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Accountants' Attitudes and Environmentally-sensitive Accounting

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Abstract—Accounting for the environment (ICAEW, 1992) is receiving increasing attention. A series of initial interviews, visits and other contacts with a wide range of organisations and accountants on three continents left us with the impression that accountants and accounting do not appear to be involved in corporate responses to the environmental agenda. This paper is an exploration and examination of that impression. A mail questionnaire survey confirmed that accountants have low levels of involvement in their company's environmental activities and, from responses to personal opinion questions, appear to experience a conflict between their awareness of environmental issues and an inability to translate this into action within their corporate life. These attitudes are explored in the paper and would be a sufficient explanation for the absence of environmental accounting in practice.

Introduction

The increasing awareness of the importance of the natural environment has stimulated a re-examination of the relationship between business and the biosphere (see, for example, Cairncross, 1991; Elkington, 1987; Elkington, Knight and Hailes, 1991; Schmidheiny, 1992). This has brought with it recognition of the role that accounting appears to play in the process of environmental degradation (Gray, 1990). The response from the accounting profession has been swift and uncompromising (see, for example, Lickiss, 1991; ICAEW, 1992; CMA, 1992; CICA, 1992). This recognition of the role that accounting does play in the business-environment relationship and the role that it should play in helping re-orientate business actions to the biosphere has been widely echoed by accounting practitioners and academics (see, for example, Derwent, 1989; Dewhurst, 1989; Gilkison, 1992; Gray, 1992; Kestigan, 1991; Maunders and Burritt, 1991; Owen, 1992; Rubenstein, 1992; Zuber and Berry, 1992) and, perhaps more interestingly, by the business and political communities (see, for example, ACBE, 1993; UNCTC, 1992; European Community, 1992; Tennant, 1993).

One might reasonably expect that such widespread, and unusually unanimous, views would lead to changes in practice. However, there is little evidence of an actual response in accounting practice (ICAEW, 1992; KPMG, 1992; Gray and Owen, 1993; Gray, Bebbington and Walters, 1993). Indeed, in the UK, such evidence as exists is not incompatible with a very partial, somewhat confused and potentially directionless response from accounting practitioners (Coopers and Lybrand, 1990, 1992; Ball and Maltby, 1992).

This paper is an attempt to explore this situation further. In particular, the paper is concerned with: (i) whether or not accountants are involved in their organisation's response to the environmental agenda; (ii) the extent to which accountants are developing 'environmental accounting'; and (iii) an initial attempt to shed some light on the reasons why accountants are, or are not, responding to the calls from the profession, business and politics.

Background

Faced with the general scenario outlined above, Gray, Bebbington and Walters (1993) attempted to explore what was meant by 'environmental accounting' in practice, to what extent accountants and accounting were involved in organisations' environmental response and what practical guidance could be offered to accountants wanting to respond to the widespread calls for 'environmental accounting'. Gray *et al.* (1993) report on a series of interviews, site visits and investigations undertaken with UK, New Zealand and Canadian organisations and conclude that not only are accountants rarely involved in environmental matters but that senior management were rarely able to see *why* the accounting function might contribute to the environmental development of their organisation, (see also Coopers and Lybrand, 1990, 1992). That

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is, Gray *et al.* appear to have identified an 'absence' of accounting that deserves further, more direct investigation (see, for example, Choudhury, 1988; Hines, 1992). This is our starting point.

What we appear to be faced with is a general climate of opinion that should encourage accountants to undertake action ('environmental accounting'). The first stage of our investigation, then, is to explore what action, if any, is being undertaken by accountants. This climate, however, does not appear to have had a universal influence on business management (Gray *et al.*, 1993) and only a patchy influence on accountants themselves (Coopers and Lybrand, 1992). If we are to take the environmental accounting debate further it seems sensible to try and look for intervening variables between the climate (e.g. ICAEW, 1992) and action (e.g. the involvement of the accountant in the organisation's environmental agenda). In a functional world, three such variables can be posited: knowledge, opportunity and volition (see, for example, Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975; Lawler and Rhode, 1976; Rokeach, 1976, 1985; Schifter and Ajzen, 1985; but see also Ferguson, 1988; Newman *et al.*, 1989).[1] Of these, we concentrated on 'volition' via an examination of 'attitudes'. This was for two reasons: first, volition is the more powerful element in the determination of action and second, the other elements—knowledge and opportunity—can be derived if the volition is present.

More particularly, the *knowledge* necessary for developing some form of 'environmental accounting' is widely available (see, for example, Derwent, 1989; Gray, 1990; Lickiss, 1991; ICAEW, 1992). Not only could an accountant with 'volition' easily acquire information on the various possibilities for environmental accounting (for more detail, see below) but also 'accounting for the environment' involves many elements that are simply extensions of current accounting practice—on, for example, contingent liabilities and provisions. Equally, the *opportunity* for innovation potentially exists because senior accountants are normally to be found as part of the senior management team of an organisation—not as an isolated function. Thus opportunities for involvement with the organisation's developing environmental agenda can be expected to present themselves.

And even if this analysis is incomplete, the importance of attitude in encouraging a movement towards action seems well-established (see, for example, Lyne, 1992; Newman *et al.*, 1989)[2] and has already been successfully applied in analysing responses to the environmental agenda (see, for example, Scheepers and Nelissen, 1989; Nelissen and Scheepers, 1992).

This gave us two of the elements of our study—the (non)actions of accountants and the role of attitudes in determining those (non)actions. To this was added Gray *et al.*'s (1993) outline of what might constitute environmental accounting (see Figure 1) and Elkington's (1987) '10 steps to environmental excellence' (see Figure 2) that have proved to be a robust guide to the stages organisations need to undertake if they are to embrace the changing environmental agenda. With these elements we then proceeded to undertake the survey.

Research method

The survey was conducted early in 1992 by postal questionnaire addressed to the finance directors of the 1,000 top UK companies (as listed at the time by the most recent *The Times* 1,000). The concentration on finance directors reflected our desire to gather opinion and attitude about the company as a whole[3] whilst still talking to accountants (see, for example, Coopers and Lybrand, 1990, 1992) and the choice of the largest companies reflected other evidence that suggests larger companies are more likely to have responded to the environmental agenda than small or medium-sized companies (see, for example, Belkaoui and Karpik, 1989; Gray and Collison, 1991; Gray, 1993).

The questionnaire[4] comprised three broad sections that concentrated on (a) background data of the company; (b) the company's current activity with regard to the environment—including accounting initiatives and the accountants' involvement; and (c) information about the respondents and their attitudes to various issues. The questionnaire reflects the material discussed in the foregoing sections and was piloted, first on colleagues and then in interview with senior executives of companies. Mailing was followed up with a postcard reminder one month later (see below). 350 replies

[1]This does not, in any sense, preclude an examination of the organisational context in which the accountant operates. It is more than likely that the organisational context provides a major constraint on some aspects of the accountants' role. However, it seems to us that it is unlikely that all aspects of the accountants' role are circumscribed. Our focus is on the calls for *accountants* to respond to the changing environmental agenda and therefore on their willingness, personal ability, knowledge and freedom to innovate as a professional group.

[2]We should also cite the work of Pat Barker of Dublin City University which explores these issues in considerable depth in the context of disclosure of information to employees. This work is not in the public domain at the time of writing but we wish to acknowledge here the considerable benefit we derived from that work.

[3]The questionnaire distinguished between personal views and statements about the company. Naturally, one manager, no matter how senior, can speak exclusively for a complex organisation but as a senior member of the management team, the finance director can be expected to know the 'facts' we sought.

[4]The full questionnaire and a more detailed explanation of the statistical analysis is available from the authors.

Figure 1
Some Potential Elements of Environmental Accounting

General:
- Involvement with environmental policy;
- Involvement with environmental audit/review;
- Involvement with the development and monitoring of environmental management systems (including BS 7750, Eco-audit and Eco-label);
- Involvement with environmental impact assessments;
- Assessment of sustainability.

Management accounting and costing:
- Accounting for energy usage and costs;
- Accounting for waste, pollution and disposal;
- Accounting for recycling, packaging and containers;
- Budgeting and performance appraisal;
- Investment and investment appraisal;
- R&D, forecasting and design;
- Involvement with life-cycle assessment;
- Merger and acquisition activity.

External reporting and audit:
- Lending, insurance and shareholders;
- Contingent liabilities, remediation and provisions;
- Asset (e.g. land and inventory) valuation;
- Environmental spending and commitments;
- Statutory audit implications;
- Environmental reporting in financial statements;
- Separate environmental reporting.

Adapted from Gray, Bebbington and Walters (1993)

were received of which 181 were usable.[5] We then tested for validity, response bias and generalisability of the results.

Validity and response/non-response bias

Response/non-response bias was tested in three basic ways (Wallace and Mellor, 1988; Wallace and Cooke, 1990): (i) using the first and second waves of responses (to the first mailing and to the reminder) we investigated differences in both responses and in corporate profiles; (ii) we assessed the extent to which our overall responses appeared to reflect the characteristics of the population of *Times* 1,000 companies; and (iii) we compared the results of our survey with other surveys for those elements that appeared compatible. The results of these tests lead us to conclude that there *is* a response bias in our analysis—one that emphasises larger companies and those in the (traditionally assumed) more environmentally-sensitive industries (typically pharmaceuticals, chemicals, aerospace and defence and extractive industries—see, for example, Dierkes and Preston, 1977; Cowen *et al.*, 1987). Thus, if anything, we might anticipate that our results *overstate* the extent of environmental accounting and perhaps paint a more positive picture of the attitudes of accountants to the environmental agenda in their companies than will be true for the top 1,000 as a whole.[6] In particular, the number of respondents claiming that their company discloses its environmental policy, discloses quantified environmental data, shows environmental financial data in its financial statements, undertakes accounting for energy and wastes and integrates environmental criteria into its investment appraisal procedures is higher than previous surveys of UK company practice (see, for

[5]138 were returned as either unwilling to participate or non-participation is part of company policy. 31 were returned-to-sender. 95% of usable responses came from qualified accountants. Of these, 80% were designated as finance director, chief group accountant, financial controller or company secretary. 15% of the usable responses were from other accounting and finance-related personnel. Of the non-usable responses the equivalent numbers were 81% and 4%.

[6]In more detail, the tests were conducted using z-scores and/or chi-square tests at a 95% confidence limit. The first and second wave yielded some differences in responses to particular questions and some slight differences in individual characteristics but overall this was not statistically significant. Comparing all respondents with all non-respondents the respondents were significantly larger on all measures of size. The differences in industry-response *looked* different but were not statistically significant at this level of confidence. The comparison with other surveys produced results that are broadly plausible as comparable with this survey. For more detail on these matters please contact the authors who will supply a discussion paper that expands on these questions.

Figure 2
Elkington's 10 Steps to Environmental Excellence

1. Develop and publish an environmental policy;
2. Prepare an action programme;
3. Arrange organisation and staffing including board representation;
4. Allocate adequate resources;
5. Invest in environmental science and technology;
6. Educate and train;
7. Monitor, audit and report;
8. Monitor the evolution of the green agenda;
9. Contribute to environmental programmes;
10. Help build bridges between various interests.

Source: J. Elkington *The Green Capitalists* (with Tom Burke) (London: Victor Gollancz) 1987

example, ICAEW, 1992; Coopers and Lybrand, 1992; Owen, 1992; Gray, 1990, 1993; Gray and Collison, 1991; Gray *et al.*, 1993). This is consistent with a biased sample but may also reflect a degree of optimism in the respondents' perceptions of activity. This positive bias is recognised in the following analysis.

Internal validity of the questionnaire was examined by reference to an assessment of the internal integrity of respondents' answers.[7] Two areas permitted comparison: environmental disclosure in which the results were not statistically different at 95%; and development of environmental policy in which (complementary) answers were not statistically different either. We take confidence from this.[8]

Results

The results are presented in three stages. First, we provide a brief overview of the respondents' opinions about the level of activity in the company concerning environmental disclosure and 'environmental accounting' in its widest sense. Second, we provide further descriptive statistics about the accountants' perceived level of involvement with these activities. The third and substantive stage is the analysis of the accountants' attitude scores and their relationships with other factors in the questionnaire.

Company Activity

The 'company activity' section of the questionnaire distinguished between environmental disclosure and internal environmental accounting. The respondents' responses on environmental disclosure are summarised in Table 1.

Two areas of Table 1 deserve note. First, 'pre-empting legal requirements and dispelling rumours' are the most widely cited reasons in the social reporting literature for disclosure of voluntary social/environmental information (see, for example, Parker, 1986; Guthrie and Parker, 1989; Roberts, 1992; Patten, 1992) but were identified by only 11% of our respondents as significant reasons for disclosure. Reasons for *non-disclosure* generally accord with other analyses (see, for example, Aupperle, 1984; Filios, 1985; Jones, 1990; Gray *et al.*, 1993) except that the 76% who cited 'unsure how to proceed' and the 41% who cited 'never thought of it' as principal reasons for non-disclosure are not anticipated by the literature. Furthermore, information sensitivity, a reason often given for non-disclosure (see, for example, Gray, Radebaugh and Roberts, 1990), was only cited by 33%.

Table 2 summarises respondents' statements on the status of a putative environmental accounting within their company.

Column 2 would permit the inference that a substantial minority of UK companies have, or intend to develop, some form of environmental accounting practice. The ranking of these figures, showing energy, investment appraisal and wastes as the dominant concerns, would accord with current thinking on best accounting practice in this field (see, for example, ICAEW, 1992; CMA, 1992; Coopers and Lybrand, 1992; Gray, 1990, 1993; Gray *et al.*, 1993).[9] Columns 3, 4, and 5 report that accountants, unsurprisingly, are more aware of the

[7]This did not arise from deliberate use of 'check-questions' as we are unconvinced of the morality and efficacy of such practice (see, for example, Moser and Kalton, 1971). However, where overlap did arise, we were content to leave it in as a sort of 'positive redundancy'. We do not place too high a reliance on this analysis as a result.

[8]However, a low response rate to question 11 suggested that our experiment with a non-consistent scale in the questionnaire may have been unsuccessful. We have, however, interpreted the actual responses to question 11 as reliable and that it was the non-response to this question which reflects the confusion.

[9]However, the proportion of companies undertaking these activities is higher than expected and, again, perhaps reflects the bias—and possibly the optimism—in the results.

[10]However, current experience in the UK suggests that financially-based systems are developing only slowly and lagging behind other areas of practice (see, for example, Elkington *et al.*, 1991). It is normally assumed that the financial and the statistical information systems, ideally, need to evolve together (see, for example, Schmidheiny, 1992; Business-in-the-Environment, 1991; 3M/Environment Council, 1991).

Table 1
Summary of Significant Respondents' Statements on their Company's Environmental Disclosure

Percentage of respondents	*Activity or reason for (non)activity*
Levels of environmental disclosure	
40%	Have some environmental disclosure
55%	Intend to have some environmental disclosure in the future
21%	Have published an environmental policy
14%	Provide some financial and/or quantitative data
30%	Intend to provide financial and/or quantitative data in the future
Perceived reasons why the company does/will disclose environmental data	
43%	Company's pride in environmental record
35%	Shareholders' and public's right to information
11%	Pre-empting legal requirements and dispelling rumours
Perceived reasons why company does not disclose environmental data	
76%	Unsure about how to proceed
60%	Lack of a legal requirement, benefits do not exceed the costs and insufficient demand for the information
41%	Never thought of it
33%	Information sensitivity

financially-based approaches to environmental accounting than those based on non-financial data.[10] By way of contrast, though, columns 6, 7 and 8 in Table 2 report the number of respondents who had never heard of a particular environmental accounting approach and/or had no intention of exploring it. These figures are particularly of concern on matters such as contingent liabilities, investment appraisal and environmental budgets. Guidance to the accounting profession has been most frequent on these issues and these are the areas where corporate response to the environmental agenda depends most crucially on a corresponding response from the accountants and the accounting systems.

Whilst a minority of accountants appear to be

Table 2
Status of Accounting for Environmentally-related Activities in Respondent Companies

Status of accounting for ...	*Financial or statistical*	*Financial and statistical*	*Financial only*	*Statistical only*	*Financial and statistical*	*Financial only*	*Statistical only*
	Currently doing or thinking about doing (%)	*Currently doing or thinking about doing (%)*			*No plans to undertake or never heard of (%)*		
Energy	56	37	52	40	44	48	60
Investment appraisal	46	22	44	24	55	56	76
Wastes	41	21	35	27	59	65	73
Returnable containers/packaging	33	23	30	25	67	70	75
Legal compliance	32	13	28	17	68	72	83
Environmental budgets	27	9	25	10	73	75	90
Water pollution	26	10	14	22	75	86	78
Recycling	25	13	20	18	75	80	82
Contingent liabilities	25	7	24	7	76	76	93
Remediation costs	22	8	19	10	78	81	90
Air pollution	21	7	10	17	80	83	90
Land pollution	19	6	10	14	81	90	86
Sustainability	12	5	11	6	88	89	94
Life-cycle analysis	12	4	8	8	88	92	92

Table 3
Accountants' Level of Involvement in Environmentally-related Activities

Activity with which accounting staff involved	*Percentage of companies undertaking activity*	*Degree of involvement where company undertakes activity 5 (high)–1 (low)* Mean	S.D.
Disclosure in financial statements	21	3.1	1.4
Screening of investments	45	2.7	1.4
Disclosure elsewhere in annual report	39	2.7	1.4
Environmental budgets	36	2.5	1.3
Environmental audit/review of energy	64	2.4	1.4
Screening of investment appraisal	56	2.4	1.3
Car and transport policy	66	2.1	1.2
Environmental audit/review of wastes	57	2.1	1.3
Environmental impact assessments	55	2.1	1.2
Environmental policy	56	1.9	1.1
R&D policy	50	1.9	1.1
Supplier audits	50	1.7	1.0
BS 7750	49	1.7	1.0
Life-cycle analysis	30	1.7	1.1
Activity centre appraisal	35	1.6	0.8
Sustainable development	34	1.6	1.0

aware of and responding to the environmental agenda, the majority do not. It must be of concern to the accounting profession that many accountants are not responding even in areas, such as contingent liabilities, where environmental matters have a direct impact on a true and fair view being given by the financial statements (see, for example, ICAEW, 1992).

Accountants' Involvement

Table 3 summarises the respondents' statements about the extent of accountants' involvement in the company's environmental development.

It lists a number of the activities that a company responding to the environmental agenda can be expected to be undertaking (see, for example, Elkington *et al.*, 1991).[11] The data in Table 3 suggests (i) that accountants are aware of corporate responses to the environmental agenda, *but* (ii) the level of accountants' involvement is not high. The mean response for the level of involvement *for those companies in which the activity takes place* only rises above a midway ranking of '3' for one activity—the disclosure in financial statements. This suggests—in data that appears to overstate the situation anyway—that accountants are not exercising anything like the level of involvement necessary for full corporate response to the environment (see, for example, Tennant, 1993).

Attitudes of Accountants to the Environmental Agenda

Table 4 reports the summarised data from the respondents' scores on the attitudinal questions together with response means for each question.

The differences between the mean responses reported in Tables 3 and 4 are remarkable. In broad terms, the data in Table 4 presents a particularly positive picture of accountants' attitudes to innovation in general and environmentally-related innovation in particular. Of especial note are the particularly high scores for the accountants' attitude to their role in innovation (question b) and the expectation of increased legislation (questions o and p). Note also that the typical 'excuse' attitudes do not score especially highly (questions a, l, r and

[11] The figures given for 'percentage of companies undertaking activity' are broadly in line with data given in the earlier part of the questionnaire and can therefore be interpreted as having internal validity. However, the external validity is again open to question. For example, the proportion stated for 'disclosure in financial statements' is a figure much higher than current UK practice and an analysis of the financial statements of the respondent companies produced only four examples of such reporting, (see also ICAEW, 1992; Owen, 1992; and, for a summary of other surveys, Gray and Collison, 1991). However, the data is still interpretable with care.

Table 4
Respondents' Personal Views on Environmentally-related Opinion Statements

Statement of opinion	*Accountants' response (5-strongly agree, 1-strongly disagree) %* 5	4	3	2	1	*1–5 Answers* Mean	S.D.
(a) the accountant should limit his/her role to the preparation of financial data	3	7	12	23	53	1.8	1.1
(b) the accountant has a duty to innovate and develop new financial information systems	65	27	5	1	1	4.6	0.7
(c) the public has a fundamental right to information about the environmental impact of companies	19	32	32	9	5	3.5	1.1
(d) accountants should contribute to the environmental sensitivity of their companies	13	27	44	12	1	3.4	0.9
(e) the professional accountancy bodies should require environmental disclosure by companies	5	15	31	20	26	2.5	1.2
(f) the government should require environmental disclosure by companies	15	27	29	15	12	3.1	1.2
(g) shareholders need environmental information	9	20	36	23	9	3.0	1.1
(h) the accountant should be involved in the preparation of environmentally related information for management	8	26	40	18	5	3.1	1.0
(i) the accountant should be involved in the preparation of environmentally related information for public disclosure	8	28	35	19	7	3.1	1.0
(j) disclosure of environmental information is a matter for legislation	23	29	20	18	8	3.4	1.3
(k) disclosure of environmental information is a subject to which I have not given much thought	17	18	31	19	12	3.1	1.3
(l) companies cannot afford the cost of disclosing environmental information	4	8	32	38	15	2.5	1.0
(m) business would be healthier if the public were informed about their environmental affairs	8	20	33	23	13	2.9	1.1
(n) environmental issues have nothing to do with accountants	1	9	27	33	28	2.2	1.0
(o) the role of the EC in environmental legislation will increase in the future	49	39	8	1	1	4.4	0.8
(p) the UK government will increase the requirements of companies in the environment domain	35	45	13	2	2	4.1	0.9
(q) environmental disclosure by companies will become general practice in the near future	9	38	36	11	4	3.4	0.9
(r) there is too much change in accounting regulation already	11	17	33	29	9	2.9	1.1
(s) the accountant's job is sufficiently demanding without worrying about environmental issues	4	9	32	31	21	2.4	1.1
(t) if environmental disclosure is inevitable, the accountant should be a primary initiator	6	13	38	24	15	2.7	1.1

(Non-responses to opinion statements were either 2 or 3%).

s) whilst the relatively negative responses given to the importance of disclosure and leadership by the accountancy profession and by the accountants themselves (questions e, m and t) introduce a distinct note of contradiction. Finally, note the seemingly strong contradiction between the fairly positive answers given to questions concerning accountants' involvement in environmental information for management and for external disclosure (questions d, h and i) and the relatively passive responses given for involvement reported in Table 3.

This fits well with expectations indicated in the literature on attitudes. In particular, Rokeach (1976, 1985) would lead us to infer that the data represents a conflict in personal attitudes between different types of attitudes related to (i) personally held views related to self-perception (for example, the accountant respondents see themselves as both innovators—question b—and pro-disclosure and pro-accountability); (ii) implicit, and thus unrecognised, but unshakeable personal beliefs (for example, as implied by the response concerning the accountant as initiator—question t) and (iii) attitudes towards authority (for example, the responses concerning law, the professional bodies and the health of the company—questions e, m, o and p). This conflict has the effect of producing volition different from that which might be expected from the stated-as-held attitudes and thus does not lead to the action that might reasonably have been expected. Furthermore, Fishbein and Ajzen's (see, for example, 1975) work on attitudes and behaviour seems to provide an insight to this. They link attitudes, social norms and volition control factors to intentions and behaviour.

The above results suggest that accountants have the prerequisite attitudes for them to be involved in environmental accounting, while social norms would also support forming environmental related behaviourial intentions. Our focus therefore rests on volition control—some other factor might be preventing accountants acting out the behavioural outcomes of their attitudes. The most relevant factors in this context are likely to be the effect of the organisation on the accountant and the ability of accountants, themselves, to translate beliefs into behaviour.

Detailed investigation of the first factor is beyond the scope of this paper, however, studies have suggested that it is easy to overestimate the amount of operational and ethical freedom that individual actors have within organisational structures (see, for example, Katz and Kahn, 1966; Jackall, 1988; Ladd, 1970; Prodhan, 1989 and Gray, 1990b). However, it is reasonable to note that many business organisations are responding to the environmental agenda and are seeking to be 'green'. Further, professional accounting bodies have a favourable environmental stance as demonstrated earlier in the paper. It is possible to conclude, therefore, that the business or professional organisations are unlikely to significantly inhibit the accountant from translating attitudes into behaviour. This leaves the second possibility, that accountants themselves are somehow unable to respond to the environmental agenda despite their apparent willingness to do so.

We sought to explore this possibility by testing whether accountants' responses appear to bear any relation with the environmentally-related behaviour of the organisation for which they work (see, for example, Thomas, 1989) or whether accountants appear to be a relatively homogeneous body regardless of working environment who, perhaps, reflect their professional affiliation to a greater degree than their organisational affiliation (see, for example, Harrell *et al.*, 1989).

Cross-tabulations of attitude scores and each reported characteristic of the responding financial director and the company for which s/he worked were undertaken.[12] Very few apparent relationships were discovered so the data were re-tested, first by employing a 'total attitude score'[13] and then by categorising attitudes into four broad groups (see Figure 3). Over 600 t-tests of statistical significance were performed on the original and the adjusted data. *Not a single* combination was found to be significant at the 95% level of confidence. We infer from this a considerable degree of homogeneity in the accountant respondents. (We return to this in the discussion below.)

When the confidence level was relaxed to 90% a number of relationships began to emerge. There was a definite, though far from simple, pattern suggesting that accountants employed by companies either currently producing, or intending to produce, environmental disclosure are more likely to have more positive scores for some groups of attitudes—particularly the 'public watchdog' and 'excuses' categories of attitudes. These more positive attitudes were notably more likely if the company already produced environmental information in the annual report *but not* in the financial statements and/or if the company intended, in the near future, to make environmental disclosures in the financial statements or financial disclosures anywhere in the annual report.[14] However, there did appear to be a conflict between these areas of positive attitude and the attitudes towards regulation.

On the other hand, an accountant with a lower total attitude score appeared to be more likely to be employed by a company with no environment policy (thus perhaps reinforcing Elkington's (1987) point in this regard) and also appeared to be more likely to be a member of the Institute of Chartered Accountants in Scotland (ICAS). This last point

[12]These factors included, in addition to the 'company activity' issues already discussed, company data on its age, number of employees, countries of operation, nationality of ultimate holding company and industry sector whilst the respondents gave data about themselves covering their age, gender, level of education qualification(s) and professional qualification(s).

[13]Being a summation of all attitude responses once all the scales had been adjusted to reflect equally the same direction in terms of 'positive' or 'negative' attitudes to environmental response.

[14]Despite the somewhat odd set of relationships encountered here, the relationship between disclosure and attitude is not necessarily odd at all. Not only does new disclosure often encourage the development of new information systems but there is widespread recognition that environmental disclosure needs the development of environmental management systems to support it and this, as one possible route, may be developed through BS 7750. Such developments could normally be expected to affect even the accountant.

Figure 3

Groups of Attitudes

1. Attitudes relating to regulatory aspects
(e) Professional accountancy bodies should require disclosure
(f) Government should require disclosure
(j) Disclosure is a matter for legislation
(o) Role of EC legislation will increase
(p) Role of UK government legislation will increase

2. Attitudes regarding public watchdog role
(c) Public have fundamental right to information
(d) Accountants should contribute to environmental sensitivity
(g) Shareholders need environmental information
(m) Business healthier if public informed of environmental affairs
(n) Environmental issues have nothing to do with accountants

3. Excuses
(a) Accountants limit role to financial data preparation
(k) Have not given subject much thought
(l) Companies cannot afford cost of disclosure
(n) Nothing to do with accountants
(r) Too much change in accounting already
(s) Job too demanding as it is

4. Positive attitudes
(b) Duty to innovate and develop new information systems
(d) Should contribute to companies' environmental response
(h) Involved in environmental information for management
(i) Involved in environmental information for public
(q) Disclosure will become general practice
(t) Accountant role is primary initiator

may reflect the fact that ICAS was the only one of the mainland UK professional accountancy bodies not to have undertaken a public initiative on environmental matters at the time of the survey. This might suggest that professional body leadership *does* have some, if small, effect on member behaviour.

More definite interpretation of this seems ill-advised—not least because a 90% level of confidence is far from compelling. Furthermore, whilst there is some positive relationship between 'positive attitude scores' and the company's environmental disclosure activity at the 90% confidence level, the pattern of the results is far from clear and, indeed, strongly suggests a high degree of conflict in the accountants' attitudes—especially between their 'self-image attitudes' and their attitudes to regulation. Despite expectations to the contrary, there appears to be no grounds for drawing conclusions about the influence of general environmental activity in the organisation, the age, the awareness or (with one possible exception) the training of the accountants on their attitudinal responses as captured by the questionnaire.[15] Further work will be necessary to clarify these potential relationships.

Discussion and conclusions

We believe that there are three main inferences to be drawn from the above analysis. These relate, first, to the apparent homogeneity of accountants' attitudes to the environment; second, to the gap between respondents' attitudes and their action with regard to environment activity of companies and, third, to the accountants' apparent lack of knowledge about the possibilities of environmental accounting. We discuss each of these, briefly, below and then offer some speculation as to possible explanations.

While questionnaire respondents worked in companies of different size, industry, country of incorporation and country of operation, their attitudes appear to be homogenous. Further, despite

[15] The educational background of the respondent in terms of university education and level of degree acquired prior to professional training does appear to have some influence, though only statistically significant at the 85% level. Those with Bachelor's degrees or PhDs scored higher than those with Master's degrees or nothing. If we posit that a substantial proportion of the Master's degrees were MBAs—and thus a different form of 'university experience' from full-time, long haul degrees—then some influence for university education background could be inferred. We did not collect data on the subject of the respondents' degrees which, especially in England and Wales, are more likely to be degrees in non-accounting subjects.

being of different ages, qualifications and professional body membership respondents' attitudes appear to be largely homogenous. Only in three areas did there appear to be *any* grounds for doubt about this homogeneity. First, accountants' attitudes did seem to be influenced (positively) if their company was active in environmental disclosure and (negatively) if their company had no environmental policy. This effect was slight and did not seem to influence the extent of the accountants' involvement. Second, there is a hint that leadership by professional accountancy bodies may have some slight association with attitudes (in our data, this related to membership of ICAS). Finally, there is a hint that pre-training university education might be associated with environmental attitudes amongst accountants. But these associations are slight and, although deserving further investigation, do not, it seems to us, detract from the essential conclusion of homogeneity.

Second, as far as we can judge, accountants are aware that environmental issues will affect their practice in the future, perceive that this impact falls within the role of the accountant and view themselves as the appropriate individuals to innovate in this area. Despite this awareness, there is an absence of environmental accounting. In terms of the theory of planned behaviour developed by Fishbein and Ajzen, this leads us to posit that, so-called volition control factors, such as situational or internal constraints, prevent accountants translating attitudes into behaviour.

Third, we confirmed what we previously suspected—there is a low level of environmental accounting activity and accountants are not highly involved in their companies' response to the environmental agenda. Further, where they are involved it is in traditional accounting areas such as disclosure. One surprise was their lack of involvement in accounting for contingent liabilities and remediation costs where field studies led us to expect that they would be. Equally puzzling, in the light of the UK professional accountancy bodies' high level exhortation and widely publicised recommendations, was the apparent lack of knowledge about possible environmental accounting options. We infer that the leadership from the professional accountancy bodies in the UK is either not getting through to members or is not yet perceived as being sufficiently important to accountants' current activities.

The apparent homogeneity of the accountants' attitudes encourages us to enquire as to what all these accountants have in common. Accountants undergo a relatively common training process that might shape them to respond in certain ways regardless of organisational setting. Granleese and Barrett (1990), for example, suggest accountants have common personality traits that appear to differ little across organisational settings. A combination of training and personal dispositions could be powerful enough to shape the accountant and thereby affect his/her ability to innovate in the future. The findings of Granleese and Barrett (1990) encourage us to speculate that our results broadly support the proposition that the present education and training programmes inadequately prepare accountants for the environment they will face within organisations (see also Lee, 1989; Power, 1991b; Cramer *et al.*, 1991, p. 5). Power's arguments (1991a and see also Power, 1991b) effectively echo a substantial literature in which researchers have identified, or posited, that accountants as a whole, are ill-equipped to respond to new challenges. This is not to say that accountants are incapable of change, but that they are ill-equipped through their training and education, to reflect upon and respond to challenges that lie outside the existing orthodoxy of current accounting techniques.

This case has been well-argued by Sterling (1973) in his identification of the failure of accounting educators to make students and trainees aware of developments and findings in research—a view that has been more recently echoed in the UK (Lee, 1989; Power, 1991b; Gill, 1993). Booth and Cocks (1990) and Lehman (1988) take this further and posit that the emphasis on the technical and algorithmic in accounting education and training positively discourages more creative and flexible thought by accountants (see also Burchell, Clubb and Hopwood, 1985; Granleese and Barrett, 1990; Zeff, 1989; Lewis *et al.*, 1992; French *et al.*, 1992).

Clearly there is some factor at work in our data and the education, training and self-selection of accountants might plausibly be that factor. However, the situation pertaining to education and training of accountants in the UK is a complex one. Our respondents were members of six professional accountancy bodies and 46% had no university education of any sort. Unfortunately, we did not collect data on the proportion of the university-educated respondents who had accounting degrees and therefore cannot infer anything about the role of educational background. But the homogeneity of response and the gap between 'volition' and action are so striking that we cannot but wonder whether the selection and training processes of accountants are, as the literature suggests, a homogenising influence that largely overrides earlier educational influence and leaves accountants ill-equipped to respond to change. If this is a valid inference, then it clearly deserves further investigation.

Finally, it appears that the exhortation and guidance from the professional accountancy bodies are not getting through to practising members in industry. Even on matters such as contingent environmental liabilities a significant majority of accountants are unaware of the importance and implications of the environmental agenda for their practice and for the organisations for which they work. On the broader environmental agenda, accountants seem genuinely uninformed by professional guidance and unsure how to develop environmental accounting systems. In this connection, we leave the last word to a senior finance director whose company is one of the UK's leaders in responding to the environmental agenda:

> 'We found it extremely difficult to see how we could put these things [environmental matters] into the accounting records ... accounting approaches encourage short-term attitudes—community investment, like environmental investment, requires a long-term attitude.' (Finance director, multi-national company).

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