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ABSTRACT

The contribution of occupational profiling to explaining and forecasting job satisfaction were analyzed by using data on job satisfaction for 33,249 workers from waves 1-7 of the British Household Panel Survey. Overall job satisfaction gradients were defined for major and minor groups of occupations in the United Kingdom's Standard Occupational Classification. The level and congruence of the material aspects and quality of work life aspects of job satisfaction in individual occupational unit groups (OUGs) were profiled. Stark contrasts emerged between fortunate OUGs, where levels of both modes of satisfaction are high, and disfavored OUGs, where both are low. Although the analysis results were consistent with earlier accounts of alienation in industrial settings, the findings required more comprehensive forms of explanation involving established findings about the correlates of job satisfaction. Regression analysis demonstrated that, in many cases, levels of satisfaction in OUGs could be accounted for largely in terms of individual and organizational variables. However, significant occupational effects remained for a large minority of OUGs. Industry was discounted as a minor influence on job satisfaction. The scope for more general explanations of job satisfaction in terms of relative deprivation was suggested, and methods for predicting trends in job satisfaction were outlined. (Contains 22 tables and 46 references.) (Author/MN)

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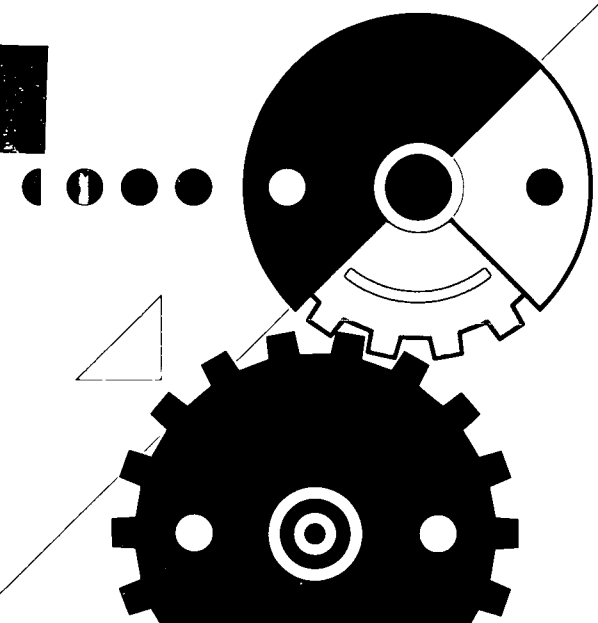

Explaining and Forecasting Job Satisfaction: The Contribution of Occupational Profiling

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ABSTRACT

Data on job satisfaction in Waves 1-7 of the British Household Panel Survey (BHPS) were reduced to scores for 33,249 observations by means of non-linear principal components analysis. Overall job satisfaction gradients are defined for Major Groups and Minor Groups of occupations in the Standard Occupational Classification (SOC). Taking account of the theoretical difference between material aspects and quality of work-life aspects of job satisfaction, detailed profiles based on the degree of congruence of these modes, as well their level, in occupational unit groups (OUGs) are provided. Stark contrasts are drawn between fortunate OUGs where levels of both modes of satisfaction are high and disfavoured OUGs where both are low. Cases where there is non-congruence, occasionally extreme, between the modes are listed. While consistent with earlier accounts of alienation in industrial settings, the findings require more comprehensive forms of explanation making use of established findings about the correlates of job satisfaction. Regression analysis shows that, in many cases, levels of satisfaction in OUGs can be accounted for largely in terms of individual or organisational variables. However, significant occupational effects remain for a large minority of OUGs. Industry is discounted as a major influence on job satisfaction. The importance for allocation in SOC of skill levels and skills specialisation allows further examination of the influence of *skill discrepancy* on employee attitudes, producing results closely in line with previous findings. In concluding, the scope for more general explanations of job satisfaction in terms of relative deprivation are suggested, methods for predicting trends in job satisfaction are outlined, and occupational groups of exceptional interest for researchers adopting case-study techniques are suggested. Incidental features of the treatment are validation of the survey instruments used to measure job satisfaction and grounded commentary on the reliability of the data.

Survey data sets used

- *British Household Panel Survey: Waves 1-7 (1991-99). Colchester: The Data Archive [distributor], 15 February 1999. SN: 4069*
- *Social Change and Economic Life. Colchester: The Data Archive [distributor], 5 November 1992. SN: 3273*

Bath
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Explaining and Forecasting Job Satisfaction: The Contribution of Occupational Profiling

INTRODUCTION

This second Working Paper from the *Work Centrality, Careers, and Household* project of the ESRC Future of Work (FOW) programme attempts to combine six distinct aims in a single integrated analysis:

1. Empirical

    a) Create *occupational profiles* of job satisfaction by establishing types and levels of job satisfaction in relatively well defined employee groups, utilising the largest relevant data set for the UK.

    b) Distinguish the main attributes of individuals and work organisations which condition the distribution of levels, and types, of expressed job satisfaction among British employees.

2. Theoretical

    a) Examine how far understanding of work attitudes may be viewed as the product of levels of and balances between 'own-skill' (personal work competence) on the one hand and 'job-skill' (or, as Berg, Freedman, and Freeman [1978] would say, 'challenge') on the other.

    b) Illustrate how these results might contribute towards dealing with one of the most troublesome and challenging areas for theoretical development in Sociology, Policy Studies, and Political Science in particular. This might be termed the problem of *category decomposition*, since it addresses the issue of unpacking 'names' (of social aggregates) into theoretical variables [Przeworski and Teuene, 1982].

3. Predictive In the light of this analysis, and in line with the central assignment of FOW, to outline methods for predicting trends in levels of job satisfaction in coming years. Levels of job satisfaction can be clearly linked not only to certain individual employee and organisational characteristics, but also to designated occupational groups. Reasonable predictions can thus be made, especially on the basis of occupational trends.

4. Technical The method to be used for creating composite measures of job satisfaction is innovative. It is one of the family of optimal scaling techniques developed by the Data Theory Group at the University of Leyden [SPSS, 1998; Gifi, 1990]. The results produced by using this technique appear to be highly consistent with those using other data reduction strategies or alternative methods of multivariate analysis.

(It has advantages that will be assessed fully in a later working paper on methodology.)

5. Problem Definition The analysis will specify useful ways in which further studies of job satisfaction might proceed - in particular via qualitative methods such as case-studies - to tackle problems encountered in the large-scale quantitative analysis undertaken here. Simultaneously, such targeting could increase chances of contributing to the theoretical task of category decomposition.

6. Validation Incidentally, to indicate and illustrate ways in which the data confirm the reality and utility for social enquiry into work and employment of the concept of job satisfaction itself.

At the same time, the present paper can be seen as continuing the analysis and discussion of the first FOW Working Paper [Rose, 1999a]. That paper argued - and it is hoped, demonstrated - that levels of skill possessed by individual employees, and *a fortiori* the degree of matching of such personal skills with the levels of skill required by a current job, play a part in shaping all job attitudes but are of special importance for understanding levels and types of job satisfaction. It is believed that this analytical strategy, developed on the basis of earlier research [Rose, 1994a], should lead to better explanation in this area. It is hoped that this paper will widen the scope of this explanatory innovation.

PREVIOUS APPROACHES TO JOB SATISFACTION DATA

Much research on employee job satisfaction by sociologists of work and other social scientists has adopted an *individual-based* cross-sectional approach. That is to say, it inspects the findings of large-scale social surveys or employee polls and attempts to identify those features in personal circumstances, or in the workplace environment, which most influence the levels of job satisfaction expressed by employees in a particular survey [1]. Previous research by the present writer [Rose, 1994a, 1994b], and the earlier working paper [Rose, 1999a] for the ESRC Future of Work (FOW) research programme, largely followed this pattern. Labour economists interested in the issue have mostly taken a similar line [Berg, Freedman, and Freeman, 1978; Freeman, 1976].

However, at least two other approaches can be adopted. From the late 1930s onwards, a growing number of reports on employee groups, often related to studies of experimental changes to workplace supervisory practice, forcefully argued that job satisfaction can be viewed - indeed, should be viewed - as much as a *process* as a state. The original Hawthorne Studies [Roethlisberger and Dickson, 1964] and many of the classic experiments on employee groups of the 1940s and 1950s [see Rose, 1988: Part IV, for a review] by social psychologists adopted this approach, if only implicitly.

The core assumption held by proponents of this approach was that job satisfaction should be viewed as a variable, and possibly dynamic, attribute of a workplace group, generated in, and by, a network of intense informal contacts. Informal social relations ('group life') would, it was maintained, provide the key to understanding employee job attitudes. True enough, the results of these studies suffer from severe drawbacks; small and often over-selective samples, or interventionist concerns on the part of investigators, are merely the two most obvious. However, they remain interesting for the present analysis in that they rely upon explanation in

terms of a *collective* or aggregate property such as 'degree of social integration'. Some social psychologists concerned with the workplace often straightforwardly equated 'satisfaction' with such integration, especially if they were influenced by Kurt Lewin [Rose, 1988: 171f].

This tradition continued in one form or another among social and occupational psychologists until it metamorphosed into Organisational Behaviour theory linked closely to teaching and research in Management as an academic discipline. Concern gradually switched to the employee's sense of participation and involvement. Among sociologists, from the late 1940s, a violent reaction set in against the earlier Human Relations image of the employee group as a 'small society' where a sense of involvement or integration created One Big Happy Family at the workplace. This was if anything intensified by the adumbration of a theory, associated with Frederick Herzberg [1968], which pointed to gains in worker productivity for managers capable of building employee satisfaction with intrinsic factors ('motivators') once extrinsic factors ('satisfiers') had been catered for. Job satisfaction was now seen by many as an intrinsically suspect concept thanks to its link with 'manipulatory' management practices.

Otherwise, it was treated by sociologists of work as just one aspect of a broader condition - *employee alienation* - determined by production technology, by bureaucratic organisation, or by capitalist exploitation. This approach is to be found in such classics of industrial sociology as Eli Chinoy's *Automobile Workers and the American Dream* [1949], Walker and Guest's *The Man on the Assembly Line* [1952], and - above all - in Robert Blauner's *Alienation and Freedom* [1964]. However, not all important works of this period regarded job satisfaction as an indicator of more profound forms of social and psychological deprivation or fulfilment. In Robert Sayles' *Behavior of Industrial Work Groups* [1958], levels of job satisfaction were conceived as preconditions for mobilising employee discontent into grievance activity that could be either sustained and well planned, or sporadic and anarchic, depending on the technical setting. In Lockwood et al.'s *Affluent Worker: Industrial Attitudes and Behaviour* [1969], expressed job satisfaction was treated as one pointer to the logic underlying an employee's labour market strategy (his or her 'orientation to work'). For reasons that lie beyond the scope of this paper, the lines of enquiry initiated by these outstanding studies soon became relatively neglected, though they are revived from time to time [2].

While these inquiries undoubtedly focused more closely upon employees who were male, blue-collar, and 'industrial', others did examine white-collar groups in which women employees were steadily becoming more numerous [Mills, 1953; Lockwood, 1958]. They continue to serve as a reminder that, where appropriate, analysis via aggregates (workplace or occupational) has three special advantages for understanding job satisfaction:

- ***Control of skill level.*** It is assumed here that one key benchmark in the comparisons that occur when individuals estimate their current level of job satisfaction is their own level of work experience, acquired skill, level of training, and educational attainment. The label 'own-skill' will be applied to this overall competence [3]. (Strictly speaking, it should perhaps be called *negotiable* competence [4].) In many cases, level of own-skill is perhaps the most important element in the effort-reward bargain made by individuals in taking a job. While large variations in skill levels may exist within occupations, there is usually some kind of recognised 'normal' range of skill-levels. One of the explicit criteria for defining the occupational groups that are to be examined below is difference in skill requirements. Occupation certainly 'works' better as a classifying device for present purposes than 'industry' [5].

- ***Reference group problematic***. Occupational groups can offer contexts for comparing individual circumstances and well-being, especially for persons who are members of them for any appreciable length of time. It is certain (though more research would be worthwhile on just how far) that such comparisons are made both with respect to other occupations as well as to others persons within the group. True enough, when some individuals evaluate their own job satisfaction, they may make multilateral comparisons that fail to take their own current occupation into account in such a systematic way. However, it is reasonable to suppose (until such further research is available) that most people who have held a job for longer than a few months do tend to make such comparisons, and that they do so more carefully as length of job-holding in a given occupation increases. It might further be added, that it is possible to undertake such forms of assessment without the employee concerned developing any significant degree of identification with the occupation concerned. However - and this may be of some importance for understanding job satisfaction - identification with an occupation will often, even generally, be far stronger than identification with an employer.

- ***Functional specificity***. Not all occupations are clearly demarcated skill groups. But many of them are, not only in the analytical eye of the Standard Occupational Classification (SOC), but in everyday economic life. Though the SOC can offer impressive examples of verbose or convoluted official jargon when designating a few of the 374 Occupational Unit Groups in its current schema, most are readily intelligible and many are well-known terms. Thus the name of the aggregate can possess a high degree of social and economic significance - it is meaningful to persons in the group and to outsiders in a way that (e.g.) membership of a social class category or, *a fortiori*, an income band is not. For purposes of communication, furthermore, OUG titles should be regarded as a godsend by those observers of the workplace who are concerned with better communication with non-specialists. At the same time, the quantitative analysis relating to OUGs to be undertaken below opens a welcome and potentially very wide area of collaboration with researchers undertaking qualitative studies of occupational groups. Such research is, in the writer's view, indispensable for grasping the processes behind the formation, expression, and modification of work attitudes and behaviour.

METHODOLOGY, MEASUREMENT, AND MEANING

No attempt will be made here to discuss the theoretical and methodological difficulties that arise in the collection, analysis, and interpretation of skill data. The concept of job satisfaction, the degree of comparability between occupations of data on it, and its validation, are also problematic in some measure - though by no means fatally so. (These issues, and the more technical ones of designing composite measures like those to be used here, will be taken up in a further working paper.) The writer understands, and has at times fully shared, the concerns of those who hold sceptical views about the degree to which job satisfaction is ever successfully measured with any degree of accuracy [6].

Again, this paper strongly endorses the distinction between *job satisfaction* and *work involvement* stressed by Brooke et al. [1988] which runs through the analysis of the early 1990s Employment in Britain surveys [Gallie et al., 1998]. However, job satisfaction data have

characteristics that strongly suggest they do indeed 'measure' (in at least an approximate way) some area of subjectivity that is closely related to workplace experiences, occupational characteristics, and individual attributes - especially those related to labour market capacity. Statements about levels of job satisfaction are not shaped or expressed in a random way. Interviewers never report significant difficulties in putting standard questions to employees about their levels of job satisfaction. Despite the professional anxieties of social scientists about its 'real' meanings, job satisfaction clearly has largely unproblematic meaning for employees themselves.

ASPECTS OF JOB SATISFACTION

From an early stage, job satisfaction studies began to recognise at least two dimensions of employee experience of paid work, with levels of satisfaction dependent on different sets of job properties. Firstly, there are *extrinsic* factors, which have to do with the economic and material rewards of employment; and secondly, there are *intrinsic* factors which relate to the demands of the work tasks, workplace discipline, and other 'quality of worklife' aspects of a job. (Indeed, a whole management theory of motivation was built upon the distinction by Frederick Herzberg [1968].) Other dimensions can be defined, but these two appear to represent a fundamental division.

This division should never be overlooked, and will be regarded here as essential for an adequate understanding of job satisfaction at the level of occupation. (However, it is easier to cope with *after* examining overall job satisfaction.) The practice has grown up among survey researchers of asking respondents to rate a half-dozen or so particular job aspects. In Britain, a stage close to 'standardisation' of both the questions and their wording has now been reached [7]. The standard set of questions embodies the distinction in a highly economical way: enquiries about satisfaction with pay, promotion, and security relate to the extrinsic dimension; others dealing with use of personal initiative, relations with the boss, hours worked, and the work itself, cover the intrinsic dimension [8]. The questions about these specific job-aspects are followed by a request for an appraisal of overall satisfaction with the current job.

In the analysis that follows, three composite measures of job satisfaction will be used. The first is a measure of overall job satisfaction and is based upon all items *except* the 'overall satisfaction' enquiry; the second is created by combining the 'intrinsic' items (relations with boss, hours, the work itself, use of initiative); the third the 'extrinsic' items (pay, promotion, security). All three composite variables are created by non-linear principal components analysis, which is particularly appropriate for reducing this type of data [Gifi, 1990].

The data reduction creates appropriate individual scores, for each employee case, for each new composite variable. The scores for individuals can be used to create summary group measures. It might be noted that there are signs that scores for the overall satisfaction measure are weighted somewhat towards the intrinsic items. However, the reduction process ensures that all items 'contribute' to scores as far as technically possible. For that reason the measure is considered preferable to the single summary question about overall satisfaction. Further, the scores can for most practical purposes be treated as equivalent to those on a scale with interval level properties, though strictly speaking they might be best regarded as an ordinal level measure. Much of the following analysis will use, simultaneously, the measures for intrinsic and for extrinsic satisfaction. In fact, sharp contrasts can occur in the way they combine from one occupation to another.

CLASSIFICATION OF OCCUPATIONS

The study adopts the UK *Standard Occupational Classification* (SOC) published in 1990, and currently under revision. The main features of SOC are:

- Its highly systematic nesting of different levels of occupational generality, with 9 Major Groups, unpacking to 77 Minor Groups, which in turn embrace 374 Occupational Unit Groups (OUGs).

- The vertical definition of groups largely in terms of the level of qualifications and/or training time they require.

- The horizontal division of OUGs of similar level by reference to their skill specialisation.

While the scheme has certain acknowledged limitations [Elias, 1997], it does succeed in creating a classification that is not only technically adequate for its purposes but possesses considerable value as a tool of communication - the overwhelming majority of the OUG titles, if at times somewhat prolix, are meaningful in terms of common-sense and everyday classifications of jobs and occupations.

THE DATA

The analysis is based upon interviews with persons who were classified as current employees in one or more of the seven waves of the British Household Panel Survey (BHPS) for the years 1991-1997 inclusive: this yields approximately 33,500 eligible observations. Up to 200 persons at each wave with another current activity status (student, unemployed, etc.) also answered the job satisfaction questions. They have been excluded from the analysis, reducing the sample by between 3-5% at each wave.

It is important to note the 'multiple observation' features of the sample. The results, are derived from a set of *observations*, not of individual cases. The analysis therefore assumes that individual psychological characteristics such as personality, while no doubt affecting levels and types of job satisfaction, can be treated as randomly distributed disturbance. Levels of job satisfaction are likewise regarded not only as cognitive but also as relatively objective and at least broadly rational. As personal circumstances (financial situation and expectations, household problems impinging on work, new training or qualifications, age, promotion, job switching, etc.) alter so should (indeed, so does) expressed job satisfaction. The reasons for this are, firstly, that these changes affect the individual's position in the labour market or the work organisation for better or worse, and secondly, that individuals evaluate these new circumstances in a systematic way. It is acknowledged that these individual assessments may be subject to at times considerable error. However, the notion that this error may be unacceptably high is discounted.

Some individuals appear as employees in only one annual fieldwork wave of BHPS, some in all seven. New members are recruited to replace some of those who leave, but replacement of the employee sample occurs largely through movements from a non-employed status (student, unemployed, full-time housework, etc.) into employment. Many (around 30% each wave)

'always employed' Panel members changed jobs at least once over the seven-wave period, or experienced some form of promotion or significant change of job assignment without changing employers, at least once and sometimes more often.

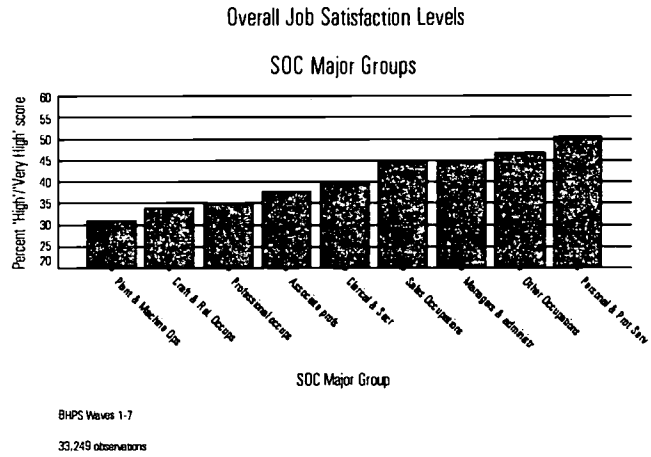
This turnover and mobility mean that duplication of cases or independence of observations should not be considered a problem. Indeed, it is of considerable value for understanding levels of job satisfaction. (As will be shown below, for example, job changing has a highly significant positive effect on job satisfaction scores.) There is considerable 'marginal' shifting from year to year in reported job satisfaction by persons who remain in the same post, suggesting that individual personal circumstances may indeed impinge upon the subjective experience and evaluation of work. Yet overall results for separate waves, examined separately, produce results that are very similar indeed. An obvious advantage of using cases for all seven waves is that aggregation creates viable samples of observations for some of the smaller OUGs, and sufficiently large samples of larger OUGs to enable more detailed internal analysis [9]. (The numbers of observations for each OUG are listed in Table 2.)

OVERALL JOB SATISFACTION AND OCCUPATION

The first step in understanding levels of job satisfaction between occupations, patterns of job satisfaction within occupations, and the possible special effect of occupation on job satisfaction, is to examine overall job satisfaction. Data for 33,249 observations of cases classified with the labour-force status of 'employee' at the time of their interview by BHPS in waves 1-7 are available. Exact scores for overall job satisfaction for each case were provided by a method of non-linear Principal Components analysis. These scores were also banded to produce five categories running from 'very low' to 'very high' with equal 20% proportions of observations in each band.

Even at a very general aggregate level, that of the nine Major Groups which form the highest level of the Standard Occupational Classification (SOC), considerable differences in levels of job satisfaction linked to occupation seem apparent. Figure 1 shows the percentage of all observations yielding scores for overall job satisfaction classified as 'High' or 'Very High'. (It should be noted that the usual ordering of the Major Groups has been altered to point up what might be called the *satisfaction gradient*.)

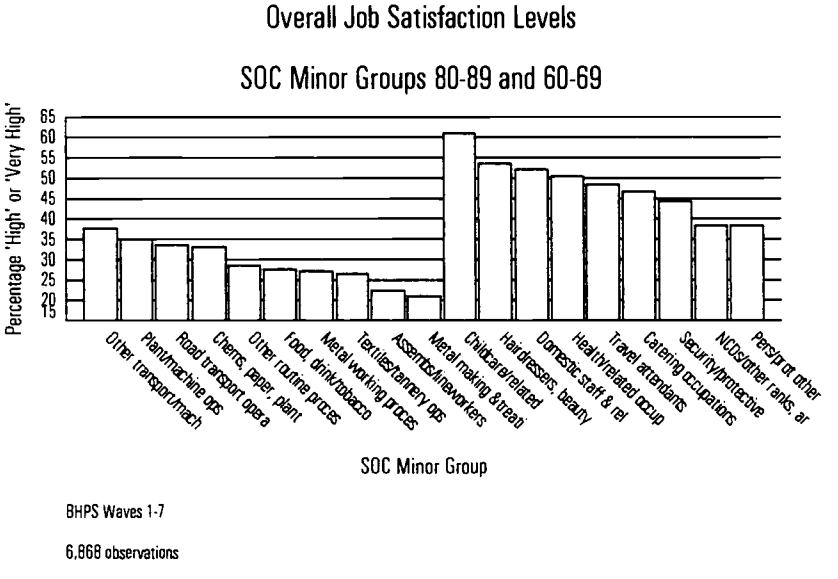
Figure 1



As the banding method created five equally sized categories, the expected level of all observations falling in these two bands, for any group, can be thought of as 40%. Evidently, there is a very considerable gap between the *Personal and Protective Services* group, with just over 50% in these two bands and *Plant and Machine Operatives*, with just over 30% in them. Two further features of the chart are worth noting: i) the relatively high 'absolute' level of overall job satisfaction of the *Personal and Protective Services* group; and ii) the contrast between *Managers and Administrators* and the two groups of professional occupations, although in terms of the Goldthorpe Class schema in particular they overlap considerably.

Unpacking the Major Groups into their constituent Minor Groups clarifies the distribution of satisfaction scores within Major Groups. Figure 2 shows overall job satisfaction levels for the 19 Minor Groups composing Major Groups 6 (*Personal and Protective Services*) and 8 (*Plant and Machine Operators*). The latter two Major groups were chosen for expansion because they offer the greatest contrast at the Major Group level. This difference is confirmed and greatly sharpened by examining the results for the constituent Minor Groups. Although, within *Plant and Machine Operators*, there is an appreciable gap between its highest scoring minor group (*Other Transport Operators*) and its lowest scoring minor group (*Metal Making and Treating Operators*), *all* 10 minor groups have lower proportions of high-score observations than the *lowest* scoring (*Other Personal and Protective Services)* of the 9 Minor Groups of Major Group *Personal and Protective Services*.

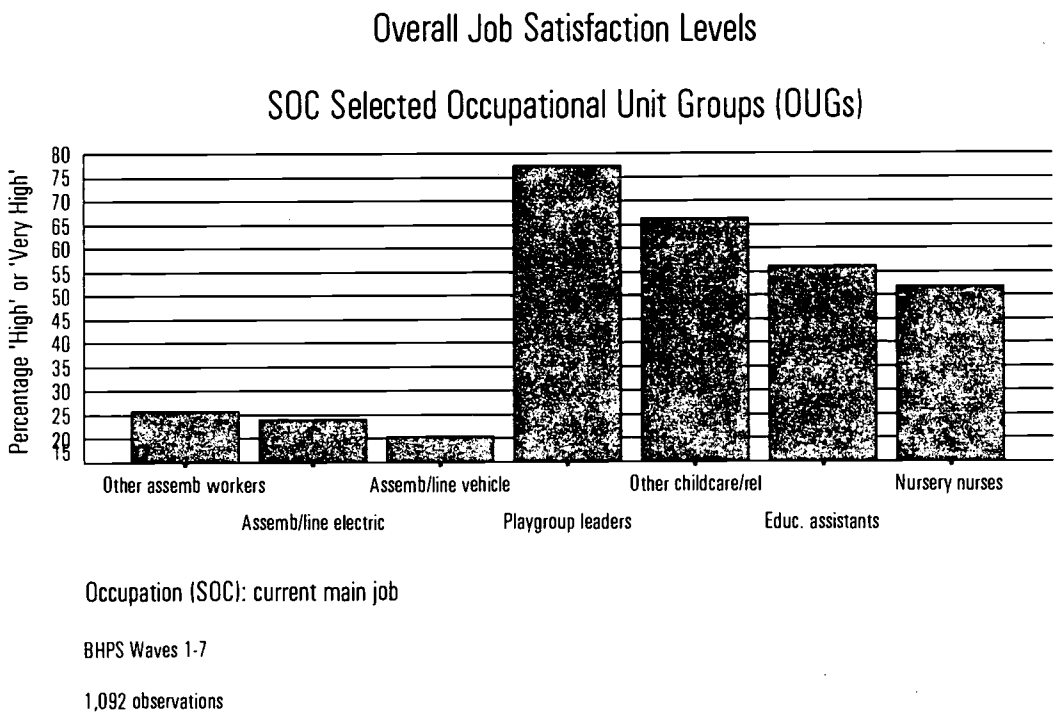
Figure 2



It is correct that the two lowest scoring minor groups (*Other Personal\Protective Services*, and *NCOs and Other Ranks* of the armed services) in the latter major group, do fall just below the 'expected' level of 40% in the 'high-scoring categories'. They are positioned only narrowly ahead of the 'most satisfied' (or 'least dissatisfied) minor group of Major Group 8. As a whole, though, the minor groups of Major Group 6 are clearly - indeed massively - 'more satisfied': just over 20% of Minor Group *Childcare Related Services* observations are above the expected level, while just under 20% of *Metal Making and Treating Operators* are below it. This is already a huge gap.

Even wider gaps exist at the Occupational Unit Group (OUG) level. Unfortunately, this has to be illustrated by examining unit groups in the Minor Group *Assemblers and Lineworkers*, and not in *Metal Making and Treating*, although the assembly-line cases yield a slightly higher overall score. This occurs because of a shortage of cases at the OUG level. (As noted, OUGs offering fewer than 25 observations will not be examined at all in this section or the next, while in general only those offering *at least* 50 observations will be preferred. The seven OUGs which have been retained are: (in Minor Group 65) *Playgroup Leaders*, *Educational Assistants*, *Nursery Nurses*, *Other Childcare Related*; and (in Minor Group 85) *Vehicle Assemblers*, *Electrical Assemblers*, and *Miscellaneous/Other Assemblers*. Between them, these OUGs offer an average 156 observations each. (However, the playgroup leader OUG falls just short one short of 50 observations [10].)

Figure 3



The difference between levels of job satisfaction exemplified by these OUGs is impressive. Virtually four out of five *Playgroup Leader* observations, but only one in five of vehicle assembler observations, fall in the 'high' or 'very high' categories. Although the *Nursery Nurses* group has 'only' 52% in these categories, it still has 27 percentage points more observations in them than the *highest* of the assembler/lineworker groups.

Such extreme contrasts in the distribution of higher levels of overall job satisfaction are to be found more often between the OUGs of Major Groups 6 and 8. Table 1 ranks OUGs offering 50+ observations according to their 'high-score' percent. (Because of its length Table 1 appears in an Appendix.) OUGs from all Major Groups appear among those with very high overall job satisfaction. The 25 highest scoring OUGs include no fewer than eight from Major Group 6: *Bar Staff*, *Care Assistants & Attendants*, *Nursery Nurses*, *Other Childcare Related Occupations*, *Educational Assistants*, *Hairdressers & Barbers*, *Caretakers*, and *Fire Service*

Officers. (*Playgroup Leaders* are omitted from Table 1 because there are just fewer than 50 observations.)

The bottom end of the table is far less 'representative'. Not a single OUG from Major Group 6 appears in the 'Bottom Twenty-Five'. Although managerial groups are noteworthy for their high levels of job satisfaction, the managerial group *Civil Service Executive Officers* comes almost bottom of the table. On the other hand, professional employees appear in strength towards the bottom of the table: there are no fewer than six OUGs from the *Professional Occupations* Major Group. They include *Solicitors, Surveyors,* various kinds of engineers, and *Biologists & Biochemists*.

Examination of the positions and scores for OUGs in this list strongly confirms, therefore, the impression that the most satisfied major group of occupations is *Personal and Protective Services* (number 6). The very lowest OUG in Major Group 6, *Hospital Ward Assistants,* comes 98 out of 143 in this list, and the mean position for OUGs from Major Group 6 is 34 - far higher than any other set of OUGs. No less clearly, Major Group 8, *Plant and Machine Operatives*, is the least satisfied. Its mean OUG position is 101 out of 143 - even though its average is boosted by the 'unexpected' appearance of an OUG from Major Group 8 (*Construction & Related Operatives*) in the 'Top Ten'.

Any attempt to explain scores, or relative positions, in Table 1 in terms of traditional industrial sociology soon meets difficulties. At its bottom end, true enough, Table features several occupations that recall the preoccupation of industrial sociologists during the high tide of Fordism in industry. No fewer than three assembly-line groups appear in the lowest 25, together with trades such as welding often related to manufacturing. Despite the decimation of manufacturing industry in the last 20 years, and the introduction of much heralded human resources techniques aimed at boosting employee involvement in the workplace, a keen sense of deprivation evidently remains widespread in Britain's increasingly modernised factories. At the same time, the analysis and predictions of Robert Blauner [1964] *are* borne out, at least in part, by the relatively higher position (81, and 99) of two groups of process industry workers in the table. Similarly, some craft worker groups *do* figure in absolutely high positions - an OUG for various footwear crafts figures in ninth place. At the same time, most craft occupations are more modestly positioned and a craft group (*Telephone Fitters*) actually takes the very bottom position with a bare 17% of observations in 'positive' territory.

Any explanation of differences in general job satisfaction between occupations relying on technological factors and skill seems to founder on the dispersion of scores among manual occupations calling for considerable skill or responsibility and offering reasonable levels of autonomy. The *technological implications* theory [Rose, 1988: chapter 22] was never extended sufficiently to provide explanations of the work attitudes of white-collar, managerial, and professional groups in any case. Such groups, often ones possessing considerable autonomy at work and work-roles which are, ostensibly, challenging and involving, are scattered all over this table.

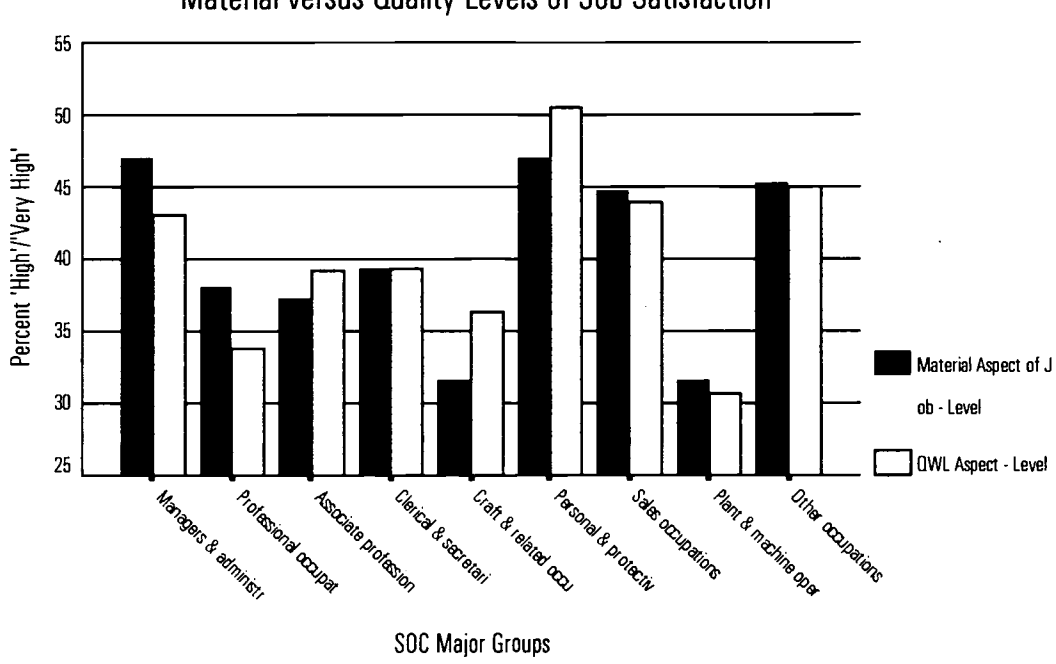
However, it would be premature to discount entirely the degree of autonomy in work tasks as a determinant of employee satisfaction. Sociologists of work have long drawn a distinction between the *intrinsic* rewards of a set of work tasks, which relate to its 'quality of work-life' features, and *extrinsic* rewards, which relate mainly to economic rewards. The material

available here enables a substantial modification of the comparisons drawn in the preceding section.

MATERIAL VERSUS QUALITY ASPECTS OF JOB SATISFACTION

Because of the degree of aggregation present in its nine categories, the Major Group level of the Standard Occupational Classification (SOC) tends to suggest that little difference exists in the degree of job satisfaction for extrinsic and intrinsic factors. For four of the Major Groups shown in Figure 4 (*Clerical and Secretarial, Sales Occupations, Plant and Machine Operators, Other Occupations*) there is little difference between the extrinsic dimension (to be labelled 'Material' factor) and the intrinsic dimension ('Quality' factor).

Figure 4



However, a hint of more interesting contrasts at the OUG level is provided by different profiles of the *Professional Occupations* and the *Craft and Related Occupations* (Major Groups 2 and 5). In terms of their Overall Job Satisfaction, these groups are separated by only a few points. They vary quite sharply in terms of their levels of satisfaction with material aspects of work, where the professionals are clearly ahead, and with the quality aspects, where the craft groups show higher satisfaction. There is a similar contrast between the profiles of the *Managers and Administrators* and the *Personal and Protective Services* Major Groups.

As should be expected, perhaps, the more striking contrasts occur not between the satisfaction profiles of the larger SOC groupings, but those at its most detailed level, the occupational unit group (OUG). Yet even at the level of Minor Groups, it is clear that all Major Groups can provide instances of both 'balanced' levels of job satisfaction, and of (sometimes sharp) imbalances. Figures 5 and 6 illustrate the degree of divergence which can occur, once the OUG level is reached, between the extent of satisfaction with material factors on the one hand and

with quality factors on the other. (The OUGs have been selected in order to illustrate the two varieties of imbalance that may occur.)

Figure 5

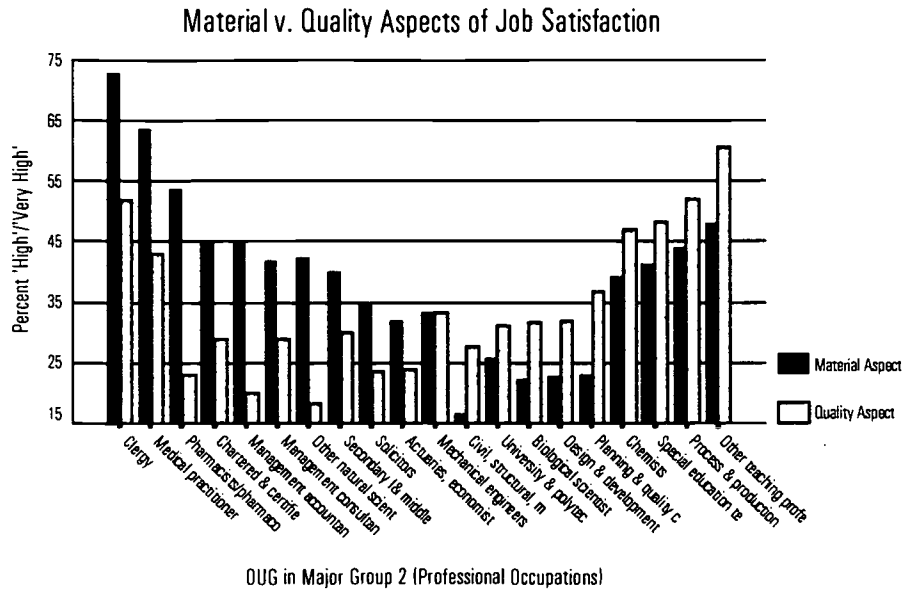


Figure 5, showing OUGs from the Professional Occupations Major Group, includes the OUG with the highest proportion of 'positive' observations for satisfaction with the Material aspects of currrent jobs - the *Clergy*. Although the clergy OUG's median score for Quality aspects is also one of the very highest of all OUGs, it still falls substantially below that of the clergy's satisfaction with the material rewards and conditions of its work. This finding, in itself interesting, provides evidence that is valuable in two quite different ways. Firstly it suggests that normative factors may be of considerable importance within certain occupations in setting benchmarks for satisfaction. For the clergy, low material wants and expectations as it were 'go with the job', and entrance to the clergy, of whatever denomination, is conditional upon accepting them. Moreover, those members of the clergy who may be less satisfied with their material rewards, may feel morally constrained to understate their dissatisfaction. Secondly, the results for the clergy provide evidence of a 'known groups' type that the two composite job satisfaction measures produce findings that are, in all likelihood, broadly valid. The material rewards of the clergy are indeed very low in absolute terms for a professional group, yet expressed satisfaction with them is 'abnormally' high.

The job satisfaction profile of medical practitioners shows a comparably higher satisfaction with the material aspects of work. Unlike the clergy, medical practitioners are not expected to exercise systematic self-denial in their material expectations, and for the most part do not do so, though remarkable exceptions certainly exist (for example in international voluntary services). The material rewards of medical practitioners are indeed quite high, at least in comparison with many other professional groups, and this occupational group is vigilant in maintaining them and well organised to do so.

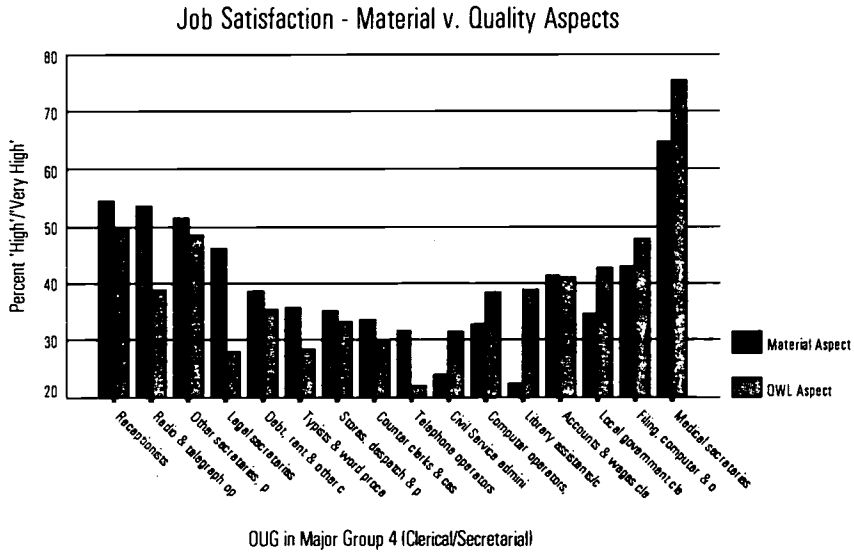
Traditionally, quality of worklife expectations have also been set high for medical practitioners. An image of a sharp decline in worklife quality, especially for hospital doctors - above all for

newly graduated hospital doctors - is widely held by the public, and encouraged by medical organisations. The satisfaction of medical practitioners with the quality aspects of their work barely crosses the expected level of 40%. Breaking down observations by branch of medicine suggests that among general practitioners the level is indeed a little higher. Among hospital doctors there are twice as many observations with low or very low scores, although slightly *more* hospital doctor observations than GP observations have very high levels. (Hospital doctor observations outnumber GP observations by five to one, and the numbers of GP observations is perhaps too small to draw safe conclusions for them separately.)

The most impressive 'quality lower' gap is that for *Pharmacists & Pharmacologists*. For this unit group, satisfaction with material aspects is firmly in 'positive' territory and satisfaction with quality of work-life very low indeed. Again, breakdown by branch of employment is hampered by shortage of observations. However, the data suggest that pharmacists employed in private retail firms are rather less dissatisfied with their worklife quality than are NHS hospital pharmacists. Crosswave analysis of the data also suggests that satisfaction with material aspects may have been rising in the 1990s in this OUG as a whole, while satisfaction with quality aspects has been declining. Other striking examples of the 'quality lower' satisfaction profile within Major Group 2 are provided by several accountant groups and miscellaneous natural scientist professionals.

While there are numerous examples of professional employee OUGs where the balance between material and quality levels are weighted towards quality, there are none where 'quality higher' gaps open up on a comparable scale. It may be significant that teacher and natural scientist groups tend to have such profiles. It will be noted by some readers of this paper that the profile for *University and Polytechnic* teachers shows levels of satisfaction well below the expected 40%, but that quality of worklife still reaches closer to it. Two other educational groups exhibit a 'quality high' profile. But these are not classroom or lecture-theatre teachers. In particular, a high proportion of *Other Teaching Professionals* are employed either in vocational training or in sports training, instruction, and supervision.

Figure 6



The Major Group 4 cases offer one example of a large gap between material and quality levels (*Library Assistants*). It should be noted, however, that even the quality score fails to reach the expected 40% level: members of this group are very likely to be dissatisfied with both aspects of their jobs. The one truly remarkable group amongst clerical and secretarial employees is the *Medical Secretary* OUG. It narrowly beats the clergy into second place for overall job satisfaction. But the profile of the two components of job satisfaction is quite dissimilar. The writer knows no obvious reason for the very high satisfaction scores on all three measures of medical secretaries. Other specialist secretaries show far less overall satisfaction; the *Legal Secretary* OUG, which is shown in Figure 6, is no better than fairly satisfied overall, and its balance between material and quality scores is the reverse of that of the medical secretary observations.

With regard to job satisfaction, an occupational profile hangs on the degree of correspondence between these two aspects, as well as their absolute levels. Profiling can identify a number of OUGs which should provide the most interesting cases for further investigation, possibly using case-study or anthropological methods. To create a simple profile, the median scores for each variable for each OUG were banded into 3 equal sized groups (higher, medium, lower). The resulting variables were cross-tabulated. Four of the nine cells in the resulting matrix should, it seems, be of greater interest:

- *high congruence*, where a score in the top third of Material job satisfaction is matched by a score in the top third for job satisfaction with Quality;
- *low congruence*, where scores both fall in the bottom third;
- *material high non-congruence*, where a score in the higher band for Material job satisfaction is associated with a score for Quality in the lower band; and
- *quality high non-congruence*, where the reverse situation exists.

Constraining the accepted minimum number of cases for any OUG to 25, there are around 50 OUGs in each of the targeted congruent positions, four OUGs in the *material high non-congruence* position, and three in the *non-congruence quality high* position. (See Table 3.)

The *high congruence* group includes cases from all SOC Major Groups *except* the Plant and Machine Operatives category (Major Group 8); a large number of manager groups appear in it, as do many personal services OUGs. However, a perhaps surprising number and variety of employee groups other than professionals also figure prominently - *Cleaners/domestic staff, Garage/filling-station forecourt attendants, Caretakers, Sales assistants, Catering counterhands, Hairdressers, Bar staff, Groundsmen/women, Sewing machinists, Scaffolders, Community and youth workers, Trade-union officials,* and *Actors/entertainers.* The *low congruence* cell contains - predictably perhaps, in view of an earlier stage of the discussion - a disproportionate number of cases from the 'Operatives' Major Group *in addition to* assemblers and other process workers.

Several driver groups (*locomotive, taxi*, and *bus*) appear in this position, as do *Postal workers.* It is also noteworthy for having three of the larger telephone-related employee groups (*Telephone fitters, Telephone salespersons*, and *Switchboard operators*). Far from over-

representing manual workers groups, whether skilled or not, it includes such typical white-collar occupational groups as *Library assistants, Information officers, Vocational trainers, Photographers, Authors/writers/journalists, Laboratory technicians, School inspectors, Civil engineers, and Civil Service executive officers.*

All four of the OUGs in the *material high non-congruence* cell are white-collar: *Taxation experts, Pharmacists/pharmacologists*, senior *Fire service officers*, and routine *Prison service officers*. A brief review of the input variables for the Quality dimension fails to suggest any uniform explanation for their (relatively) lower scores. It is tempting to speculate that if there is some underlying common source it may result from sensed status discrepancy, with real job quality failing to match levels that a relatively high level of material reward leads members of such groups to regard as their appropriate entitlement. All the same, for the fire officers, prison warders, and pharmacists, levels of satisfaction with hours of work is lower than average, and unsocial working hours may provide a good part of any explanation.

None of the three OUGs in the *non-congruence quality high* cell is white-collar. Two (*Carpenters/joiners, Roofers/slaters/tilers*) are traditional craft groups in the construction trade, exercising considerable autonomy over their use of time and methods - but facing a high degree of labour market insecurity. Indeed, all three groups share particularly high scores - for *Ambulance staff* they are phenomenally high - for satisfaction with their work itself and with using initiative at work.

There is a second way in which the contrast between levels of satisfaction with material and quality aspects of work might prove of considerable value to students of trends in the workforce as a whole. There has for some years been a widespread perception in Britain, which has been growing in the 1990s, that while a distinct improvement may often have been occurring in the material rewards of work (at least, in all those except job security), there had been a sharp decline in some of the quality aspects of work-life, notably in hours of work and, to a lesser extent, relations with employers, which more than offset it.

If such trends are indeed occurring - and the evidence that they are doing so *generally* still seems incomplete - they should show up in declines in job satisfaction, particularly among groups of employees subject to the most change of this type. Candidate groups offering a sufficient number of observations for each year of the 1990s to observe trends that may turn out to be significant can be defined with some precision in the data set used here. However, this is a task for another paper, desirably based upon at least one additional wave of BHPS employee observations [11].

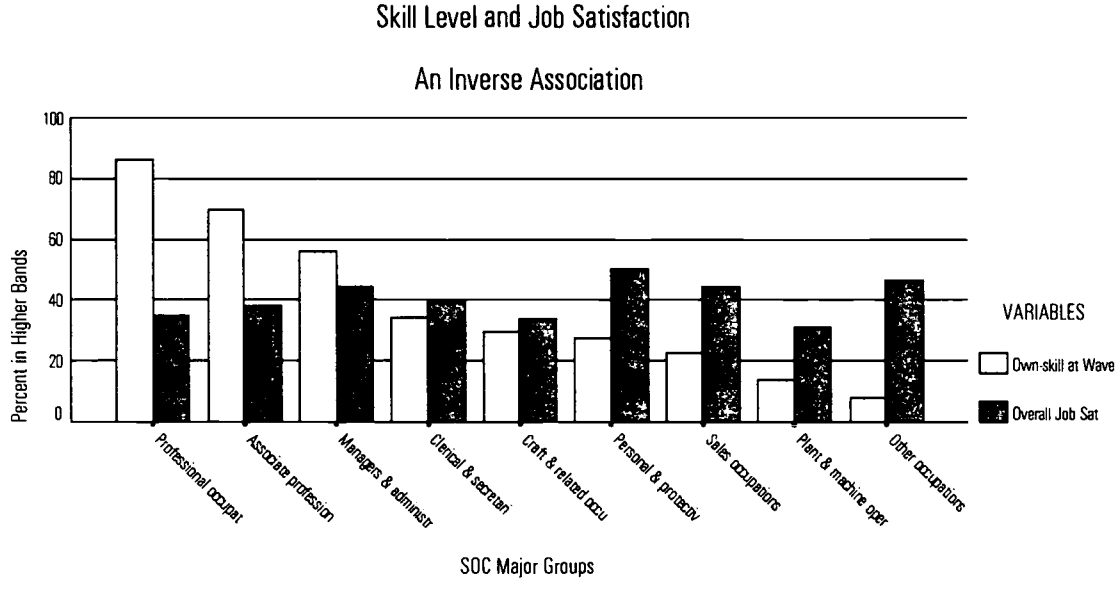
The foregoing examination has established, it is hoped, that in terms of the two types of job satisfaction, and the levels of each one, most OUGs do have profiles that approximate to one of the nine cells in the typology. The next question seems evident. To what extent do these profiles reflect unique features of the occupations concerned, and to what extent can they be reduced to individual attributes of employees who happen to be members of the occupation, or of the organisations in which members of the occupation are usually employed? Because of the close connection of the OUG scheme with skill properties, the way in which skill may affect job satisfaction within occupations will be considered first.

Previous research showed that skill was one of the more influential determinants of levels of job satisfaction, but that the association was not a straightforward one. Skill is a multi-dimensional concept, having at least two modes that are easy to confuse. In one of its senses, that conveyed by the term *challenge*, skill refers to properties of jobs and work-roles - the range, type, and depth of learned abilities called upon to perform the role competently (or convincingly). For convenience this will be labelled *job-skill*. Alternatively, skill is to be seen as *competence* - the possession by a given individual of stock of general education, vocational or professional training, and relevant experience. The label *own-skill* will be used to refer to this level and type of proficiency, which is conceptually close to that of *human capital*.

It is assumed that anyone assigned to a given job possesses at least the minimum amount of competence to meet its level of challenge, with an own-skill level close to matching the job-skill level. Obviously - notoriously even - complete matching is relatively uncommon. In many cases an imbalance ranging from trivial to gross exists in one direction or the other. For any given level of challenge or job-skill, there is always a good number of individuals who are either 'under-qualified' or 'over-qualified'.

To say the same thing slightly differently, there are always people whose skills are 'over-extended' or, alternatively, 'under-utilised' in their current job. The SCELI survey suggested that the degree of such mismatching mattered a great deal for job satisfaction, with the under-utilised recording significantly less satisfaction with their current jobs than the under-qualified [Rose, 1994a]. A broader result was that a loss of job satisfaction often accompanies a simple rise in the level of own-skill, and this will more than offset any gain in satisfaction from anything but large rises in the level of job-skill.

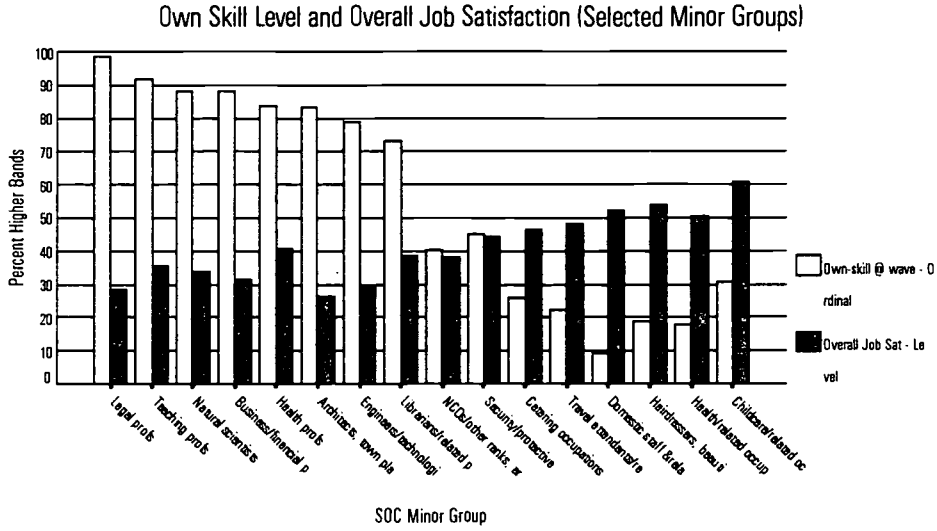
Figure 7



Some skill effects can readily be found in the BHPS data. If Major Groups really do reflect job-skill levels, Figure 7 shows that as the proportion of persons with higher levels of own-skill

falls the proportion in the Major Group expressing high levels of job satisfaction either remains steady or actually rises. (The order of Major Groups in this chart has been varied, for purposes of presentation, by moving Managers and Administrators from first to third place.) Figure 8 goes to the next level of detail in SOC, that of Minor Groups, showing selected groups from Major Group 2 (Professional Occupations) and Major Group 6 (Personal and Protective Occupations). The contrast is in fact sharper at this level.

Figure 8



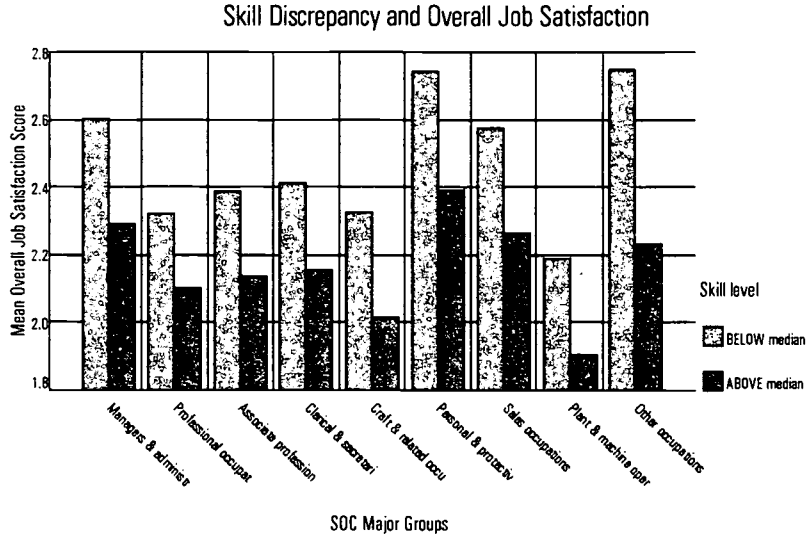
At this point a serious difficulty arises. The SCELI employee survey provided a large number of different indicators of both modes of skill and it was possible to combine these to provide effective measures of each one. It was thus practicable to compare in a fairly direct way, at the level of the individual, the effect of skill 'deficits' and 'surpluses' on job satisfaction. Indeed, the SCELI findings suggested that though own-skill had a clear depressive effect on satisfaction level, job-skill might actually have a neutral to slightly positive effect on it. It is not possible to repeat this analysis here. Regrettably, while BHPS provides excellent data on most aspects of own-skill, it delivers very little data about the type and degree of challenge in jobs done by individuals.

This problem has to be solved by a process of imputation, by using the median scores for own-skill at each level of SOC aggregation as a reference point. (Using the median score was preferred to using the mean; results are not affected by this preference.) The median had to be computed from the individual scores of persons allocated to groups. It is then straightforward to determine the difference between an individual score and this imputed score. (However, it is somewhat tedious in terms of computing procedures, as average scores rise slightly at each BHPS wave; thus scores for each of 350+ OUGs had to be computed for each separate wave.)

There are several weaknesses of this procedure, which it is best to acknowledge without more ado. Firstly, many individuals will be - *must* be - mis-assigned. The demands of actual jobs in any given OUG can vary enormously, with some falling well below the average level of job-skill computed in this way, and others well above it. Occasionally, job-skill demands may be very uniform across an OUG, but more often they are skewed in one way or another. Individuals whose own skill *is* quite well matched to their jobs will nonetheless often be classified as 'overstretched' or 'under-utilised'. Secondly, it is desirable that a sufficiently large number of observations exist to produce a distribution of own-skill levels approximately

mirroring that which prevails in the real world - after all, it is the real world that employees themselves respond to when assessing the balance of competence and challenge in their jobs. It is evident that many allocations to both the above-median and below-median groups are erroneous. Sadly, however, this unknown but probably high level of error must be accepted. Computation of a probably more sensitive measure is technically feasible but would be costly in man-hours.

Figure 9



Despite these difficulties and objections, this second-best procedure appears to show a skill-deficit effect. Figure 9 shows the results of dividing observations into those with own-skill above the median value for the Major Group to which their OUG belongs, and those with own-skill below it. It is evident from the chart that quite sizeable differences can occur. For all Major Groups, and all except 6 of the 77 Minor Groups, the effect is clear: the 'deficit' own-skill groups have higher levels of job satisfaction than those in surplus. The scale of the difference varies considerably from one Minor Group to another, and for any given Minor Group to some degree with the type of job satisfaction concerned. For OUGs, the number of groups failing to show the effect is larger; almost one in five (18.6% of 215 OUGs with 25 or more observations) fail to show it. Some of this result is no doubt attibutable to sample size effects. The scale of the difference for the anomalous cases averages out far lower than the remainder; and almost half of them *do* show the predicted effect for either the Material and Quality job satisfaction measures, though not for overall satisfaction.

As the regressions results, which will be presented next, show, having a 'deficit' or 'surplus' of own-skill exerts an appreciable independent effect on scores for job satisfaction *in addition to* that of absolute skill level. In other words, a person who has a high skill score and whose skill is higher than the median for his or her OUG is likely to be far less satisfied than someone with lower skill that also falls below the median for their OUG. However, the kind of skill discrepancy examine here is logically distinct from that examined in SCELI. The implied comparison is that between one's own level of competence and the prevailing levels of competence among people classified in the same occupation. The crucial skill discrepancy effect is one created by a difference between the level of an employee's own competence and the level of challenge present in the job held by that employee. This paper is simply not able to advance that version of the skill discrepancy approach any further, because of the lack of appropriate data, although its findings are certainly consistent with the SCELI results.

REGRESSION RESULTS

Differences of job satisfaction in occupational profiles have been established by the earlier analysis. However, it is well-known that certain individual attributes and organisation characteristcs are implicated in job satisfaction. Can the different profiles be accounted for largely in terms of such variables, or do they appear to be inherent in occupations? (Of course, accounting for differences does not make differences 'disappear': whether their source lies outside an occupation or within it, the job satisfaction profiles of occupations remain important in themselves.)

Regression of individual scores for job satisfaction on a large number of variables does indeed show that much of this difference is in the most cases *not* attributable to occupationally specific factors (whatever they might be - technological setting, occupational ethos, degree of individual autonomy, career structures, etc.). Individual factors such as age, sex, and personal skill levels, or organisational ones such as size of workplace, unionisation, economic sector, are what create differences between occupations. Approximately 30 variables relating to individual and organisational characteristics show individually high correlation with overall job satisfaction. The factors boosting scores are:

- higher age in years
- having managerial duties in current job
- enjoying a wider range of employment terms of a 'service class' type
- being aged over 50 years old
- being a woman
- reporting a significant promotion or a move to a different job in the previous year
- having optimistic financial expectations for the coming year
- mentioning a major personal event in the last year with a theme relating to work, training, and education.

The factors generally depressing scores are:

- higher level of human capital (education, training, work experience - 'own-skill')
- having own-skill above median for OUG at current wave of BHPS
- wishing to increase or decrease the number of hours worked per week
- appearing in a later wave of BHPS
- the number of persons employed at the workplace
- working over 35 hours per week
- having current financial worries
- having more household problems affecting work
- having a non-permanent appointment
- being a member of any trade union
- having a trade union or staff association at the workplace
- time spent travelling to work.

Table 4 (please see Appendix) indicates the influence of these variables, and of all but one of the OUGs offering 25 or more observations, on overall job satisfaction scores [12]. Because of the length of the variable list this and similar tables is organised as follows:

- Individual and organisational factors that were significant at the .050 level or better are listed first; they are ordered in terms of their *beta* weights (column 3), running from highest positive weights to highest negative weights.
- Individual and organisational factors not significant at the .050 level, ordered from highest positive beta weights to highest negative weights.
- The OUG dummy variables significant at the .050 level or better are listed first; they are ordered in terms of their *regression coefficient* (in column 1), running from highest positive values to highest negative values.
- The OUG dummy variables that did not reach the .050 significance level are listed next, and are not ordered.

It is not easy to express in a simple way what appear to be the main findings from this regression exercise about the influence of occupation. The logic of the analysis is that if all differences in scores can be accounted for in terms of individual and organisational variables then occupational factors are *per se* of little or no importance. In fact, in many cases, occupation fails to enter the regression equation. One inescapable conclusion is that the individual and organisational variables, in the form used in this model, do account for the differences in scores for overall job satisfaction employees in a majority of OUGs - i.e. those not entering the equation. At the same time, the regression confirms that membership of *some* OUGs - those remaining in the equation - account for part of the differences in scores beyond the differences explained by the variables relating to individual and organisational properties. Each of those OUG variables retained expresses an average effect on individual scores that can be 'explained' by membership of the group in question rather than the reference group OUG, which was omitted. Thus, being a medical secretary will add, on average, .841 to an individual's score - in effect, boosting it by around 17%. Being a telephone operator will, on average, reduce a score by almost 13%. These are important independent effects.

Almost 60 OUGs have an independent effect on scores. It would no doubt be possible to reduce their number by adding more individual and organisational variables - provided suitable data were to hand. Whether all could be removed from the equation in this way is highly questionable. Future analysis will explore the possibilities. One obvious possibility can be discounted - that industrial branch is of crucial importance and should be included in the regression. Generally industrial branch is not significant. Regressions including dummy variables at the Industry Classes level of the Standard Industrial Classification (SIC) produce no improvement in adjusted r^2 (already quite respectable at .223), without suggesting interpretations that might be more economical, enlightening, or intuitively appealing.

INDIVIDUAL/ORGANISATIONAL VARIABLES

Some comment on the non-OUG variables failing to enter the equation is called for. The relative unimportance of money reward per se (as measured by usual gross pay per month returned by a main job) may come as a surprise to anyone unfamiliar with job satisfaction studies. Depending upon exactly which variables (including OUG dummies) are used as regressors, gross monthly pay either fails to meet significance tests (F<=.05), or just makes it into the equation when overall job satisfaction is dependent variable. (When satisfaction with

the material aspects of the job is dependent variable, as will be seen shortly, things are a little different.) Similarly, having a public sector job makes no difference to overall satisfaction scores, although other research using the same data set suggests that overall job satisfaction has been falling in the public sector in the 1990s [Gardner and Oswald, 1999a; 1999b].

This issue can be linked to another that is more troubling. There appear to be quite severe 'penalties' for appearance in Waves 2 to 7 of BHPS. There is an apparent general 'decline' in satisfaction scores over the 7 waves of BHPS. It should be noted, however, that the scale of this decline falls appreciably if the decline effect is examined wave-on-wave from waves 2 to 7. (There is a fall followed by an incomplete 'recovery' between Wave2 and Wave7; when Wave1 is added, there is a pronounced dip between Wave1 and Wave2.) The raw scores for Wave1 used as input in data reduction may well have been inflated by the use in BHPS in that Wave of a measurement instrument that was modified at Wave2. It seems desirable that in future this change, although minor, should carry some kind of health warning in the BHPS documentation [13]. When the data for Wave1 are eliminated, the scale of any decline appears less than dramatic. In this model, with Wave1 as the reference year omitted from the analysis, a decline in scores certainly remains. With the broader range of controls used in this model, it emerges as a decline affecting *all* employees.

More importantly, at least from the writer's theoretical point of view, is the negative sign of the score for personal skill and competence (human capital, 'own-skill'), and for having own-skill higher than that of the median for the employee's current OUG at the current wave of BHPS. It is far from unreasonable to expect that since higher skilled persons are higher paid, and are to be found mostly in higher skilled posts which are often more intrinsically interesting and rewarding, that their job satisfaction level should be higher. As argued earlier, there is considerable evidence to show that this is, for the workforce as a whole, never the case. The reasons for this effect have not yet been established. It may be that the educational component in high human capital scores has a tendency to create a generally more critical attitude towards employment conditions and rewards.

When high educational level is compounded with high levels of professional or technical training, individuals may become more likely to set themselves ever higher career aims and to review progress towards achieving them more frequently and more searchingly. For such individuals, an inbuilt 'deflator' would be structured into their evaluation of their current job situation - however favourable that situation might be. As noted earlier, it is not possible in BHPS, as it had been in SCELI, to make a more direct comparison of the level of 'own-skill' with the level of 'job-skill' (independently measured for each individual). The unwieldy method of imputing surpluses and deficits of own-skill by reference to the median own-skill score of each OUG group results in a large amount of error. It could no doubt be improved upon, by creating dummy variables for individual scores in both the top third, and the bottom third, of their current OUGs. However, the computation required for this is discouragingly complicated [14].

None of the remaining variables, nor their signs, seem very surprising, except perhaps the apparent 'non-significance' of working in a larger workplace (200-999 persons). This dummy variable collapsed two categories of the conventional 'size of workplace' categories. A final category ('Over 1000') was used as the reference dummy variable and therefore omitted [Greene, 1990]. As the effects of the other dummy variables for size should be interpreted in relation to this one, it appears that a appreciable positive *size effect* on job satisfaction

terminates in medium sized establishments, taking a more of less linear form below this threshold but not above it. How far this can be reconciled with received opinion about the size effect (for a discussion, in the light of original research see Ingham, [1970]) is open to discussion.

One common interpretation of the size effect is in terms of an alleged deteriorating human relations climate, with larger workplaces being characterised as 'less friendly, more anonymous'. The research material collected by Ingham [1970] does not support this view. But there can be no way of verifying this without data that is absent from BHPS; for example, there is no question in BHPS on the degree of social distance in workplaces, let alone on the varying employee orientations Ingham stresses. An admittedly inadequate alternative is to examine responses to the separate job satisfaction questions. In point of fact, and somewhat unexpectedly, size is not at all closely related to five of the seven job aspect variables used as input for deriving the present overall satisfaction score. If anything, it has a *positive* association with satisfaction with promotion prospects; and a fall-off in satisfaction with relations with the boss are associated with size only after the 50-person threshold - and then only very feebly.

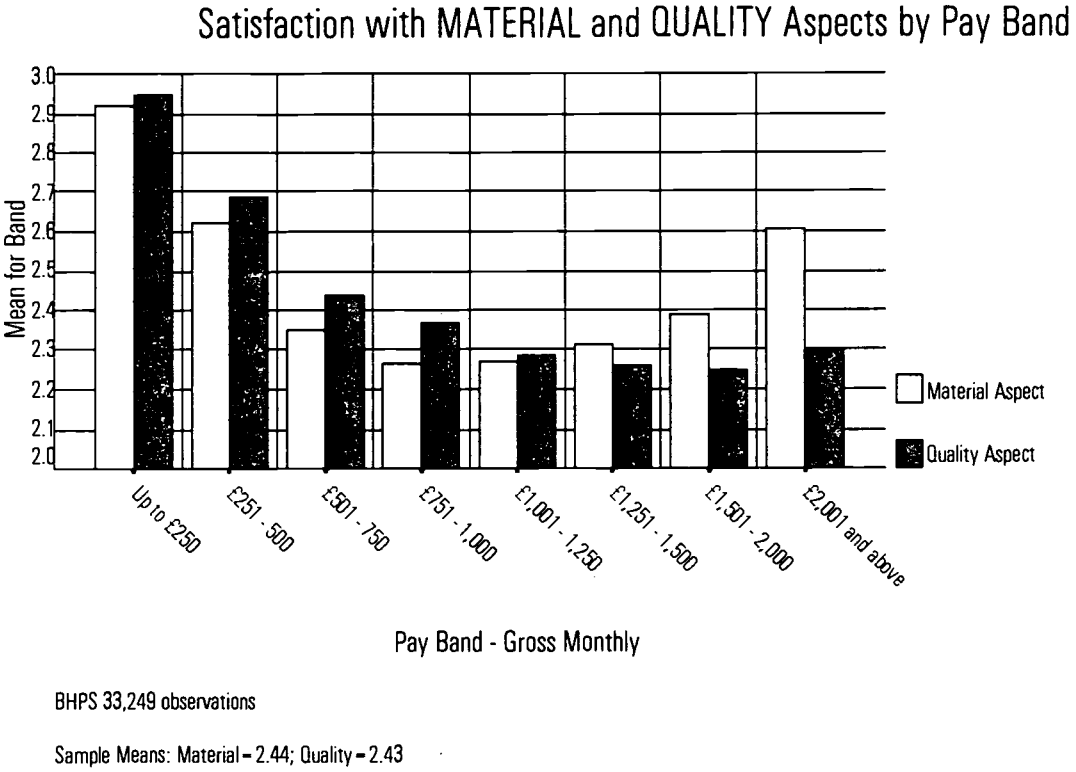
The two clearly negative associations are with sense of job security, and with use of initiative. In fact, this finding suggests economically rational explanations (larger workplaces will operate impersonal criteria when hiring and firing, and/or they have more formalised work procedures and production routines) which are more appealing than unsubstantiated assertions about distant interpersonal relations. In terms of the analysis used here, a possible explanation for the size effect lies in reference group theory, bringing it close to the approach of Berg, Freedman, and Freeman [1978]. The starting point for such an explanation would be that larger workplaces are likely to have more persons in the same or adjacent OUGs, thus extending the scope for creation of a sense of relative deprivation.

Regression analysis is also of value in understanding the sometimes sharp differences within OUGs in levels of employee satisfaction with the material rewards of work and with its quality aspects on the other. The results can be inspected in Table 4 (please see Appendix). At first sight, these results appear quite complex. However, there are certain clear patterns. Nearly all the individual and organisational variables used to explain levels of overall job satisfaction also enter the equations created by WLS regression for both of components of overall satisfaction. However, the scale of their influence differs, sometimes sharply.

The pattern revealed by Table 5 itself is a fundamentally unsurprising one: satisfaction levels with the material rewards of a job are related closely to the sense of being relatively well off, having a permanent rather than temporary job, enjoying a number of service class type benefits (e.g. promotion opportunities, being paid on an incremental scale, etc.), the absolute level of pay received, and not having a job in the public sector. Apart from this, the equation suggests that any decline in job satisfaction from one wave of BHPS to the next has indeed affected mainly satisfaction with the quality aspects of working, not the material ones. It appears that the job satisfaction of public sector employees may be with the material rather than the quality aspects of work. However, there is scope for further exploration of these issues. It has long been argued that overall job satisfaction can reflect cyclical economic movements, and that there may even be switches of emphasis between the extrinsic and intrinsic returns from work which reflect the tightness of labour markets (Kalleberg, 1977; Berg, Freedman, and Freeman, 1978:52]. What has impeded such inquiry in the past has been lack of suitable panel data.

The regression for material satisfaction scores shows monthly gross income as a moderately influential positive factor. (If the equation were an exact guide, the estimated theoretical 'price-tag' for raising an individual material satisfaction score by 1% would be on average in the region of £700 per month!) According to the model, then, *very* high pay can 'buy' units of material satisfaction. Without any controls, there appears to be a very definite tendency for material satisfaction to climb rapidly once a certain pay threshold has been crossed. (See Figure 10.)

Figure 10



At the same time, high pay usually requires the possession of high levels of human capital. A one unit rise in the own-skill score on average reduces scores for satisfaction with material aspects of a job by 3-4%. It should, then, perhaps be expected that the satisfaction profiles of many successful professionals (who possess very high human capital, but are not always paid exceptionally high salaries) would differ somewhat from those of successful managers (who *are* highly paid yet often have less human capital than professionals). Inspection of suitable OUGs broadly confirms this conjecture. Scientists and university teachers might be expected to have rather low satisfaction with the material aspects of their jobs, but relatively higher satisfaction with the quality aspects. They do - though the quality norm is itself currently on the low side too. (This expectation is also borne out by examining scores for the two modes of satisfaction for SOC Major Groups, or for Goldthorpe Class [15].)

The regression equation for the quality aspect scores (Table 6: please see Appendix) shows that there are some clear differences in the variables that are influential in each case. These are summarised in Table 7. The relative prominence of variables relating directly to material aspects of a job and wage or salaried employment has already been noted. The decline in satisfaction with the quality dimension after Wave1 appears to have been far stronger than for

the material dimension. There is no significant association between being in the public sector and quality scores, though there is for material scores. There is a tantalising difference in the effect of the two age variables.

This analysis provides support for the hypothesis of a U-shaped association of age and job satisfaction, even without controls. However, the foot of the 'U' is very shallow with a modest downward slope from the mid-teens to the late-20s, with a balancing climb to the late 40s, and a far steeper rise after the age of 50 [Clark, Oswald, and Warr, 1996]. This might more correctly be thought of as a 'lazy J' curve. In the presence of controls, age at Wave is less important for material satisfaction scores than being over 50 - neither having a strong influence on scores. For quality scores, the position is quite different: being aged over 50 years is very weakly positive, but age in years is very strongly positive. These findings have a number of plausible common sense, and consistent, interpretations. Another variable that is more important to both aspects is working time aspirations. Employee respondents in BHPS have the option of stating a preference for working more hours, working fewer hours, or working the same hours. The model includes two dummy variables, 'wish to work more hours', and 'wish to work fewer hours', with 'wish to work same hours' omitted and used as the reference. In both equations, wishing to work more is almost equally significant and negatively associated with satisfaction; wishing to work *fewer* hours is also negatively associated with satisfaction, and very strongly so, in both cases - however the association with lower quality satisfaction is outstandingly strong.

Table 7

Individual and Organisational Influences: Major Differences between Equations for Material and Quality Aspects

VARIABLE	MATERIAL	QUALITY
Finances - living comfortably	+++++	+++
Current job thought of as permanent	++++	+
Above median score 'service class' benefits	++++	+
Usual gross pay per month	+++	Not significant
Aged 50 years or more	+++	+
Age in years at Wave	++	+++++
Mentions work, education, training as important recent life event	Not significant	+
Job in public sector	00	Not significant
Being in a BHPS wave after Wave1	00	00000
Current financial position = difficult	00000	00
Employed full-time	00000	000

Scale of importance is measured by *t*-statistic
+++++ = Very strong positive
00000 = Very strong negative

It is worth noting that several variables have very similar effects in both equations: being a woman (in each case strongly positive), having managerial duties, having taken a new job or had a significant promotion since last appearing in BHPS, working in smaller rather than larger workplaces, the number of domestic problems impinging on work, and travelling to work time. The two most important comparable influences are, however, score for own-skill and having an own-skill score above the median point for the OUG at the current wave. Together, they amount to a very strong, almost exactly equal negative influence on scores in each case. As previously acknowledged, the reasons for this must for the present remain somewhat

conjectural. Reporting a new job or a substantial promotion is equally important in all three equations, boosting scores by about 3%, and of equal sigificance to being a woman employee. It is of additional importance because the direction of any causality is unambiguous, and further confirmation that job satisfaction is linked (albeit not entirely) to economic rationality. Likewise, it provides valuable indirect validation of job satisfaction as a concept.

Individual and organisational variables explain most, or all, of the variance in scores in the majority of cases. (Strictly speaking, we should say 'the proportion of the variance that *has* been successfully explained'.) However, it would be incorrect to assume that occupation has no effect at all in these cases. Certain types of employee - younger, financially challenged young males, for example - may be drawn into an occupation because jobs in it are easier to obtain. Such personal characteristics will tend to reduce satisfaction levels, but the occupation none the less remains one where lower levels of satisfaction predominate. If the work is done in middle sized to large sized firms, satisfaction levels will be depressed further. Because the low level of job satisfaction scores can best be explained, in the statistical sense, by non-occupational characteristics does not mean occupations have nothing to do with them.

OCCUPATIONAL GROUPS

In terms of the OUGs entering the equations, on the other hand, a sharp difference is immediately apparent. Rather fewer (39 against 52, in fact) appear in the material aspect equation. Moreover, there is only modest overlap between the two sets of OUGs - 17 cases only. The effect of being a member of one of these OUGs can be assessed by reference to its regression coefficient in column 1. Since the range of scores for satisfaction (all three used here) is approximately 0 - 5, a coefficient of .250 changes a score by about 5%, either up or down depending on its sign. For material satisfaction, nine OUGs have scores in excess of .250, and rather more (14 cases) with scores below -.250. For quality satisfaction, there are 9 OUGs with scores above .250, and 16 with scores below -.250. (These cases are shown in Table 7.)

Table 8

Occupational Effects on Job Satisfaction Scores - Most Influential OUGs

MATERIAL ASPECT	B value	QUALITY ASPECT	B value
Clergy	0.836	*Medical secretaries*	0.749
Medical secretaries	0.741	*Playgroup leaders*	0.569
Medical practitioners	0.600	*Construction & related operatives*	0.443
Garage managers	0.585	*Fire service officers (leading fire officer & below)*	0.393
Fire service officers (leading fire officer & below)	0.570	* *Shoe and leather crafts*	0.371
Police officers (sergeant & below)	0.514	*Gardeners, groundsmen/groundswomen*	0.329
**Other childcare & related occupations nec*	0.431	*Hairdressers, barbers*	0.306
Butchers, meat cutters	0.369	*Medical practitioners*	0.273
Cleaners, domestics	0.276	*Nursery nurses*	0.259
Production, works & maintenance managers	0.239	**Other childcare & related occupations nec*	0.251
Other managers & administrators nec	0.227		
Farm workers	0.226		
Computer systems & data processing managers	-0.242	*Telephone salespersons*	-0.273
Bus & coach drivers	-0.244	*Kitchen porters, hands*	-0.280
Civil Service administrative officers & assistants	-0.246	*Postal workers, mail sorters*	-0.290
Counter clerks & cashiers	-0.261	*Bus & coach drivers*	-0.290

Advertising & public relations managers	-0.322	*Retail cash desk & check-out operators*	-0.301
Planning & quality control engineers	-0.324	*Counter clerks & cashiers*	-0.305
General administrators; national government	-0.325	*Plastics process operatives,moulders & extruders*	-0.309
Design & development engineers	-0.342	*Typists & word processor operators*	-0.346
Inspectors, viewers & testers (metal/electrical	-0.355	*Library assistants/clerks*	-0.366
Telephone salespersons	-0.363	*Inspectors, viewers & testers (metal/electrical)*	-0.371
Civil, structural, municipal, mining & quarry engineers	-0.363	*Packers, bottlers, canners, fillers*	-0.372
Civil Service executive officers	-0.364	*Assemblers/lineworkers (electrical/electronic goods)*	-0.406
Woodworking machine operatives	-0.396	*Legal secretaries*	-0.441
Telephone operators	-0.461	*Coach trimmers, upholsterers & mattress makers*	-0.468
Computer engineers, installation & maintenance	-0.527	*Assemblers/lineworkers (vehicles & metal goods)*	-0.546
Telephone fitters	-0.568	*Telephone operators*	-0.644
Library assistants/clerks	-0.579		

OUGs appearing in both columns are printed in bold type

* The SOC term fnecg means fnot elsewhere classifiedg; such residual groups may be internally diverse in terms of skill.

** In full: *Shoe repairers, leather cutters & sewers, footwear lasters, makers & finishers, other leather making & repairing*

All these groups appear in the earlier examination of satisfaction, based upon cross-tabulation of banded scores (see Table 3). However, most of the OUGs shown in high-congruence positions by that approach do not emerge with any occupational effect from the regression exercise. The conclusion must be that there are special factors that predispose members of the OUGs exhibiting an occupational effect either to relatively higher job satisfaction, or to relatively lower job satisfaction. There is, as it were, either a premium added to or a penalty subtracted from the satisfaction score that cannot be explained by reference to the 30-odd individual and organisational control variables available for the regression. Three OUGs are in the advantageous position of having high premiums for each of the dimensions of job satisfaction: *Medical secretaries*, *Medical practitioners*, and the *Other childcare & related occupations* groups. Five OUGs are in the unhappy position of suffering high penalties on each dimension: *Counter clerks and cashiers*, *Inspectors, viewers, and testers*, *Library assistants and clerks*, and - probably of great importance, given the continuing growth of call centre work - *Telephone operators*, and *Telephone salespersons.*

If OUGs with lower positive regression coefficient scores are included, there are five further groups with an 'occupational effect' on scores for each dimension: *Cleaners and domestics*, *Production, works and maintenance managers*, *Other managers & administrators nec*, *Welfare, community and youth workers*, and *Hairdressers, barbers*. If those with lower negative coefficients are included, there are four further OUGs suffering the 'double penalty': *Packers, bottlers, canners, and fillers*, *Storekeepers and warehousemen/women*, *Bus and coach drivers*, and *Civil Service administrative officers & assistants*. It may be of some interest that only one OUG - *Primary and nursery education teaching professionals* - has a positive occupational effect for material scores but a negative one for quality scores [16].

CONCLUSION

The Introduction outlined six interrelated aims of the foregoing analysis. Conclusions will be summarised under each of those headings except that of technical innovation. (A separate paper will deal with this.)

Empirical. The main body of this paper, using data from the British Household Panel Survey (BHPS), supports the view that the concept of job satisfaction can best be studied by making use of all of the information in the question batteries used to examine it, rather than in one or two selected questions. Sharp and apparently systematic differences in levels of overall job satisfaction became apparent at all levels

of generality between occupational groups as defined by the Standard Occupational Classification (SOC) scheme. Overall job satisfaction was then divided into its two main underlying components: satisfaction with the *material* aspects of a job on the one hand, and with the *quality of worklife* aspects on the other. Further contrasts were drawn between the profiles of occupational groups, in terms of the degree of congruence between the material and quality aspects of satisfaction, and their levels. Most occupational groups exhibit a balance between a moderate degree of satisfaction with both 'material' and 'quality' aspects of their work. However, there remain numerous groups with 'congruent' levels of satisfaction which are either substantially higher or lower, or which show an appreciable degree of non-congruence between them. A small number of groups exhibit a high degree of non-congruence between the two modes of satisfaction.

Regression was used to identify any robust *occupational effect*, that is any effect on individual scores for job satisafaction variables not produced by organisational characteristics or individual attributes known to correlate with job satisfaction. With these controls, it became clear that many sharp differences in occupational profiles for job satisfaction can be accounted for in terms of the way such characteristics are combined. Nevertheless, approximately 60 of the OUGs examined continued to exert a statistically significant independent influence on scores. In this sense, there was an *occupational effect* which could not be further reduced - or at least could not be reduced now, in the absence of further information on organisation-level or individual-level attributes.

Problem Definition. Groups having this *occupational effect* were listed in the paper. It is possible that sociologists or other social scientists who have studied some of these groups may be able to suggest reasons for their job satisfaction profiles, either obviating the need to undertake further systematic research or enabling it to be carefully targeted. Because the analysis has narrowed down and focused the search for explanation in terms of occupational specifics to a smaller number of OUGs, qualitative studies of such groups using case-study or anthropological techniques can proceed in the knowledge that quantitative analysis has designated these groups as being of exceptional interest.

A contribution to a quite different sort of problem definition may also have been made. As David Rose and Karen O'Reilly have pointed out, the existing SOC scheme stands in need of some revision [1998: 49-51]. As Rose and O'Reilly argue, a strong case exists for dividing a number of OUGs on the grounds of the lack of consistency in the employment relations 'package' that employees currently allocated to them actually receive. This suggests that more than one relatively distinct group of employees is involved. Rose and O'Reilly also note numerous cases of probable skill-based inconsistencies.

It might be noted that the skill measures developed for this analysis also point to incorrect allocation of some employees to some of the problematic OUGs mentioned by Rose and O'Reilly. If skill levels are highly diverse, anomalies might also appear in the distribution of job satisfaction levels in such groups. This is harder to test, but appears to be so for some at least of the OUGs specifically named by these writers

[17]. The findings endorse the claim that a *prima facie* case exists for a careful review of the relevant allocation criteria.

Predictive. Many of the factors shown to affect job satisfaction at the individual or organisational level are altering in ways which are already well understood, at least in the sense that they constitute broad trends. Some of these, such as a fall in the size of workplaces, could in theory add substantially to modal levels of job satisfaction. At the same time, trends towards higher levels of education and technical training (important constituents of own-skill) should in theory operate in the opposite direction. Provided there really is some *unique* set of features about employment in certain occupations which affects job satisfaction independently of organisational and individual influences - in other words, if there really are irreducible *occupational effects* - then this analysis should allow certain predictions about job satisfaction trends to be made with still greater confidence.

As Elias [1997: 25-27] points out, trends in the occupational structure known to have been already operating strongly in the 1980s continued, with if anything greater momentum, in the 1990s; and there is every reason to believe many will continue to do so for the foreseeable future. In particular, the sharp decline of employment in manufacturing related occupations, and the rapid expansion in management occupations, should continue. The present paper has shown that management occupations generally have high levels of job satisfaction, as do other jobs with a significant responsibility for managing the work of others. The dismal levels of job satisfaction in many occupations related to manufacturing has also been confirmed here: the assembly line OUGs corroborate the portrait of job attitudes in them drawn equally by traditional [Blauner, 1964] and very recent [Gallie *et al.*, 1998] industrial sociology. An exceptionally low level of satisfaction with the extrinsic (quality) aspects of their work continues to be linked to relative satisfaction with extrincic rewards, as first pointed out by Goldthorpe [1966].

The expansion of occupations in the Personal and Protective Services major group of SOC should provide conditions for high levels of job satisfaction - the *Hairdressers/barbers* OUG might furnish the paradigm case here. The expansion of mass retailing occupations in the *Sales Occupations* Major Group will be less favourable. Going by the results here for the *Retail cash-desk and checkout operator* or *Shelf filler* OUGs, this trend will operate in exactly the opposite direction. Given job satisfaction profiles which for the *Telephone salespersons* OUG is adverse, and for the *Telephone operator* OUG decidedly appalling (its penalty for material satisfaction is fourth from highest, and for quality satisfaction it *is* the highest), the current frantic expansion of call-centre work cries out for careful monitoring. True enough, most of the telephonist employees in the early years of the BHPS sample did *not* work in call-centres, which still barely existed at the turn of the 1990s. However, it could hardly be more appropriate, in the light of this finding no less than on other grounds, that the Future of Work programme will include an in-depth study of call-centres as a work context [18].

Theoretical. Confirmation of earlier findings that job satisfaction was affected by skill levels and skill balances, and that skill deficits enhance satisfaction while surpluses reduce it, only increases the annoyance of a continuing failure to provide an adequate

explanation of exactly why this should be so. Testing of a clear hypothesis (that what counts is imbalance between level of personal competence and level of challenge in job tasks) was also precluded by the data limitations of BHPS. In addition, the very large amount of data processing of all kinds required to undertake the proxy tests for skill discrepancy reported in this paper has certainly proved an obstacle to any more decisive movement towards resolution of this problem. At the same time, however, intensive contact with and consideration of the material has repeatedly provided clues to the kind of explanation which may finally be proposed for skill discrepancy effects. Provisional suggestions follow.

Two processes seem important. The first is one familiar from standard *reference group theory* [Merton, 1968] in Sociology, in particular in its application by Runciman in his notion of *relative deprivation* [Runciman, 1966; Masters and Smith, 1987]. Stated crudely, a person holding a post for which his/her demonstrable qualifications are lower in skill content than those normally required is more likely to experience a sense of achievement than someone whose qualifications are demonstrably higher than those required. This 'relative satisfaction' will be enhanced if the fortunate employee is in contact with, or aware of, many other persons in similar posts who *are* in possession of the normally required 'quallies, certs, and CV'. Persons in the converse situation are more likely to develop a sense of being over-qualified for their present post, and of achieving well below their potential by remaining in it. They are, likewise, more likely to be seeking ways to reduce the status dissonance of holding a post below their demonstrable (and therefore *negotiable*) competence, either by obtaining promotion or by moving to another employer. In other words, skill-dissonance creates higher propensity to move to jobs demanding higher competence, or to seek to move for such reasons. Furthermore, having surplus negotiable competence should make it easier to obtain such posts. For such reasons, a current post will be valued less highly, the more so the greater the skills discrepancy.

Such considerations are, however, little more than the elements of any adequate skills discrepancy explanation. Further elaboration requires careful attention being given to exactly which reference groups might be invoked, depending upon the individual's current occupation and work organisation membership. In addition, it seems likely that readiness (or even ability) to undertake anything more than very rough and ready *ad hoc* comparisons will also depend somewhat on individual wants and aspirations with regard to paid work. It should not be surprising, for example, that other things being equal full time employees have distinctly lower job satisfaction scores than part-timers - for material satisfaction, being a full-time employee cuts scores on average by as much as 7%. To simplify, the full-time employee is likely to have higher expectations and higher levels of negotiable competence; most probably, their approach towards the labour market is better planned and longer-term than that of part-timers. In a word, they are far more likely to consider themselves as having a career. However, this possibility cannot easily be tested for individuals using any existing BHPS data. In particular, data on the extent to which individuals believe they have, seek to pursue, or see their current job as part of a strategically planned *career* seems essential to further elaboration of such an explanatory framework.

A second potential area of theoretical contribution derives from a consideration of the concept of an *occupation*. It is probable that a large minority of the OUGs in SOC are

little more than analytical constructs lacking social reality for persons allocated to them for statistical purposes. At the same time, many others (particularly those in the *Craft & Related*, the *Associate Professional*, or the *Professional Occupations* Major groups) certainly *do* form relatively distinct labour-market groupings, or networks possessing a high level of socio-economic immediacy and coherence, both for their members and for members of other groups. In such circumstances, some process of mutual reinforecement of job attitudes - what Sayles called *resonance* [1958] - can occur. Alternatively, entry to an occupation may involve lengthily considered *self-selection*, with the structure of its rewards and requirements well-known and accepted at entry. It should not be surprising, then, that there do appear to be some cases of an occupational effect in profiles of job satisfaction, which cannot be reduced further - or not much further - by analysis which proceeds in terms of more universal theoretical variables. However, this possible occupational particularism should not be used as an excuse to abandon, prematurely, the search for universal explanatory factors - that is, those which apply across occupations. As was shown in section 4 of the paper, the introduction of a set of organisational and individual controls *did* permit very considerable reduction of this kind.

At this point, two contributions to the sociology of work might serve as useful signposts. The first is the classic discussion by Kerr and Siegel [1964] of the inter-industry propensity to strike. The second is the debate over organisational universalism initiated by Marc Maurice and his collaborators [Maurice, Sellier, and Silvestre, 1986]. Kerr and Siegel showed that industries such as mining, lumber-jacking, and docking were exceptionally strike-prone in every country for which reasonably lengthy records existed. Explaining this effect, they acknowledged, was harder than discovering it. (They put forward plausible alternatives.) Maurice *et al.* demonstrated that firms of similar size producing almost identical products could have sharply differing internal organisation from one European country to another, while none the less suggesting that 'nation' or 'culture' remained an inadequate explanatory variable.

By analogy, occupation - like 'industry', or 'nation' - is essentially a categorical or nominal level variable. To put things more simply still, it is a *name*. It is this which makes it, like nation or industry, highly attractive as a rhetorical device, aiding exposition because it is so concrete. This should not stand in the way of further theoretical reduction, when that is feasible and relevant. Occupation is seen here in this light - a reality that is certainly complex, but which may well be advantageously reduced to theoretical universals [Rose, 1985].

It should be clear that any such moment is still some way off with regard to job satisfaction. It is hoped, however, that this paper has helped move things in the right direction, if only by providing a schedule of OUGs which retain a high degree of particularism with regard to job satisfaction levels. *Ad hoc* explanations can be suggested for several of these. To be satisfying, however, explanation needs to be as parsimonious as possible. To replace 50 names by 50 new variables would hardly count as progress. The present writer believes two sorts of variables may provide a more economical resolution. The first set of these would relate to status effects in certain occupations, which are disproportionately able - or alternatively, unable - to 'punch above their weight' in terms of prestige. The second would relate to normative

processes. To simplify, some occupations may have an exceptional capacity to create and manage patterns of satisfaction.

Validation. It is believed that extensive validation of the concept of job satisfaction has taken place throughout this paper, albeit for the most part incidentally. Most of this validation has been on the level of logic: factors ostensibly related to higher or lower job satisfaction have been shown actually to 'produce' higher or lower scores. None of the effects of individual and organisational level variables creates severe intuitive tensions. The one possible exception remains pay level. However, it was shown that pay level *does* have an effect on material satisfaction, at least after a certain (rather high) threshold is crossed. Better modelling of pay (requiring, no doubt, still more dummy variables in a regression equation already stacked high with them) might nevertheless be worthwhile. Validation by reference to known groups has also been for the most part incidental or implicit; however, discussion of the assembly-line OUGs, the clergy, and various health services occupations has sought to underline the high degree of continuity of present results with those provided by other investigators.

The subject of validation provokes a final, more argumentative thought.

It is possible for social science professionals to fret unduly about the logical and empirical status of a concept like job satisfaction. Of course, as noted at several points in this paper, it should be recognised from the outset and never be overlooked that job satisfaction is in many ways a *problematic* concept for social scientists - difficult to define in the abstract, difficult to measure with complete confidence as to just what *is* being measured, and usually requiring care or even caution when being inferred from apparently clear empirical results. Moreover, its effects on workplace and labour market behaviour themselves are unclear.

Still, and with all these provisos, it is easy to overdo the methodological *angst*. Paradoxically, this is one of those concepts that appears to be well understood by virtually every non-social scientist who has ever held a job for longer than a few hours. Questions about it can be put without misgivings to these methodological innocents, and will almost invariably be answered without hesitation by most of them in terms which are brief and clear. It is hoped that evaluation of the influences considered in this paper has been undertaken in the spirit of such a common-sense approach.

NOTES

1. The analysis and forecasts of Robert Blauner [1964] relied in part on job satisfaction polls to provide supplementary evidence about the 'feeling-states' accompanying a condition of alienation, which he believed he had successfully operationalised and measured. They form part of quite different, more ambitious project - that of predicting the future course of worker alienation as automation superceded mass-production assembly-line work as the core activity of manufacturing.

2. Most recently by Catherine Hakim [1996], with her insistence on the importance of an essential division in women's work orientations between a career perspective and a more short-term work involvement.

3. The questions used to estimate job satisfaction can produce strikingly different results. Inclusion of the words 'satisfaction', 'satisfied', 'satisfying' tends to produce a high threshold for the expression of discontent. Asking about enjoyment of jobs, whether the employee would choose the same sorts of job if they relived their life, or what alternatives might actually be attractive to them now, all produce lower satisfaction levels. These difficulties are not the only ones faced by management psychologists seeking to link job satisfaction and work effort ('performance'); higher performance might produce satisfaction, rather than the reverse; a third, undetermined, factor might produce both high performance and high satisfaction [Porter, Lawler, and Hackman, 1975].

4. For further discussion see Rose, 1994a; 1994b.

5. All labour market actors possess some skills, experience, training, or education that may have inherent worth but have relatively little value, or none at all, as a tradable resource; alternatively, actors may not wish to offer such skills to possible employers. The most important variety of such competence are the tacit skills (in the USA, 'soft skills') possessed by otherwise poorly qualified women employees. Most employees are able to drive but do not consider this as a negotiable skill, even in some jobs (including white-collar jobs) for which a clean driving licence may be required.

6. While the search for links between SOC and job satisfaction scores produced immediate results, at all levels of the scheme, a similar search for links with SIC (Standard Industrial Classification) was disappointing. SIC that can be shown to possess some statistical significance in the absence of SOC controls, particularly at the unit level, but it is low. Industries, even at the unit level, all possess a division of labour of some kind based on skill level and skill specialisation. Industries provide *stratified* samples of such skill features. This heterogeneity creates difficulty for comparisons by individuals in an industry context. The importance of industry is precisely in its ability to create varied employee skill groups. The examination of industrial branch may at times be illuminating: the contrast between general practitioners and hospital doctors in section 4 shows this. Until contrary evidence is brought forward, however, occupation (operationally defined as OUG) will be assumed to provide a context for comparison of job features between employees with far greater reality and immediacy than industrial branch. It might be noted that Blauner [1964] somewhat confused this issue by talking of 'industries' rather than occupational groups. However, it is quite clear that Blauner's analysis is of the employee's work situation and experiences in *occupations* such

as compositing, machine-minding, assembling, and equipment monitoring to be found in the printing, cotton-spinning, car manufacture, and oil-refining *industries*.

7. At the same time, the writer keeps a (relatively) open mind about what exactly the data can and do signify, especially in terms of behavioural concomitants. Non-sociologists [Clark, 1996; Gardner and Oswald, 1999a] who have addressed issues related to job satisfaction are often impressed by what they see as the relatively high level of overall job satisfaction in the British workforce. In part, this might be attributed to over-reliance upon a single summary question about overall job satisfaction. It perhaps overlooks the possibility that some employees may find it reassuring to 'inflate' their sense of satisfaction when questioned about it by an outsider. To admit disliking a job, while remaining in it, may seem an admission of a low labour market capacity, a low level of personal initiative, or even of low intelligence. Those employees who can readily find other jobs, on the other hand, might be dismissive of a current job as a way of expressing their ample labour market confidence. The more traditionally minded may wish not to be seen as 'moaners', while the admissibility of 'whinging' appears to oscillate somewhat. It is questionable how far expression of satisfaction can be taken as an indicator of *happiness*, though interesting arguments have been built on the premise that it can indeed be so [Oswald, 1997]. Employees may more often act as 'satisficers' than as maximisers in seeking both material rewards and those relating to the quality of work-life, especially where alternative work opportunities are scarce, poorly rewarded, or entail vexatious contingent disutilities. It may be colloquial to ask someone whether they are 'happy' with their work. Yet to reply that one *is* happy might *really* mean 'yes', or decode to: 'No, I'm certainly not happy with it at all - but I can't be bothered to do anything serious about it for the moment - and who knows, it might just get better - anyway, it's better than working for...'. Satisfaction data are disturbed by misunderstanding, rationalisation, evasion, and other sources of error. However, to state that the data to hand bear no relation at all to *real* states of subjectivity would be perverse and untenable. The data do have authentic subjective meaning and indicate predispositions towards certain kinds of behaviour, as well as reflecting it; thus they *may* include feelings of happiness, but research evidence for this is insufficuent.

8. This does not mean that the dimensions are neatly distinct empirically. Indeed both standard factor analysis and non-linear principal components analysis by alternating least squares (PRINCALS) show that all satisfaction variables are closely related to a single underlying dimension. Unless instructed to create more than one factor, Factor Analysis in SPSS always converges on a single factor in only a few iterations. In PRINCALS, the number of dimensions required *must* be specified in advance - however, it is perfectly acceptable to request just one dimension, as was done for the present analysis. PRINCALS also converged very quickly. In both cases, Eigenvalues were far above those values required to make data reduction worthwhile. If PRINCALS is allowed to create two dimensions, then their loadings are completely in line with the theoretical distinction between intrinsic and extrinsic job satisfaction. If Factor is requested to produce two factors is performs somewhat differently, with the first factor loading heavily on all inputs and the second factor loading heavily on promotion opportunities alone. In the analysis that follows, however, a theoretically important distinction determines the form of data reduction, and two sets of inputs were reduced *separately* to create scores for the *material* and *quality* dimensions.

9. OUGs offering fewer than 50 observations are not examined in most of the inter-OUGs comparisons in Section 3. The representativity of OUG samples was scored on a scale of 0 - 5, as shown in Table 9 below. The scale was used for the weighting in regression analyses.

Altogether, 362 OUGs are represented in the pooled data. Twelve have only one observation, and 70 have 10 observations or fewer. Four OUGs supply over 1000 observations. Only one significant absence has been noted amongst the 12 missing OUGs: dental surgeons, who are the highest paid unit group in the Professionals Major Group [Elias and McKnight, 1997]. (Nearly all dental surgeons are self-employed.) A full tabulation of observations for OUGs is provided as Table 2: please see Appendix.

Table 9: Representativity of OUG samples

value	Label	n obs	%
0	Unacceptable : <25 obs	1778	5
1	Marginal : 25-49 obs	2836	9
2	Broadly acceptable : 50-99 obs	4598	14
3	Fully acceptable : 100-249 obs	7701	23
4	Good : 250-499 obs	6298	19
5	Excellent : 500 or more obs	10038	30

10. The exact numbers are:

Other assemblers/lineworkers nec	58
Assemblers/lineworkers (vehicles & other metal goods)	96
Assemblers/lineworkers (electrical/electronic goods)	177
Other childcare & related occupations nec	337
Educational assistants	203
Playgroup leaders	49
Nursery nurses	172

11. Work at the University of Warwick on the present data set has suggested that such trends have indeed affected work in the public sector during the 1990s [Gardner and Oswald 1999a: 1999b] with consequent effects on job attitudes, in particular a sharp fall in job satisfaction. This claim is backed by careful modelling and has undoubtedly identified what may turn out to be a clear trend. But three comments should be made here.

    i. *Indicator.* The Warwick analysis relies largely upon the summary question about overall job satisfaction, which is asked in BHPS immediately after all seven particular questions on job satisfaction. There is some reason to believe that replies to this question disproportionately reflect satisfaction with the quality of working life aspect of jobs. If satisfaction with quality and material aspects of jobs are indeed beginning to diverge, a measure biased towards quality will produce misleading results suggesting a sharper fall-off in satisfaction than may be occurring, or it may simply mistake the direction of the trend. The indicator of overall job satisfaction used in the present paper is based upon answers to *all* questions about particular job aspects, and is believed to represent a more appropriate measure of overall job satisfaction, thanks to the data reduction method used.

    ii. *Reliability of Data.* The BHPS method for collecting job satisfaction data was modified slightly after Wave 1. Thus the distribution of replies

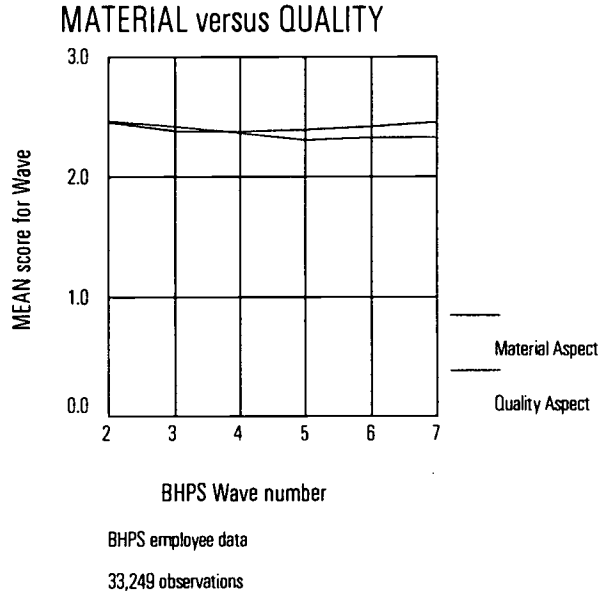
('marginals') for Wave 1 differs in certain ways from subsequent years. Especially where means of the overall job satisfaction (or particular aspect) responses are adopted as the main indicator, the Wave 1 data may require correction; or, better still, should be excluded from analysis. If retained, these data point to a particularly sharp drop in job satisfaction between Wave 1 and Wave 2, which has every appearance of being artifactual. If it was real, the scale of this drop would almost certainly call for special explanation. However, it is believed that any real drop was at most half the apparent drop.

iii. *Manpower Effects.* Previous work suggests that levels of personal skill and competence have a slightly depressive overall effect on job satisfaction scores [Rose 1994a; Rose 1999a]. The data reviewed in this working paper confirm this effect. (The reason for this 'skill penalty' has not yet been identified, though an explanation may lie through alteration to mobility expectations.) The average measured personal skill levels of employees in BHPS have risen steadily with each wave, apparently thanks to wider provision and/or greater use of work-related training. An improvement in the quality of the labour force itself may therefore result in a fall in overall job satisfaction. (Such a fall in morale need not imply that the quality of work, or work effort, have deteriorated. The reverse might be true.)

It is likely that a measure of overall job satisfaction which may disproportionately reflect quality factors may misrepresent trends in *overall* job satisfaction. Figure 11 below shows changes in mean levels of job satisfaction for the material and the quality aspects of work, for each wave of BHPS, with the unreliable Wave 1 data excluded. According to these indicators, there occurred an appreciable (6%) overall fall in mean score for the quality aspect from Wave2 to Wave7, while satisfaction scores for the material aspect, after a very shallow dip, recovered to the 1992 level.

Figure 11

Trends in Job Satisfaction 1992-97



The conclusion must be that further discussion of the hypothesis of declining job satisfaction has something to gain from distinguishing between the two aspects. The graph has been left with its full scale as a reminder that any year-on-year shift in job satisfaction is likely, in any case, to be marginal. How it is affected by longer run secular economic changes, or even by relatively short-run cyclical ones, is not yet known through lack of reliable trend data and presents a considerable research design challenge. It may be that job satisfaction in Britain is merely oscillating in response to events of the latter kind. While some of the effect shown by the Warwick investigators may result from the indicators used and their inclusion of Wave1 data, they have provided an incentive to further examination of the issue.

12. The reference dummy variable for occupation was OUG 999 (*All other employees in miscellaneous occupations*). To avoid the 'dummy variable trap' [Greene, 1990] it was omitted from the analysis. Strictly speaking, all regression coefficient values for OUG should be interpreted as differences from the value for this OUG.

13. The frequency percentage distributions for job satisfaction responses in Wave1 have slightly more in three levels than those for all other years: 1 (*Not satisfied at all*), 4 (*Neither satisfied nor dissatisfied*), and 7 (*Completely dissatisfied*). The writer noticed this discrepancy while 'eyeballing' the results at an early stage and informed the BPHS, who pointed out that at Wave1 the intermediate points of the scale, as shown on the card handed to respondents, had been provided with numeric scores but no labels; in subsequent Waves, both scores and labels were shown. Experiments using data for Wave1 corrected to the mean percentage distributions for Waves 2-7 suggest that the mean sample scores for Wave1 are inflated by a few percentage points in the uncorrected data. However, there appears to be no way of correcting the data to adjust individual scores. When PRINCALS scores are generated *excluding* Wave1 data for job satisfaction, they correlate almost perfectly with those created by including Wave1 scores (i.e. those used here). The question-mark hanging over the Wave1 data certainly should be noted in any study of job satisfaction trends including it. It is doubly unfortunate that such a 'blip' should occur in the base year of the BHPS.

14. Computation of over 5,000 intermediate reference scores would be required to set these limits, because the range of scores for own-skill for each OUG alters slightly at each wave; this would require approximately 30 hours work by an experienced researcher. To automate production of individual scores (e.g. by means of SPSS syntax files) would require a further 40-65 hours work. (Estimates prepared by writer for application for research funds.) The lower band included those scores having the median value itself. The median rather than the mean was selected as break-point because skill distributions within smaller OUGs were frequently skewed. A limited examination using the mean suggests, however, that this precaution was unnecessary, at least if the aim was to produce a rough and ready binary variable. For a few of the smaller (but still 'acceptable') OUGs with 2 or more observations tied at the median value, the size of the subgroups did vary by up to 10% points (i.e. 55% lower, 45% higher).

15. See the charts below.

Figure 12a

Job Satisfaction Profiles

Goldthorpe Service class 1 and Service class 2

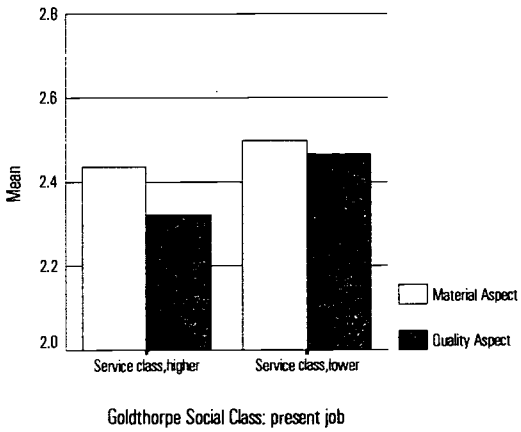
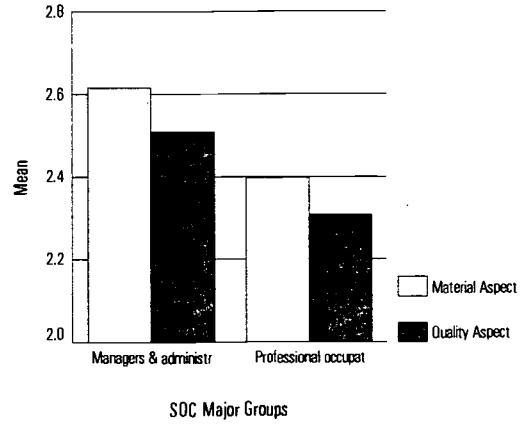


Figure 12b

Job Satisfaction Profiles

SOC Major Groups 1 and 2



16.

Table 10

OUGs Remaining in Regression Equations for both MATERIAL aspects and QUALITY aspects of Job Satisfaction

OUG CODE	OUG LABEL	MATERIAL aspect	QUALITY aspect
450	*Medical secretaries*	.741	.749
220	*Medical practitioners*	.600	.273
659	*Other childcare & related occupations nec*	.431	.251
958	*Cleaners and domestics*	.276	.135
110	*Production, works & maintenance managers*	.239	.205
199	*Other managers & administrators nec*	.227	.187
371	*Welfare, community & youth workers*	.197	.175
660	*Hairdressers, barbers*	.179	.306
234	*Primary & nursery education teaching professionals*	.101	-.107
862	*Packers, bottlers, canners, fillers*	-.158	-.372
441	*Storekeepers & warehousemen/women*	-.172	-.231
873	*Bus & coach drivers*	-.244	-.290
400	*Civil Service administrative officers & assistants*	-.246	-.152
411	*Counter clerks & cashiers*	-.261	-.305
860	*Inspectors/viewers/testers...*	-.355	-.371
792	*Telephone salespersons*	-.363	-.273
462	*Telephone operators*	-.461	-.644
421	*Library assistants/clerks*	-.579	-.366

17. The OUGs *Chefs and cooks* (620), *Hospital ward assistants* (641), *Sales assistants* 720), and *Drivers of roads goods vehicles* (872) could be worth further investigation on this count. However, for some of the groups mentioned by Rose and O'Reilly, dispersion of job satisfaction scores is remarkably low - *Computer analysts and programmers* is one important case in point.

18. The project 'Employment and Working Life Beyond the year 2000: Two Emerging Employment Sectors', directed by Professor H. Ramsay (University of Strathclyde), will examine call-centres and software development companies using case-study techniques.

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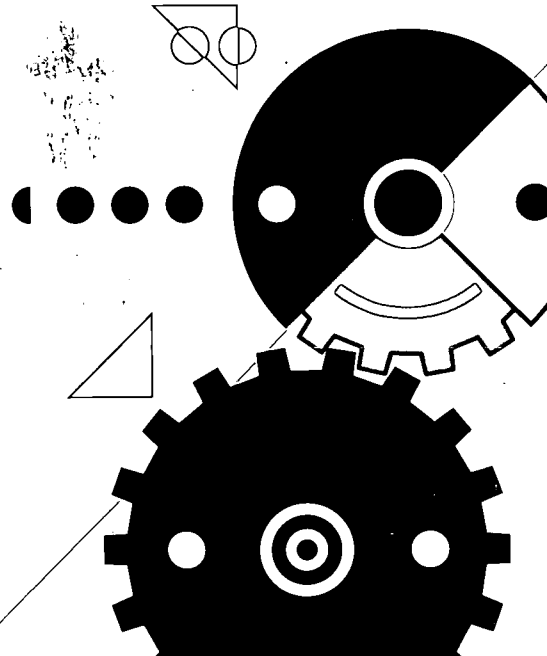

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