough akin to the scientific writing in the study quoted to allow an extrapolation from one to the other to be justified, it was predicted that one of the determining features of the language elicited by the technical titles would be its possession of a larger number of clauses with a lexical adjunct in thematic position in front of the subject.

It was not thought that the language of the technical titles would involve the writer in the expression of attitudes towards the subject-matter in his essay. It was predicted from this that there would be a decrease in the frequency of 'comment' adjuncts in the technical writing.

In the same analysis of scientific writing the authors, in discussing sentence structure, have pointed to the explicit nature

of the clause relation of subordination in contrast to that of co-ordination and apposition and among the subordinating elements themselves to the greater explicitness of the relationships articulated by *wh*-items and binders. In this connection they have emphasised the markedly explicit nature of the relationships of subordination found in scientific texts. Once more, on the presupposition of the existence of what might be called a technical/scientific register, it was predicted that the technical writing in the corpus would be marked by a higher frequency of bound clauses, as it is these clauses which enter into the system of subordination in the structure of the sentence, and by a higher frequency of *wh*-items and binders as clause-relating elements.

The three hypotheses can now be given a more detailed operational formulation. It was predicted that:

(a) an overall comparison of the written language structure elicited by the titles of the two social class groups would show the middle-class group to use more nominal modifiers and qualifiers and, where modifiers occurred in their writing, more modification of a complex kind, more passives and modals, more lexical adjuncts, particularly those of the 'comment' variety, and, where lexical adjuncts occurred in their writing, more lexical adjuncts in thematic position, more bound clauses and clauses subordinated to a greater depth, more rankshifted clauses and these to a greater degree of layering, and, finally, more subordinating elements categorised as being of an explicit kind;

(b) an analysis of the extent to which linguistic adjustments were made within the corpus in moving from register to register would show both social class groups to use more complex nominal modification, passives, lexical adjuncts in thematic position, bound clauses and *wh*-items and binders as subordinating elements and less nominal qualifiers, modal verbs, 'comment' adjuncts, rankshifted and layered or deeply embedded rankshifted clauses when writing on the technical titles, but that this internal adjustment would be more pronounced in the language of the working-class group.

(c) as a consequence of this greater stylistic definition within the working-class group, on those linguistic items, a high frequency of which had been taken as indicative both of linguistic complexity and of linguistic adjustment to the technical titles, that is on complex nominal modifiers, passives, lexical adjuncts in thematic position, bound clauses and *wh*-items and binders as subordinating elements, the social class differences apparent in the overall comparison would disappear when only the means of the writing done by the two groups on the technical titles were compared.

(iii) Procedure (d): Scoring Procedure and Treatment of Results

The concept of delicacy contained within the model of grammar used meant that the occurrence of each linguistic item could be considered as a sub-category of a more general, or, in the terminology of the grammar, less delicate category. As a result of this, the

number of occurrences of a particular item could be calculated as a percentage of the total number of occurrences of the item of which it was a more delicate sub-category. In one area alone, this method of calculation was not employed. In investigating the lexical adjunct the objective had been not to count the number of clauses containing a lexical adjunct but to count the number of lexical adjuncts occurring irrespective of the pattern of their concentration in the clauses. If the former course had been adopted the clauses with lexical adjuncts could quite easily have been regarded as a sub-category of clauses in general and percentaged accordinaly. Lexical adjuncts are merely one element of clause structure, however, and they cannot, when counted by themselves, be regarded as, in any sense, a sub-category of the clause. The number of occurrences of lexical adjuncts was, therefore, calculated as a ratio to the total number of occurrences of clauses.

The scoring procedure was as follows: for each subject the total number of occurrences of an item in the essays of each registral category was expressed as a percentage of the total number of occurrences in the essays of that category of the item of which it was considered to be a sub-category. The process of sub-categorisation affected the differenc areas of structure in the following way:

(a) Nominal group structure. Four categories of the nominal group were isolated and removed from the data for analysis: (i) noun- and ordinal-headed nominal groups containing one modifier other than a deictic; (ii) noun- and ordinal-headed nominal groups containing two or more modifiers other than a deictic; (iii) noun- and ordinal-headed nominal groups containing no such modifiers but possessing one or

more qualifiers; (iv) noun- and ordinal-headed nominal groups possessing both one or more modifiers and one or more qualifiers. These categories did not exhaust the total number of occurrences of nominal groups but they did provide an exhaustive categorisation of those noun- and ordinal-heads of nominal groups which were modified and/or qualified. As it was the extent of modification and qualification in nominal group structure which was under analysis the occurrences within each category were expressed as a percentage of the total number of occurrences of noun- and ordinal-headed nominal groups with or without modifiers and/or qualifiers. In the description of the results the categories are given the following labels: (i) MH; (ii) 2MH; (iii) HQ; (iv) MHQ.

(b) Verbal group structure. Two categories of verbal group were abstracted from the data: (i) verbal groups marked by a passive construction; (ii) verbal groups containing a modal verb. The two categories were neither exhaustive of all occurrences of verbal groups nor mutually exclusive. The number of occurrences in each of them was expressed as a percentage of the total number of occurrences of all verbal groups. In the description of the results the two categories are labelled simply: (i) passives; (ii) modals.

(c) Clause structure. In this area of structure the method of scoring used made it necessary to depart from the general procedure of treating the number of occurrences of an item as a proportion of the number of occurrences of an item of which it could be assumed to be a sub-category. We

have already said that the number of lexical adjuncts was calculated as a ratio to the total number of clauses. This departure from general procedure was not necessary in the case of the occurrences of lexical adjuncts in thematic position and of 'comment' adjuncts. These two items could both be regarded as sub-categories of the more general category of lexical adjunct and the frequencies of their occurrence could be percentaged accordingly. In the description of the results the category and its two sub-categories are labelled: (i) lexical adjunct; (ii) thematic adjunct; (iii) 'comment' adjunct.

(d) Sentence structure. Bound clauses may be considered as a sub-category of clause which may fulfil certain functions within the elements of sentence structure. They may also be rankshifted downwards to function in the structure of units on the scale beneath the sentence. Both functions of the bound clause were analysed. This made it inevitable that part of the analysis would be of relevance for areas other than the structure of the sentence. In this sense, the analysis of rankshifted clauses, of those bound clauses, that is, which function in the structure of units below that of the sentence, which is included under this heading, does not, strictly speaking, constitute a part of the analysis of the structure of the sentence. It is included here under the same heading as that of other bound clauses merely for the purpose of convenience.

The bound clauses could be treated as a sub-category of the clause and the frequency of its occurrence percentaged as such. The

other clausal items, on the other hand, bound clauses dependent upon other bound clauses in the structure of the sentence, bound clauses rankshifted to function within the structure of the clause or within that of nominal groups, deeply embedded clauses and bound clauses whose relationship of dependence in the structure of the sentence is articulated by *wh*-items, binders and 'reporting elements' in the superordinate clause, could, with justification, have been considered as sub-categorisations of either bound clauses or bound and free clauses together. It was the latter course which was adopted largely because it was felt that to have taken bound clauses as the denominator in those essays, and there were many of them, in which they were few in number, would have been to have produced somewhat deceptive percentages. All the clausal items were, therefore, expressed as a proportion of all clauses, bound and free, and the frequency of their occurrence was percentaged in this way. In the description of the results the items are given the following labels: (i) B(OUND CLAUSE); DEEPLY DEPENDENT B( ); (iii) GROUP-RANKSHIFTED B( ); (iv) CLAUSE RANKSHIFTED B( ); (v) DEEPLY EMBEDDED B( ); (vi) *WH*-ITEM-DEPENDENT B( ); (vii) BINDER-DEPENDENT B( ); (viii) REPORTED DEPENDENT B( ).

The registral percentages obtained in this way formed the basis of the analysis of registral variation. The extent of registral variation was measured by the differences between the registral percentages. The analysis of registral variation was an internal comparison of linguistic adjustments. As well as this, there were three external inter-class comparisons; one of the extent of internal registral variation; one of a single registral mean;

and, finally, one of an overall essay mean. The overall essay mean percentage for each individual was obtained by summing his registral percentages and dividing by three.

The statistical technique used to analyse the extent of registral variation was analysis of variance. For the inter-class comparisons of registral and overall means it was considered necessary to partial out the possible influence of verbal ability scores upon language performance by the use of analysis of covariance.

CHAPTER III

STATEMENT OF RESULTS

The three hypotheses were given two definitions. The earlier definition was given at a level of generality which allowed certain broad patterns of scores to be predicted. At this level two of the hypotheses (a and b) were confirmed : Tables 1A and 1B show the performance of the working-class subjects as a group to be generally inferior to that of the middle-class subjects on a number of linguistic items indicative of 'elaboration' of language; Tables 2A, 2B and 2C show both social class groups to possess a definitive functional style of technical explanation but the working-class groups more so than the middle-class. The third hypothesis (c) was only partially confirmed, the dramatic disappearance of social class differences in certain of the items in Table 3 being matched by an equally dramatic survival of the same differences elsewhere.

It is the later, the operational, definition of the hypotheses which enables the full extent of their confirmation to be determined. At this level the criteria of confirmation were more stringent. Predictions were made about the movements of seventeen linguistic items in hypothesis (a), of eleven in hypothesis (b), and of six in hypothesis (c). For the prediction of the movement of an individual item to be fully confirmed it was necessary for the movement to be not only in the predicted direction but also to be apparent to a degree which would preclude chance expectation.

Only at the first level of definition could the mere direction of movement of a number of items taken as a whole be taken as evidence of confirmation of a hypothesis.

At this second, operational level a number of more detailed, minor patterns can be seen to emerge within the broader developments, which serve to qualify the general picture of confirmation. To begin with, the general performance of the two groups on the items selected is rather closer than had been anticipated. Analysis of covariance of the overall means (Table 1A) reveals (Table 1B) twelve items which have clearly moved in the direction predicted. Of these twelve items, however, only seven have moved to a statistically significant degree, and for one of these ('Comment' Adjuncts) the degree of significance is marginal anyway. It is at the point at which they might have been expected to have reached statistical significance that the movements of the items selected for the first hypothesis (a) cease to be systematic. This can be seen when the items are allotted to the linguistic categories covering the main areas of investigation and studied from a wider standpoint. Within the noun - and ordinal-headed nominal group modification and qualification when considered as elements in isolation from each other (MH, 2MH, HQ) have produced movements of scores in the expected direction but it is only when these two elements are combined (MHQ) that a movement can be seen which has clearly been statistically significant. A similar pattern is evident in the area of the explication of clausal relationships. The movement of the 'explicit' subordinating elements (WH-item, Binder and reported dependent B) is in the expected direction but nowhere does it approach a level of significance. It is only when the operation rather than the

TABLE 1A

The overall mean percentage scores of the two social class groups:

LINGUISTIC ITEM	MIDDLE-CLASS	WORKING-CLASS
MH	19.1	17.6
2MH	3.2	2.6
HQ	18.2	14.4
MHQ	7.6	4.8
Passives	18.3	10.4
Modals	9.9	11.5
Thematic Adjuncts	15.4	15.0
'Comment' Adjuncts	4.0	2.0
B(ound Clause)	51.3	46.1
Deeply Dependent B	7.3	6.6
Group-Rankshifted B	18.7	12.9
Clause-Rankshifted B	3.0	3.1
Deeply Embedded B	2.2	0.7
WH-Item dependent B	4.1	5.2
Binder Dependent B	10.2	11.3
Reported Dependent B	3.8	3.8
Ratio of Lexical Adjuncts to Total Clauses:	*.812*	*.689*

TABLE 1B

The variation in overall mean percentage scores as a function of parental socio-economic status after covariance adjustments for uncontrolled verbal intelligence test scores.

LINGUISTIC ITEM	d.f.	F. RATIO	p.value
MH	1,44	2.91	N.S.
2MH	1,44	2.02	N.S.
HQ	1,44	1.67	N.S.
MHQ	1,44	18.50	< 0.001
Passives	1,44	6.70	< 0.01
Modals	1,44	2.44	N.S.*
Thematic Adjuncts	1,44	1.03	N.S.
'Comment' Adjuncts	1,44	5.55	< 0.05
B(ound Clause)	1,44	10.72	< 0.001
Deeply Dependent B	1,44	1.10	N.S.
Group Rankshifted B	1,44	11.90	< 0.001
Clause Rankshifted B	1,44	4.24	< 0.05 *
Deeply Embedded B	1,44	28.40	< 0.001
WH-Item Dependent B	1,44	1.19	N.S.*
Binder Dependent B	1,44	0.27	N.S.*
Reported Dependent B	1,44	0.20	N.S.*
Ratio of Lexical Adjuncts to Total Clauses:	*1,44*	*176.20*	*< 0.0001*

**denotes a movement of scores not in the predicted direction.*

TABLE 2A

The registral mean percentage scores of the two social class groups on those linguistic items selected for the analysis of Registral Variation.

LINGUISTIC ITEM SELECTED	MIDDLE CLASS			WORKING CLASS		
	IMAGINATIVE DESCRIPTIVE	TECHNICAL EXPLANATORY	OPINIONATIVE DISCURSIVE	IMAGINATIVE DESCRIPTIVE	TECHNICAL EXPLANATORY	OPINIONATIVE DISCURSIVE
2MH	3.8	3.1	2.8	2.5	4.0	1.3
HQ	16.8	17.2	21.0	14.2	11.5	17.5
Passives	9.2	33.8	12.0	5.3	21.1	4.7
Modals	9.7	9.9	10.0	19.4	5.1	9.9
Thematic Adjuncts	19.2	10.8	16.1	18.7	10.3	16.0
'Comment' Adjuncts	2.7	3.2	6.2	2.9	0.2	2.9
B(ound Clause)	43.4	55.5	55.6	42.4	47.8	48.2
Group Rankshifted B	14.4	17.5	24.3	12.2	8.1	18.3
Deeply Embedded B	0.9	1.8	3.8	0.9	0.1	1.1
WH-Item Dependent B	3.0	7.0	2.3	2.9	10.6	2.0
Binder Dependent B	9.1	10.6	11.0	10.6	10.7	12.5

TABLE 2B

The variation in the linguistic scores of each social class group as a function of the registral classification of the eliciting titles

i. Source of variation: the linguistic adjustment involved in moving from the imaginative descriptive to the technical explanatory titles

	MIDDLE CLASS			*WORKING CLASS*		
LINGUISTIC ITEM SELECTED	d.f.	F. Ratio	p. value	d.f.	F.Ratio	p. value
2MH	1,42	0.90	N.S.*	1,48	4.92	< 0.05
HQ	1,42	3.08	N.S.*	1,48	3.66	N.S.
Passives	1,42	175.18	< 0.0001	1,48	246.30	< 0.0001
Modals	1,42	0.64	N.S.*	1,48	32.40	< 0.001
Thematic Adjuncts	1,42	17.01	< 0.001*	1,48	4.19	< 0.05*
'Comment' Adjuncts	1,42	1.14	N.S.	1,48	4.06	< 0.05
B(ound Clauses)	1,42	29.30	< 0.001	1,48	3.43	N.S.
Group Rankshifted B	1,42	3.07	N.S.*	1,48	5.42	< 0.05
Deeply Embedded B	1,42	4.11	< 0.05*	1,48	4.45	< 0.05
WH-Item Dependent B	1,42	18.95	< 0.001	1,48	18.65	< 0.001
Binder Dependent B	1,42	1.60	N.S.	1,48	0.84	N.S.

**denotes a movement of scores not in the predicted direction*

TABLE 2C

The variation in the linguistic scores of each social group as a function of the registral classification of the eliciting titles

ii. Source of variation: the linguistic adjustment involved in moving from the opinionative discursive to the technical explanatory titles

	MIDDLE CLASS			WORKING CLASS		
LINGUISTIC ITEM SELECTED	d.f.	F. Ratio	p. value	d.f.	F. Ratio	p. value
2MH	1,42	3.62	N.S.	1,48	19.71	< 0.001
HQ	1,42	5.81	< 0.01	1,48	25.00	< 0.001
Passives	1,42	130.69	< 0.0001	1,48	78.30	< 0.0001
Modals	1,42	1.06	N.S.	1,48	7.57	< 0.01
Thematic Adjuncts	1,42	12.10	< 0.001*	1,48	5.23	< 0.05*
'Comment' Adjuncts	1,42	9,21	< 0.01	1,48	8.08	< 0.01
B(ound Clauses)	1,42	1.04	N.S.*	1,48	1.14	N.S.*
Group Rankshifted B	1,42	14.16	< 0.001	1,48	37.25	< 0.001
Deeply Embedded B	1,42	9.13	< 0.01	1,48	15.20	< 0.001
WH-Item Dependent B	1,42	19.42	< 0.001	1,48	37.86	< 0.001
Binder Dependent B	1,42	1.02	N.S.*	1,48	1.20	N.S.*

**denotes a movement of scores not in the predicted direction.*

TABLE 3

The variation in mean percentage scores on the technical explanatory registral category as a function of parental socio-economic status after covariance adjustments for uncontrolled verbal intelligence test scores.

LINGUISTIC ITEM SELECTED	d.f.	F. Ratio	p. value
2MH	1,44	0.48	N.S.
Passives	1,44	24.81	< 0.001
Thematic Adjuncts	1,44	1.51	N.S.
B(ound Clause)	1,44	12.88	< 0.001
WH-Item Dependent B	1,44	4.14	< 0.05
Binder Dependent B	1,44	0.44	N.S.

****

explication of the bound clause is studied that the movement of the scores can be seen to reach significance with any consistency, a development which is most apparent in the behaviour of those clauses operating in places other than the structure of the sentence. All three aspects of rankshifted clauses, their frequency when combined with dependent clauses (B(ound) Clause), their area of operation (GROUP- and CLAUSE-rankshifted B) and the depth at which they operate (Deeply embedded B), discriminate between the social classes and at statistically significant levels. The problem is that one of the four items covering these three aspects (CLAUSE-rankshifted B) does so by moving in an unpredicted direction. The level of significance is marginal (F. Ratio : 4.24; p. value 0.05) but the movement is none the less eccentric for that. The result is a surprising one

and its occurrence shows that there are exceptions to take into account even in those areas of hypothesis (a) where the general rule of predictions proved strongest.

That the consistency of the rankshifted clauses in attaining levels of significance is not equally evident in the movement of those clauses operating within the immediate structure of the sentence may be partly the effect of the categorisation used in the analysis. The reasons for the particular choice of categorisation have been discussed above and will be referred to again below. At this point it is sufficient to say that the general category of bound clauses does discriminate between the two social class groups and at a significant level but that the extent to which each of the two component factors, rankshifted and dependent clauses, has contributed to the discrimination is a matter of surmise.

If the problem of the frequency of dependent clauses can be left an open question, subsumed as it is by the broader category of bound clauses, the same is not true of the problem of the depth at which these clauses lie in the structure of the sentence. Here the linguistic item (DEEPLY DEPENDENT B) is seen to follow the more general pattern of this first hypothesis in that it moves in the direction predicted but not to a significant level.

The pattern of scores in the two remaining areas can be taken as representative of that of the first hypothesis as a whole in so far as one of the areas pursues the general trend while the other makes characteristic deviations from it. All three aspects of the lexical adjunct studied, its frequency (RATIO OF LEXICAL ADJUNCTS TO TOTAL CLAUSES), its positioning (THEMATIC ADJUNCTS), and one of

its communicative functions ('COMMENT' ADJUNCTS), conform to predictions in the movement of their scores. Again, however, the conformity does not extend to levels of significance. The degree of movement is varied. Both frequency and communicative function distinguish between the social classes but the levels of significance at which they make their distinction are scarcely comparable. In the case of frequency the F. Ratio is remarkably high (176.20); in the case of communicative function it is disappointingly low (5.55). As for positioning, it fails to achieve significance at all (F. Ratio : 1.03).

The behaviour of the two linguistic items extracted from the verbal group is characteristic of the minor inconsistencies of Table 1B. As with the rankshifted clause, there is a dramatic movement in favour of the hypothesis by one item (PASSIVES : F. Ratio: 6.70; p. value < 0.01) which is counterbalanced by a surprising, although in this case less dramatic, movement against it by another (MODALS : F. Ratio : 2.44; N.S.).

To conclude the summary of findings for hypothesis (a) it can be said that the general confirmation of the predictions of this hypothesis is evidenced both in the general movement of the scores and in the levels of significance at which it occurs but that the confirmation itself needs to be qualified by a consideration of two eccentric patterns : the tendency of one item to approach and of another item to achieve a level of significance in an unpredicted direction and the failure of a number of movements in the predicted direction, particularly within the structure of the nominal group, to reach significance.

In assessing the outcome of the first hypothesis two factors were considered critical : the direction of movement of the scores and their success in achieving significance. Consideration of a third factor, consistency of movement, whether in a predicted or unpredicted direction, was later introduced in an attempt to find a detailed patterning of scores in certain areas of structure. In the assessment of the second hypothesis, hypothesis (b), the consideration of this additional factor became more critical for it was conceivable that a number of items could, by moving consistently against prediction, both reinforce the concept of stylistic definition and invalidate the hypothesis in the terms in which it had been stated. This problem is highlighted by the behaviour of the thematic adjunct. In Tables 2B and 2C this item can be seen to move consistently and to a significant degree against the hypothesis. In so doing it is both acting as a stylistic indicator and undermining the hypothesis. Clearly, for this particular item, the premises of the hypothesis have been shown to be false. Conversely, by the same reasoning, a consistent movement in the predicted direction could be expected to provide the hypothesis with its strongest support. Three items (PASSIVES; 'COMMENT' ADJUNCTS; and WH-ITEM DEPENDENT B) provide exactly this - a consistent movement across both class and registral boundaries.

The introduction of the notion of consistency enables the first part of the hypothesis, the expectation in the language of both groups of a defined technical style, to be confirmed on its strongest ground. However, the two original criteria, the direction and level of significance of scores, are sufficient to provide confirmation of a less

ambitious kind. The scores of the eleven items selected do generally move in the direction predicted and, when they do so, are more likely than when not to exceed chance expectation.

A general confirmatory pattern can thus be seen to emerge but at a more detailed level of analysis the confirmation needs to be qualified. A linguistic adjustment is made in moving towards the technical explanatory titles but the degree of adjustment is greater when the movement is from the opinionative discursive titles and this is noticeably more true of the middle-class group who produce only three statistically significant movements in the predicted direction in moving from the imaginative descriptive to the technical explanatory titles (Table 2B) but as many as six in making the same movement from the other direction (Table 2C).

There is also a greater tendency to make adjustments on the part of the working-class group and this is most evident when the extent of adjustment made by both social class groups in moving from the imaginative descriptive to the technical explanatory titles is compared. In moving from this direction the scores of six of the items (2MH; HQ; MODALS; 'COMMENT' ADJUNCTS; GROUP-RANKSHIFTED B; BINDER DEPENDENT B) fail to reach significance in the middle-class essays. Moreover of these items the only two which manage even to approach significance (HQ; F. RATIO: 3.08; GROUP-RANKSHIFTED B: F. RATIO : 3.07) do so by moving in an unpredicted direction. This is the most formidable challenge to a hypothesis encountered so far and no counterpart to it can be found either in the middle-class scores when moving from the other direction (Table 2B) or in the working-class scores when moving towards the 'technical' titles

from either direction (Table 2B and Table 2C). It seems clear that, when considered in relation to their scores on the imaginative descriptive titles, the scores of the middle-class group on the technical explanatory titles do not give the impression of a defined 'technical' style. To this extent, the confirmation of the first prediction of hypothesis (b) needs to be qualified.

However, it is partly by means of this qualification that the second prediction can be confirmed. Whatever the criteria of validation, the working-class group are shown to possess a more clearly defined technical style. Their scores are more likely to move in the predicted direction and, when they do so, they are more likely than those of the middle-class group in either area of adjustment, to move consistently and to a level of significance.

The third hypothesis, hypothesis (c), predicted that on six items assumed to be both indicators of linguistic complexity and of stylistic variation, social class differences which had appeared on an overall comparison would disappear in a comparison of technical registral means. One of these items (THEMATIC ADJUNCTS) behaved, as we have said, in a persistently deviant manner throughout the tables of registral variation. The premises upon which the choice of this item had been based appeared, therefore, to have been faulty. The scores for this item had run consistently against the second hypothesis, the hypothesis upon which the third was partly founded. It was decided, therefore, to remove it, at this stage, from the consideration of results.

This left five items (2MH; PASSIVES; B(OUND CLAUSE); WH-ITEM DEPENDENT B; BINDER DEPENDENT B) which had established themselves as indicators of style in the direction predicted. Three of these

items had failed to reach significance in the overall comparison. To these three items the concept of the null hypothesis could not be applied. For that to have been applied it would have been necessary for them to have reached a level of significance in Table 1B which they could then be seen to have maintained or from which they could then be seen to have withdrawn in Table 3.

The process of assessment for the third hypothesis took, therefore, two forms. The scores of two items (PASSIVES; B(OUND CLAUSE) reached a level of significance in the predicted direction in Table 1B. To these two scores the null hypothesis could be applied and it was confirmed. Social class differences on the overall comparison of these scores (PASSIVES; F. RATIO; 6.70; p. value< 0.01; B(OUND CLAUSE) : F. RATIO : 10.72; p. value < 0.0001) did not disappear on the technical registral means. On the contrary, as Table 3 reveals, they were accentuated.

For the three items remaining (2MH; WH-ITEM DEPENDENT B; BINDER DEPENDENT B) the problem was to decide how far their behaviour on the technical registral mean had contributed to their failure to discriminate between the social class groups on the overall comparison. For one of these items (BINDER DEPENDENT B) Table 3 shows the contribution to have been negligible. For the other two it shows the contribution to have been more substantial. The scores for complex modification (2MH) run in a direction counter to that found in the comparison of the overall means. This would seem to suggest that its behaviour in the 'technical' essays of the working-class group had been a contributory factor in the failure of the overall comparison to reach a level of significance

on this item. For the other item (WH-ITEM DEPENDENT B) Table 3 shows the evidence for such a contribution to be much stronger. Not only is there no middle-class predominance in the scores on this item on the registral mean - the social class difference that does occur runs in the other direction. In this limited aspect at least, the third hypothesis can be confirmed.

CHAPTER IV

DISCUSSION OF RESULTS

The early theoretical papers of Bernstein, it has been said, reveal the static nature of his conception of the elaborated and restricted codes. For many working-class families, he seemed to suggest, the restricted code was the only channel of communication available for the socialisation of the child. The connection made between limitation to a restricted code and the experiencing of certain modes of socialisation gave to the notions about linguistic development which emerged as the theory of the codes was elaborated a curious deterministic flavour. Once the early linguistic emphases were placed then the process of socialisation would, by reinforcing them, carry them forward to their logical conclusion. The early experiences of the working-class child would ensure that, for his, the restricted code would be his only code. The repercussions of limitation to a restricted code upon the cognitive development of the child were seen as irrevocable for, according to the theory, entry into the higher abstractions, the 'universalistic orders of meaning' of the elaborated code could only be achieved by gaining access to its structure. The codes were thus defined by the criterion of their linguistic structure and it was the connection made between possession of the latter and the possibility of reaching certain levels and kinds of conceptualisation which gave to researchers in the field the feeling that for the first time the causes of working-class under-achievement in educational settings had been

made accessible to empirical observation. The whole problem of the potentiality of the working-class child at school could be seen as lying embedded in the structure of his language, a structure which possessed its own communicable aesthetic but which, when faced with the novel stimuli of the classroom learning situation, could not meaningfully respond. Indeed, the restricted code was defined by its preconceived predictability, by its greater inability to respond to changes in context.

The early researches reflected this conception of the restricted code as a static and unvarying entity. In the early work of Bernstein (1962b) and Lawton (1963, 1964) intra-class and intra-individual consistency in linguistic performance was assumed. Large numbers of contextual variables were left uncontrolled. Not surprisingly, the predictions in these early researches were generally confirmed. Even if it seemed premature at the time to talk of the existence of verbal planning procedures of qualitatively different orders, it was still the case that groups of children and adolescents controlled for intelligence test scores and parental socio-economic status had been found easy to separate on a series of simple frequency counts of linguistic items.

It was the later work of Lawton (1965), and that of Robinson (1968), both with adolescents, and of Hess, Shipman et al (1968) with adults, which showed that the manipulation of certain contextual variables could destroy the credibility of the early notions of consistency in social class language performance. The evidence was too great for it to be ignored and Bernstein (1969a) was forced

to make the first major modification of his original theoretical model when he conceded that,

> "it is clear that context is a major control upon syntactic and lexical selections ....",

This concession was a crucial one for it meant that if a structural definition of the two codes was ever to be obtained it could only be of the moxt complex kind.

It was at this point in the development of the theory that this piece of research work entered into the picture. As a project with certain objectives, it could be said to represent an attempt to test the original hypothesis of two separable and structurally-defined codes on its strongest ground, in the form of a blanket comparison of the language performance of two social class groups, and on what appeared to be its weakest, in the form of a study of the internal variations in language scores which remain unexplored in a blanket comparison. In both cases the research attempted to extend the existing body of theoretical knowledge, particularly at the level of analysis. In both areas its findings substantiated those of some of the previous researches in the field and failed to substantiate those of others.

In the first area, that of the analysis of social class differences in overall language performance, the concept of elaboration of code was accepted while that of a separate elaborated code with planning procedures distinct from those of an hypothesised restricted code was left an open question. This enabled us to use the notion of elaboration of code as a descriptive concept, to

talk of a stretch of language as being 'more' or 'less' elaborated than other stretches of language, without accepting necessarily the connotations the term had acquired of the separability of coding procedures. Once the term had been accepted, it was possible to make it a more refined operational concept by drawing upon the analytical resources of the model of grammar used. Four indicators of elaboration of code were introduced into the analysis which had not previously been operationalised, either in the comparable work of Bernstein, Lawton and Robinson or in the work of the Sociological Research Unit which had been published by the time the process of analysis described here had begun. These four indicators were: the 'comment' adjunct; the lexical adjunct in thematic position; the modal verb; and the deeply embedded clause. Two of these, the lexical adjunct in thematic position and the modal verb, not only failed to distinguish clearly between the classes but were also wayward in the pattern of their variation across the titles. For the other two, the predicted discriminating power was confirmed.

Changes in methodology render the task of making comparisons with the results of previous work a hazardous one. Scale and Category grammar provided more refined indicators of elaboration than those suggested by Bernstein, Lawton and Robinson, and a more systematic framework for analysis. Nevertheless, if we take those researches which appeared to confirm the hypothesis in its original form, a comparison with some of their findings can be made. In his study of adolescent speech, Bernstein (1962b) found his working-class subjects to use, among other things, less subordinate clauses, passive verbs and total adjectives. Lawton, in a replication of

this study (1963, 1964, 1965) found parallel differences on the same categories and on an additional one measuring depth of subordination. A further analysis, this time of written language, in the same study, produced even greater social class differences on the same items.

Five of the areas investigated in this research were roughly comparable with those mentioned above of Bernstein and Lawton : bound clauses (B(OUND CLAUSE)), including both rankshifted and dependent clauses but covering much the same ground as Bernstein's subordination count; passive verbs (PASSIVES), a directly comparable category; modified (MH) and heavily modified (2MH) noun- and ordinal-headed nominal groups, two categories covering between them most of the area covered by Bernstein's total adjective count; and, finally, clauses dependent beyond the first order of dependence (DEEPLY DEPENDENT CLAUSES), a category bearing some resemblance to Lawton's measure of depth of subordination, which included the same clauses but attached a 'weighting' to them.

In two of these areas, that of the bound clause and of the passive verb, the research provides considerable support for Bernstein's hypothesis and parallels his own findings. Both areas produced statistically significant differences in the direction predicted which were maintained consistently on each of the registral means.

In the other areas, it is the weakness of the support they offer to the original hypothesis and the extent of their deviation from the pattern of results in previous empirical work which are the most striking characteristics of the findings related here. The failure

of the 'deeply dependent' clauses to move in the predicted direction to a significant degree might be explained by the absence of a depth 'weighting' similar to the one attached by Lawton to this item. No such factor lies fortuitously at hand to explain the failure of simple and complex modification within the nominal group to discriminate significantly between the classes.

If we wish to find less equivocal support for the notion of two separable and structurally defined codes then we are compelled to look for it in other areas, in particular, in those areas where the concepts of Scale and Category grammar had suggested new indicators of elaboration of code. Here the pattern is somewhat different. Table 1B shows both the lexical adjunct and the rankshifted clause, in various forms, to possess powers of discrimination at very high levels. It seems strange, at first sight, that Bernstein's hypothesis should have been most strongly supported in those linguistic categories which were designed deliberately to break new ground empirically, and which were not intended merely to replicate those of previous work. It would suggest that the developing sophistication of research methodology in this field might yet show the hypothesis to possess untapped reserves of predictive power. Nonetheless, even here, the problem of unpredicted movements of scores remains to spread confusion. Of all the items in Table 1B one of those least expected to move significantly against the hypothesis (CLAUSE - RANKSHIFTED B (clauses rankshifted to function as elements within the structure of other clauses)) succeeded in doing just that, althought at only a marginal level of significance. Until such movements can be satisfactorily accounted

for, both the premises of the hypotheses and the methodology of the research projects which are developed to test them must remain suspect.

In the second area, that of the study of internal stylistic variations beneath the general means, the main theoretical extension involved the introduction of the concept of registral variation or switching. The antecedents of the delimitation of this area as a separate area of analysis lay in a number of previous researches. There had been one uniform finding in all of these researches. Lawton (1965) and Robinson (1968) working with adolescents and Henderson (1970) working with children had all found contextual variables, and especially choice of topic, to be a dominant control upon syntactic selections. The problem with these researchers was that, in their descriptions of the phenomenon of adjustment to changes in context, they lacked a satisfactory explanatory variable. This conceptual weakness compelled both Lawton and Robinson to talk in terms of switching between codes in the absence of a generally accepted linguistic definition of code. The level of socio-linguistic knowledge was not yet high enough to support such a concept. It proved impossible, beyond mere comparative evaluation, to say at what point a stretch of language could be said to have ceased to be 'elaborated' and to have become 'restricted'.

At the genesis of this research, an assessment of this other work in the field suggested the usefulness of the idea of 'register' as developed by Halliday et al (1964). Halliday had claimed that an individual or group would have access to a number of registers

the defining linguistic features of which would tend to co-occur with certain aspects of the situation in which they were produced. Registers, he had suggested, were defined by their 'formal properties' and he had gone on to propose a classification of properties along three dimensions : the field, mode and style of discourse. The operational value of this concept was two-fold for not only did it enable the essay topic to be classified and controlled along certain dimensions - the topic concerned with the explanation of the working of a piece of machinery being classified, for instance, as lying in the 'technical' field and requiring an 'explanatory' style - it also enabled the response of the individual or group to that topic to be classified as a response to the need of certain items to co-occur with certain categories of topic. In this way, the problem of explaining the linguistic adjustment made in moving from title to title or from topic to topic could be handled without recourse to the confusing and disruptive concept introduced by Lawton and Robinson, of code-switching. The problem remaining, after the concept had been operationalised, was mainly that of recognising the patterns of co-occurence. The body of empirical work directed towards the establishment of the formal properties of registers had been of miniscule proportions. The lack of such work on technical writing made it necessary, in discussing the premises of the second and third hypotheses, to talk in terms of a broad technical/scientific register. Obviously, at this level of assumption, the consistency of scores in moving in the direction predicted was the important factor.

The interconnectedness of the two hypotheses made it necessary to choose the indicators of stylistic variation from out of the group of items whose frequency of occurrence, it had been suggested, would be an indication of 'elaboration' of code. However, despite this partiality in the choice of indicative items, the outline of a pattern of what might be called a 'technical' or a 'technical/scientific' register can be seen emerging in Tables 2B and 2C. A higher frequency of certain items, passive verbs, non-restrictive relative clauses (WH-ITEM DEPENDENT B), and heavily modified nominal groups (2MH), and a lower frequency of others, notably 'comment' adjuncts and items containing rankshifted material (HQ and DEEPLY EMBEDDED B), did tend to co-occur with the technical titles and, although the other items proved less responsive, only one (THEMATIC ADJUNCTS) ran consistently against the hypothesis, justifying thereby its choice as a stylistic indicator, if not the premises which lay behind it.

Having established the existence of certain aspects of the register under analysis the next problem was to decide whether there were any social class differentials in access to it. In his study of variations in movement from 'description' to 'abstraction' sequence in speech, Lawton had found both social class groups making adjustments in their language but the tendency to do so to be stronger in the middle-class group. This research confirmed the first of Lawton's findings but not the second. Not only did our working-class group make linguistic adjustments of this kind; Tables 2B and 2C reveal the adjustments they made to

have been more extensive than those of their middle-class counterparts. If we can talk in terms of differentials in access to a 'technical' or 'technical/scientific' register then the suggestion of this research, on the basis of limited evidence, is that, for these two groups at least, they were negatively correlated with social class. That the 'less elaborated' language (and Table 1B shows this to be not an unfair designation) should have the greater power of internal variation is a surprising finding. What is a more surprising and, for the protagonists of the idea of two separable codes with different orders of verbal planning, a more embarassing finding is that increased access to the 'technical' register did not always occur at a lower level of elaboration. For some items, the bound clause and the passive verb, this was undoubtedly the case. Social class differences established on the overall comparison (Table 1B) were firmly and solidly maintained on the registral means (Tables 2A and 3). For others, however, for the non-restrictive clause and the heavily modified nominal group, the greater adjustment made to the technical titles by the working-class group seemed to have the power to lift their scores to the point at which they were achieving frequencies higher than those of the middle-class group.

Explanations for the unusual pattern of these results are not slow in coming to mind. Table 2B shows the linguistic adjustment made in moving from the 'imaginative' to the 'technical' titles to have been less than that made in moving from the latter to the 'opinionative' titles. From this it could be argued that the

technical explanatory titles were in fact concealed descriptive titles and if, as Bernstein has said, the true aesthetic of working-class language is a descriptive one, then a predominance of descriptive essays might be taken to be an unfair weighting in favour of the working-class subjects. Equally, it is arguable that the greater knowledge which one could assume from the working-class subjects on the 'technical' titles could have had an inflationary effect upon some of their scores. This might easily explain the increase they experienced in their use of heavy modification. It is difficult to see how it could explain so easily their superiority on the 'technical' titles in the use of the relative clause.

Yet, whatever the various explanations for it might be, it is difficult to see how far the idea of two separable and largely class-based codes can long survive the finding that twenty-five working-class adolescents, without formal educational qualifications and with an almost uniformly depressed verbal intelligence test score, were able, for example, as a group, to produce on two simple tasks of technical explanation a higher frequency of complex modifiers than were a sample drawn from the sixth form of a major public school. It is not the contention of this summary that the ascription to the language of the working-class group of the epithet 'less elaborated' is undeserved. Tables 1A and 1B show this, conclusively, not to be the case. What is merely being suggested is that the partial confirmation of the third hypothesis must modify any prior notions we might have had of the restricted nature of working-class language. Once we accept that the language

produced by the middle-class group was the more 'elaborated' language then we must also admit that, in achieving higher frequencies on certain of the indicators, the working-class group were also enjoying a measure of access to elements of elaboration. What is more, it has already been argued that there is some justification for believing that the social class contrasts within our sample, whether judged by the criterion of parental socio-economic status or by that of the subject's own educational experience, were the most extensive of any research carried out so far. It would appear, therefore, that, having accepted a structural definition of elaboration of language, and, at the present time, a definition of another kind does not exist, we are compelled by these findings to admit at least the possibility that it can be applied as a concept to describe the writing of the most unselected group of working-class adolescents so far studied in this field. This admission clearly does some damage to any hopes that might have remained of finding a social class location for the hypothesized 'restricted' code. It also makes Bernstein's (1969b) concession in this area seem both a critical and a timely one. Of all contextual variables, choice of topic or essay title does appear to be the powerful control upon syntactic selection which previous research suggested it might be. Moreover, it appears to have the power to influence the level of elaboration in the written language of even linguistically 'impoverished' groups of subjects. The implications of such a finding, tentative though it is, could go very deep indeed, in fact, to the very foundations of assumptions upon which the concept of two separable codes was originally raised, for, if facility in registral switching can

give a degree of access to an elaborated code, might it not also be seen as giving access to an equal degree to those universalistic orders of meaning which Bernstein is still insisting can only be acquired by means of this code? This is a question which only future research projects with more penetrating instruments of analysis and more precise controls will be able to answer.

As far as the educational implications of these findings are concerned, it seems unwise at this stage to raise too many problematic consequences upon such slender empirical foundations. Some intriguing lines of inquiry have, nevertheless, been opened up.

Bernstein has said that the aesthetic of working-class language is likely to be a concrete and descriptive one. If we take this remark in conjunction with Robinson's (1965) statement that, if working-class children are going to acquire a measure of elaboration in their language, they are more likely to do so in their writing than in their speech since it is only in the former that they are given extensive classroom practice, then we may have the skeleton of a partial conceptualisation of working-class language development.

The question then becomes one of the form which this classroom practice is likely to take. It is the descriptive essay, 'concrete and self-referential", which is presented to the working-class child as his primary mode of written expression in the classroom. It is not very far to go from recognising this fact to making the further proposition that the descriptive abilities of working-class

children could be refined in their written language to a degree which might never be suspected from their speech. This is not to say that Lawton (1968) was mistaken when he said that social class differences in writing will generally be greater than those in speech. It implies merely that, even in working-class language which appears impoverished when judged by formal criteria, there may exist certain limited and highly idiosyncratic areas of elaboration.

It is our belief that this research tapped one of these areas in stimulating from the working-class subjects a particular mode of descriptive writing on the technical explanatory titles. The quality of the response received has already been documented. The fact that it occurred at all might be taken as a cause for some optimism in considering the problem of the educational under-achievement of the working-class. Venables (1961) has argued that even a small stimulus of extended education may be sufficient to lift the level and alter the patterning of the abilities of adolescents who have performed only moderately at school. The findings reported here might be used to extend her proposition to lower ranges of ability and attainment than she was able to study. They suggest that even at this level the response to such a stimulus might be vigorous enough for its reverberations to be felt in areas of skill in which the potentiality of a particular type of student has, for long, been unsuspected.

A P P E N D I X

The Questionnaire given to the working-class subjects

Q U E S T I O N S

Try to answer *all* the questions presented below. If you feel you cannot answer a particular question give the reason why you feel you cannot do so.

1. Does your mother work? If so, what is her occupation?
2. If your mother does not work now write down any occupation you can think of which she has had in the past.
3. What type of secondary school did you attend: (a) Grammar School; (b) Comprehensive; (c) Secondary Modern; (d) Secondary Technical?
4. If your school practised streaming, state what stream you were in, whether (A), (B), or (C) etc., when you left school.
5. How many brothers and sisters have you got?
6. Do yourparents own or rent their house?
7. Did you stay on at school after the age of fifteen?
8. Did your parents influence you in your choice of occupation?
9. If your firm did not send you to the college, would you come of your own accord?

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