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Research on Financial Accounting and Uncertainty: Developments and Departures

Ciaran O hOgartaigh
Dublin City University

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RESEARCH ON FINANCIAL ACCOUNTING AND UNCERTAINTY: DEVELOPMENTS AND DEPARTURES[1]

ABSTRACT

This paper is concerned with uncertainty and accounting. Research carried out in the area to date and the proposed future direction of the research are explored. Potential hypotheses concerning user reaction to disclosures of uncertainty in financial statements are discussed. These hypotheses suggest that increased information regarding uncertainty may be relevant to userss and may change their confidence concerning their decisions. It may also contribute to a firmer social, `intersubjective' reality. An experimental framework within which such hypotheses might be explored is developed. The paper then discusses the problems foreseen with the future implementation of these experiments and how these problems might be minimised. The paper concludes by briefly commenting on the role of accounting disclosure in an uncertain world.

> (S)ilence, the absence of signals, is in its turn a signal, but it is ambiguous, and ambiguity generates anxiety and suspicion. (Levi, 1989, p. 69)

> To-day's management wisdom is predicated on stability. None of its tools - basic accounting practices, patterns of organisation, formulation of strategy or workforce care - can cope with the new rates of change. (Peters, 1989, p. 27)

[1] The author is grateful for the helpful comments from participants at the Inaugural Research Seminar of the Irish Accounting and Finance Association and at a research seminar at Dublin City Universtiy Business School.

INTRODUCTION

This paper is presented as part of the research paper series of Dublin City University Business School. It explores the research carried out by the author to date in the area of financial accounting and uncertainty and sets out the proposed future direction of the research. The paper is, as a result, in two main sections.

The first section, which explores the research to date, introduces the research area and its potential value. It then goes on to draw on several key arguments from what the American Accounting Association (1973, p. 63) termed "the behavioural interactions of the accounting data and the decision maker" to develop a series of hypotheses regarding user reaction to uncertainty in the context of financial accounting. The paper then briefly discusses the contribution to the research of other work in the area of accounting. In outlining the development of the research to date, the paper edits the various and broad arguments involved and provides the `headlines' which have brought the research to its central theme(s).

The second section, setting out the future direction of the research, considers how the hypotheses proposed in the first section might be made concrete. Furthermore, this section outlines the potential limitations of the research approach and explores how those limitations might be minimised. Finally, the design of the proposed research instrument is outlined in the light of the preceding discussion.

THE RESEARCH TO DATE

Why uncertainty in financial accounting?

The primary motivation for examining how financial accounting might grapple with uncertainty is that it is interesting. It is interesting not only to this author but also to the discipline. That this is the case is well-illustrated by drawing on a number of arguments put forward in a 1990 journal article by Tweedie and Whittington (T&W). T&W (1990, p. 91) outline what they see as the broad consensus regarding the purpose of financial reports. One of these broadly agreed notions about financial reports is that they are intended to provide users with information for decision making. Users are defined broadly by the ASB (1995). They include, for example, employees, those in the environment of the reporting entity, customers and the public.

Arguing that there is broad agreement that financial reports should provide information to users, T&W comment that users seek "economic relevance." While noting that the ICAS group (McMonnies, 1988) "bravely pins its faith in identifying economic reality", T&W continue that `economic reality' carries with it connotations that are "inappropriate in a realistic setting of uncertainty." This finds echoes, though not exact parallels, in Stamp's argument (1980) that as economic reality is complex and ambiguous, its presentation in financial statements cannot be unambiguous. It seems that to be useful in decision making, information must represent some form of what has variously been termed `substance' or `reality' but that in doing so accounting information must struggle with the uncertainty or ambiguity of that substance. That struggle, according to T& W, is characterised by two common problems. These two problems are recognition problems and measurement problems: which transactions to recognise and how to measure them. They go on to say that uncertainty underlies these two problems.

Uncertainty, then, is central to financial reporting. Users are concerned with uncertainty. They are also concerned with "economic relevance", which in an uncertain world, is uncertain. The problems of financial accounting have uncertainty as a common theme. This is hardly surprising as accounting is a human activity and uncertainty is what Keynes terms (1933, p. 339) "part of our human outfit." What is ironic is that while accounting exists because of uncertainty, it is also constrained because of uncertainty. Research in this area is therefore interesting in a discipline that struggles with uncertainty. It leads one to wonder whether the role of accounting is not to eliminate but to illuminate uncertainty, whether there is a certainty surrounding single numbers and whether that is financial reporting's strength or its weakness.

If one defines accounting as a discipline that is concerned with information and with informing decision makers, the influence of uncertainty on the discipline is clear. A compelling and pithy definition of uncertainty is provided by Mack (1971, p. 1) who comments that "uncertainty . . . is the gap between what is known and what needs to be known." This `gap' is illustrated in Figure 1.

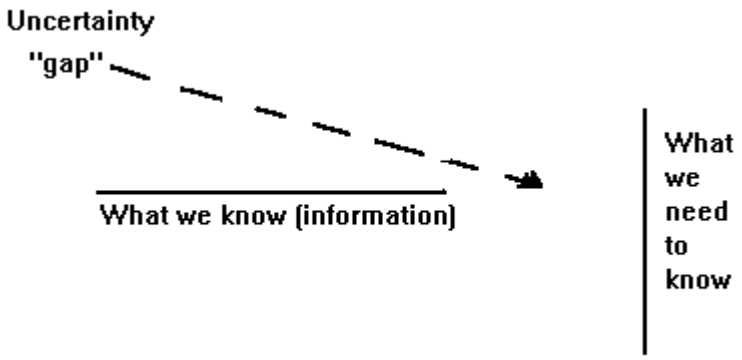


Figure 1: The information gap and uncertainty as defined Mack (1971, p.1)

Mack's definition of uncertainty finds an echo in financial reporting: Boritz (1990, p. 44) comments that "uncertainties [in the use of financial statements] may arise from reliance on information which is incomplete": in grappling with uncertainty, financial reporting grapples with the gap between what the user knows and what the user needs to know. Such uncertainty is included in the category of information uncertainty by Boritz and is discussed later. At this stage, however, one is led to consider what the American Accounting Association (1973, p. 63) termed "the behavioural interactions of the accounting data and the decision maker", what May and Sundem (1976, p. 760) describe as the "black box" which links "accounting outputs to aggregate market consequences."

The behavioural interactions of the accounting data and the decision maker

As pointed out by Einhorn (1976, p. 196), the study of human behaviour is "an intersection of psychology, economics, statistics and management sciences." It is therefore a broad field, which has a long history characterised by differing perspectives and conclusions. It is also a field that is peppered with paradox. Early (17th century) assessments of the worth of an uncertain choice concluded that it was worth its expected value (EV)

where EV = $p_1x_1 + \ldots + p_sx_j$ where p_s is the probability of event x_j. Such an assessment was challenged by the St.Petersburg paradox:

> Appealing to intuition, Bernoulli says that the cash value of a person's wealth is not its true, or moral worth to him . . . the dollar that might be precious to a pauper would be nearly worthless to a millionaire. (Savage, 1954, p. 92)

From this paradox came the proposition called expected utility (EU). The subjective worth of money, it was argued, is not necessarily its objective worth. A consequence of axioms developed by von Neumann and Morgenstern (1944 and 1947) was the proposition that a person's preferences can be represented by the utility of money and that the maximisation of EU can be a model of the person's preferences. A further extension referred to the decision-maker's attitude towards risk as risk averse. Risk averse persons prefer a certain amount equal to the expected monetary value of an uncertain prospect, rather than the expected monetary value of that prospect (for example, a certain £50 rather than a 50/50 chance of £100 or 0). Utility is then a concave function of money (Pratt, 1964; Arrow, 1971).

Having met with favour in the domain of economics, the concepts of EU were broadened, most notably by Savage who replaced objective probabilities with subjective probabilities. In doing so, he was not unique, nor was he the first. In psychology, Tversky (1967) had earlier distinguished between "objective" and "subjective" probability. Tversky expressed a decision-maker's subjective expected utility as $EU = p_1u(x_1) + \ldots + p_su(x_j)$ where p_s is the subjectively assessed probability of the occurrence of x_j and $u(x_j)$ is its utility. Not only, therefore, was the worth of an outcome subjective, so also was the probability of the outcome. Expected utility became subjective expected utility (SEU).

The implications of the SEU theory were that just as some outcomes may be preferred over others some probabilities may be preferred over others. A series of experiments by Edwards in the 1950s, reported in both the economic and psychological literature (Edwards, 1953 and 1954), suggested "that subjects, when they bet, prefer some probabilities to others, and that these preferences cannot be accounted for by utility considerations." (Edwards, 1954, p. 34) Subjective utility implied subjective objectives. This became a coherent strand in decision theory. Allais, illustrating yet another paradox of utility theory in 1953, showed that people do not conform to the constraints of EU. Using the choice of a wonderful outcome happening for certain and an even more wonderful outcome possibly happening, Allais demonstrated that people may sacrifice the even more wonderful outcome for certainty even if the certain outcome is less wonderful. The implication of such a sacrifice, is, perhaps, that people satisfice.

Newell and Simon (1970) argued, in an entirely different strand of decision theory, that the large problem spaces "associated with the problem called `life'" (Newell and Simon, 1970, p. 151) constrained decision-makers from processing information in a way that would allow them to optimise or "maximise utility" and that decision-makers were destined to satisfice - to find *a* solution rather than the *best* solution. Hampton, Moore and Thomas (1973, p.33) conclude that "the early interest expressed by psychologists for the relationship between `objective' and `subjective' probability is of limited interest today if one accepts that decision analysis requires the assessment of a probability that reflects the beliefs of the decision maker based on the information available to him at the time of the decision." In its development from EV to EU to SEU, a common theme of the broad behavioural literature is that decision making and cognition are complex and context-contingent.

More recent efforts have drawn on early theories of decision making in uncertain contexts and attempted to structure and characterise perception and consequent behaviour in a more comprehensive way. Theories developed as a result include Kahneman and Tversky's Prospect Theory (Kahneman and Tversky, 1979), Einhorn and Hogarth's Venture Theory (Hogarth and Einhorn, 1990) and Loomes and Sugden's Regret Theory (Loomes and Sugden, 1982). These theories have contributed to the development of the arguments underlying this research in many ways. Three propositions common to the theories have, however, been particularly useful: decision makers' reactions to gains and losses, the subcertainty created by ambiguous information and the need for inference in the absence of complete information. Each of these propositions is now considered.

Reactions to gains and losses

The first of these propositions is central to Regret Theory: that people anticipate that they will regret losing more than they rejoice at winning. Kahneman and Tversky state this in a broader context by concluding that a decision maker's "value function is (i) defined on deviations from a reference point, (ii) generally concave for gains and convex for losses, and (iii) steeper for gains than for losses" (Kahneman and Tversky, 1979, p. 279). A value function representing these three properties is reproduced in Figure 2.

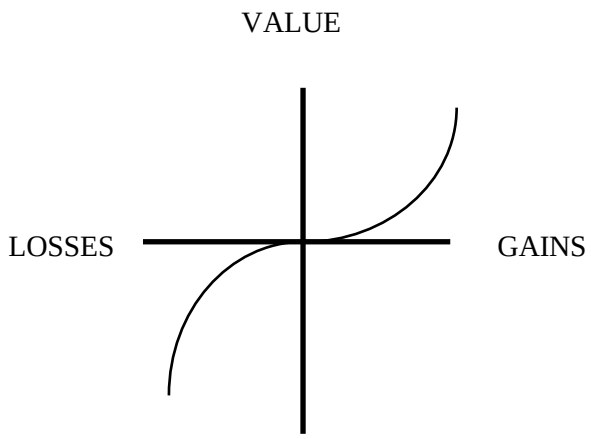


Figure 2: Kahneman and Tversky's Value Function (Kahneman and Tversky, 1979)

They argue that decision makers view uncertain prospects as potential gains and losses from a current asset position rather than as a final asset position. (For example, a decision maker with a current asset position of £100 and a potential gain or loss of £10 focuses on the potential gain or loss rather than on the final asset position of £90 or £110.) Furthermore, attitudes to gains or losses differ and are not symmetrical. The decision maker is risk averse in the domain of gains and risk seekers in the domain of gains. MacCrimmon and Wehrung (1986) found evidence that risk perceptions and risk taking behaviour requiring the use of private wealth differ from those in an organisational or institutional context. March and Shapira (1992) and Steil (1993) develop this proposal further in the institutional context (the context where investment decision making often takes place). They conclude that institutions define targets for decision makers and that decision makers are risk averse above the target level (holding what they have) and risk takers below the target level (trying to reach the target).

These findings indicate that attitudes to gains or losses are inconsistent and context-contingent. They lead to the conclusion in this context that a study involving gains and losses should be avoided and that any uncertainty in financial information presented to decision makers should focus on uncertain losses or uncertain gains alone.

The findings do however find echoes in the financial accounting view of assets and liabilities. Financial accounting prudently views assets and liabilities asymmetrically. The ASB in its draft Statement of Principles suggests that among the recognition criteria for assets and liabilities is the requirement that there be "sufficient evidence"

for the recognition of the asset or liability (ASB, 1995, para. 4.37). However, "prudence has the effect that less evidence of occurrence and reliability of measurement is required for the recognition of a loss [or a liability] than for a gain [or an asset]" (ASB, 1995, para. 4.32). SSAP 18 adopts a similar asymmetric approach in the consideration of the recognition of contingencies. This approach of accounting regulators to recognition leads one to wonder whether decision makers view uncertain gains or losses differently in the domain of assets than in the domain of liabilities. This is one of the issues that the research intends to explore.

Subcertainty due to ambiguity

Another common strand in the theories of behaviour and uncertainty is that ambiguity creates what Kahneman and Tversky call "subcertainty." Subcertainty implies uneasiness or lack of confidence concerning the outcome being considered.

Drawing on the work of Ellsberg (1961) and Fellner (1961), Kahneman and Tversky suggest that "subcertainty should be more pronounced for vague rather than for clear probabilities." `Ambiguity' or `vagueness' affects the perception of choices faced by decision-makers. This ambiguity writes Ellsberg (1961, p. 258) is "a quality depending on the amount, type, reliability and `unanimity' of information, and giving rise to one's degree of `confidence' in an estimate of relative likelihoods." The link between ambiguity and the `unanimity' of information has become an important part of the research and will be discussed in more detail later.

Ambiguity according to Nurmi (1983, p. 106) arises first from "impreciseness due to randomness" of events in the environment surrounding the decision maker and second from "impreciseness due to the employment of inexact notions . . . i.e. impreciseness due to fuzziness" in describing the randomness of the environment. This distinction characterises ambiguity as not only due to an uncertain environment but also due to the manner in which that environment is presented, portrayed and, therefore, perceived. The importance of this characterisation is clear in the context of financial reporting and will be discussed in more detail later. For the moment, however, the proposition that ambiguity creates subcertainty or less confidence in a decision leads to the idea that the exploration of decision making in the light of uncertainty should include an exploration of the effect of information on the confidence as well as on the decision of the decision maker.

Inference and incomplete information

Some ideas developed by Newell and Simon were introduced earlier. A further notion introduced by them is the nature of behaviour and perception in the face of "immense problem spaces." The human intellect, they argue, is limited and needs to use rules of thumb or heuristics to make sense of the complexities of the world. Heiner (1983, p. 585) calls such heuristics "smaller behavioural repertoires" which are used because the decision maker "cannot decipher all the complexities of the decision problems they face."

These descriptions of cognitive behaviour are also discussed by Kahneman and Tversky. Tversky (1974, pp. 148 &156) describes such "mental operations" as:

> three heuristics . . . that are employed in judgment under uncertainty. (i) An assessment of representativeness or similarity, which is usually employed when people are asked to judge the probability that an object or event *A* belongs to a class or process *B*. (ii) An assessment of the availability of instances or scenarios which is often performed when people are asked to assess the frequency of a class or the plausibility of a particular development. (iii) An adjustment from a starting point which is usually employed in numerical estimation when a relevant value is available.

While these heuristics provide a basis for some empirical work in accounting particularly in attempts to characterise decision making in auditing and lending decisions, they draw on broader theories of perception including those of Brunswik (1952), Lenzen (1952) and Litterer (1965). Litterer's model (Figure 3), (which is well described by Kast and Rosenzweig, 1970) is particularly helpful in describing the "mechanism" of perception. This perception influences subsequent behaviour. Information (e.g. accounting data) and the experience of the decision maker are inputs to the model. Decision makers select certain information from the voluminous information that is received. They interpret that information "based on (the) past experience and value system of each particular person" (Kast and Rosenzweig, 1970, p. 217). Finally, the decision maker "adds to the information input whatever seems appropriate in order to close the system and make it meaningful."

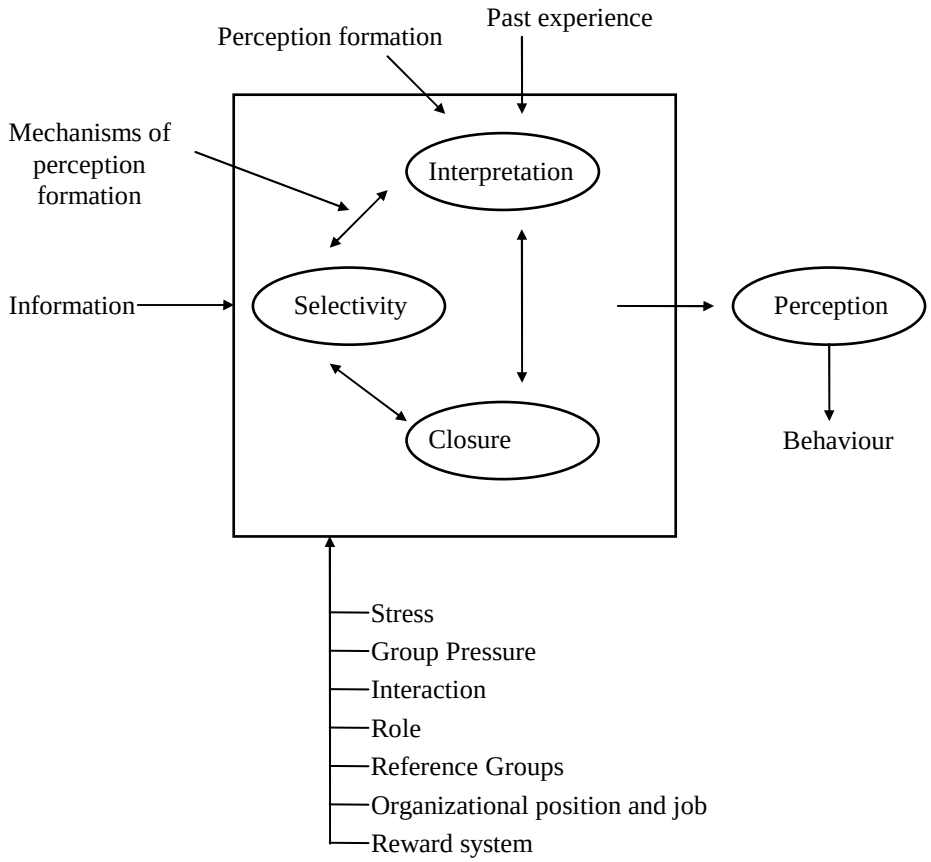
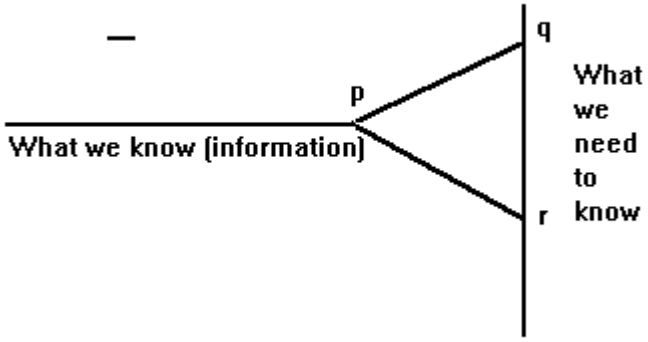


Figure 3: Litterer's Model of Perception Formation (Litterer, 1965, p.64)

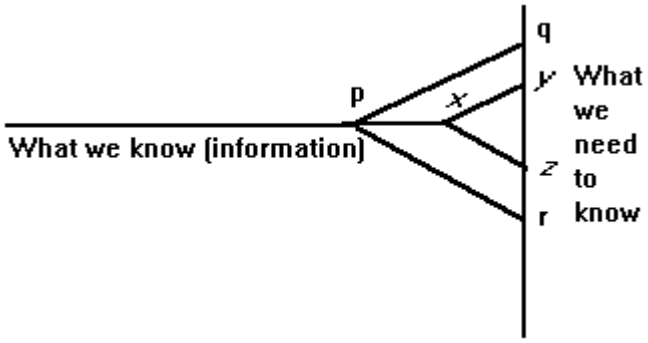
Some evidence supporting Litterer's model has been found in accounting and other areas. For example, Simon and Sumner (1968, p. 220) write of "the urge to find pattern" even where "one may well doubt whether a pattern exists (e.g. in the movements of the stock market)." The argument of Eggleton (1976 and 1982) can be inferred from the title of his paper *Patterns, Predictions and Prototypes*: that, in making predictions, decision makers faced with a broad range of information seek patterns of which central tendency and variability are "prototypical".

The notion that there is a need for closure finds echoes in Mack's definition of uncertainty which was introduced in Figure 1. This model is developed further in Figure 4a to argue that as more information is available, the need for inference or "closure" narrows. This finds a further development in the area of statistics. Gardenfors and Sahlin (1988, p. 4) describe deFinetti's representation theorem as follows: "even if two decision makers start out with widely different initial distributions . . . they will end up arbitrarily close to each other, if given sufficient time to experiment with the coin." Blackwell and Dubins (1962) model the "merging of opinions" that occurs as more information is made available to decision makers.

Such a phenomenon is outlined in a simplified form in Figure 4b: as more information is made available to the decision maker, the information "gap" narrows and the need for "closure" diminishes. As a result, increased information may lead, *ceteris paribus*, to a more shared view of the world.



a)



b)

Notes: a) When the level of information = p, decision-makers' "closure" and "intersubjective, social reality" = qr.

b) When the level of information = *x* (*x*>p), *ceteris paribus*, decision-makers' "closure" and "intersubjective, social reality" = *zy* (*zy*<qr).

Figure 4: Increased information and intersubjective, social reality

Gardenfors and Sahlin (1988, p. 4) develop this idea further: "even though deFinetti does not believe in `objective' probabilities, one could say that his representation theorem shows that everyone's subjective probability distribution would converge towards an intersubjective probability distribution if given more and more information about what the world is actually like." If, as Stamp (1980, p. 124) writes, "accounting is concerned with the representation of economic reality", increased information may lead to an intersubjective rather than an objective reality, to a firmer social rather than physical reality.

Not only does this echo Nurmi's inclusion of `unanimity' of information as a factor influencing its ambiguity, it is also somewhat similar to the consideration of objectivity in accounting. Mattessich (1978 and 1991) distinguishes between the social and physical realities created by accounting representation. Hines (1987) comments that "in communicating reality, we construct reality." She comments further, discussing the development of a conceptual framework (1991, p. 319), that such a framework requires an "objective, intersubjective" view of the world. Chambers (1964, p. 269), arguing that while the meaning of objectivity does include the elimination of biases, comments that "every personal judgment, measurement, statement, has its personal background - it is subjective." Borrowing from Popper (1961), Chambers continues that objectivity may be described as "intersubjective testability." Philosophers such as Husserl (1954) and Dummett (1978) have also emphasised the "social character of meaning" (Dummett, 1978, p. 424): that the search for an objective truth which is not acknowledged as such by others "would appear to involve the same fallacy as `they're all out of step but our Willie'".

This is not only of esoteric interest but is also, if explored further, of interest in the context of a market. An active market results from many factors: differences in wealth, preference, access to information but also from differences in opinion or perception. If the availability of information narrows such differences of opinion, what May and Sundem (1976, p. 760) term "aggregate market consequences" may also be affected. It seems to this author that this is an interesting theoretical proposition to pursue while considering the role and influence of accounting information in the context of uncertainty.

The accounting literature, uncertainty and the development of this research

There has been much work in the area of accounting, the use of accounting information and uncertainty. Two strands within that work are particularly useful in the development of this research: the search for accounting indicators of beta and the study of the use of accounting information, particularly information regarding uncertainty.

Some market-based studies of the contribution of currently disclosed information to the assessment of risk. These studies have focused in particular on the correlation between key indicators in financial statements and beta (e.g. Beaver, Kettler and Scholes, 1970; Farrelly, Ferris and Reichenstein, 1985 and Ferris, Hiramatsu and Kimoto, 1990). While interesting in the context of uncertainty and accounting, these studies indicate several ratios which are useful in assessing the risk of the reporting entity. These ratios have been used in the design of the research instrument discussed later.

The consideration of the decision impact of accounting information has been wide and varied. Some of this work has attempted to describe how financial analysts make decisions (e.g. Gooding, 1973 and 1975; Bouwman, Frishkoff and Frishkoff, 1987; Anderson, 1988 and Gniewosz, 1990). Other research has studied the reaction of users (in particular analysts and lenders) to accounting information, including new information and information concerning uncertainty (e.g. Libby, 1979a and 1979b; Chen and Summers, 1981; Abdel-Khalik, Graul and Newton, 1986 and Dados, Holt and Imhoff, 1986 and 1989).

A detailed discussion of this research is beyond the scope of this paper. This work within accounting has, however, assisted in the selection of the research method and in developing the structure of the research. In particular much research within the behavioural area uses an experimental approach. This research intends to use an experimental approach as this approach has been found to have value in behavioural science as well as in accounting, economics and finance. Intuitively, if one is assessing the behavioural interactions and information and decision makers, a controlled experimental approach would appear to be a useful one to test the hypotheses selected.

Hypotheses of the research

As a result of the issues arising from the exploration of the literature outlined, several hypotheses have been developed. The discussion of these hypotheses brings together the main conclusions drawn from the literature. These hypotheses are that increased accounting information in the context of uncertainty influences decision makers, affects their confidence and brings their inferences closer to one another.

The research also intends to assess whether these hypotheses differ between uncertain assets and uncertain liabilities. As a result, however, of evidence that decision makers react differently to gains than to losses and that such reactions differ in a personal and institutional context, it is not proposed to examine reactions to accounting gains and losses. The scenarios constructed will contain gains alone or losses alone.

The first hypothesis is based on the ASB's own definition of the quality of relevance in its draft Statement of Principles: "Information has the quality of relevance when it influences the economic decisions of users by helping them to evaluate past, present or future events or confirming, or correcting, their past evaluations" (ASB, 1995, para. 2.8). This definition makes the task of the researcher easier: what will be tested is that information regarding uncertainty influences decisions. Decisions using accounting information need not, of course, be right or wrong: there may be no objectively right or wrong decision. This has implications for the design of the research instrument and for the kinds of incentives offered which will be discussed later.

The second hypothesis draws on the notion of "subcertainty" in the behavioural literature. If ambiguity creates subcertainty, less ambiguity should create less subcertainty. The third hypothesis, which is central to the development of the research, arises from deFinetti's representation theorem and the issue of whether increased information concerning uncertainty in an accounting context contributes to a firmer intersubjective, social perception of the reporting entity. Again, this perception may or may not be `correct', the philosophical basis of the argument being that there may not necessarily be a `correct' or `incorrect' perception of the reporting entity.

HYPOTHESIS TESTING

The challenge that remains is to make the ideas and hypotheses developed to date concrete. This has been in many ways the most difficult part of the research and is where limitaitons of the research remain. The research requires that the level of uncertainty should be held constant while at the same time disclosure regarding such uncertainty should be increased in a controlled way. The resulting limitations and perhaps inevitable narrowing of the research which result create doubts regarding its value and validity. This section will deal with the search for a vehicle within which to test the hypotheses put forward as part of the research. The identification of limitations arising from potential approaches is part of that search, as are research designs that will minimise the limitations outlined.

Having explored broad and general issues in the research, the research must now find an apparatus within which to test those issues. "The urge to find pattern" found by Simon and Sumner also aptly describes the search for a framework within which to test uncertainty in the accounting context. This search initially set out to classify and characterise the manifestation of uncertainty in accounting. The influence of uncertainty on financial accounting has been classified in many ways including, for example, by Thornton (1983), Boritz (1990), Pope and Marshall (1991) and by the AICPA (1994). Boritz's classification, which is somewhat similar to that of the AICPA, is outlined in Figure 5.

Uncertainty of Business	**Nature of business operations**
	Management's motives & intentions
Information uncertainity	**Nature of financial statements**
	Limitations of financial statement measurement and disclosures

Figure 5: Classification of uncertainties (Boritz, 1990)

This classification is compelling as it mirrors Nurmi's characterisation of ambiguity as arising from randomness in the environment (business risk) and ambiguity in the presentation of that randomness (information risk). There are also many ways to reflect (i.e. recognise and/or disclose) such uncertainties in financial statements

and/or annual reports. These include proposals by Vatter (1965), ASOBAT (1966), Brief and Owen (1968, 1969), the AAA *Committee on Concepts and Standards - External Financial Reporting* (1973), Milburn (1988), Boritz (1990) and the AICPA (1994).

Several of these suggestions, while interesting, involve significant change in the way events are recognised, valued and presented in financial statements. The author has been conscious of the constraints of the current structure of financial statements and the need for any proposals to remain within those structures. This is critical from the point of view of understandability and acceptability. It also reflects the objective of standard-setters that change in accounting should be evolutionary rather than revolutionary. Concrete ways in which to reflect the uncertainties identified by Boritz have been developed by identifying suggestions within existing accounting standards and pronouncements. These include the accounting standards of the ASB, the Statement on Operating and Financial Review (OFR), the Cadbury Report, and the AICPA Statement of Position.

The OFR attempts to establish "a framework for the directors to discuss and analyse the business's performance and the factors underlying its results and financial position" (ASB, 1993, para 3). The AICPA Statement of Position suggests the disclosure of the nature of the operations of the reporting entity. These disclosures are disclosures of business risk, disclosures relating to the risks arising from the nature of business operations and management's motives and intentions. Examples of such disclosures are the launch of a new product with uncertain prospects, research and development expenditure, the entry or exit of a competitor from the market or the death a founding or key executive.

Developing sufficient disclosures that can be consistently applied in this context is problematic for various reasons. First, disclosure in such a broad context may take different forms: the framing of the disclosure, rather than the disclosure itself, may influence perception and behaviour. In particular, keeping the level of uncertainty constant while increasing the level of disclosure is difficult. Second, the link between such disclosures and particular elements of financial statements, with the future performance of the entity and with the share price is also not clear. Third, the disclosure of a product launch or withdrawal for example may itself have uncertain effects. Fourth, good news and bad news may have different potential: a product

launch has an unlimited effect on turnover while the effect of a product withdrawal is limited to the current turnover of that product. Finally, the OFR proposes (but does not require) that such uncertainties be disclosed within the annual report but not within the audited financial statements. Although the auditor may assess whether the information disclosed is not inconsistent with the financial statements, the disclosure is unaudited. This causes further `noise' in that the perception of the reliability of the information disclosed may depend on factors other than the disclosure. While none of these problems would lead one to avoid testing disclosure in this area, together they suggest that disclosure in the area is difficult to construct in a controlled way and that the link between such disclosure and perception is unclear and potentially affected by other variables.

Disclosure of `information risk'

Financial statements are a way of presenting the transactions of a reporting entity and their consequences. As products of an uncertain world, they are themselves uncertain. As standard-setters attempt to represent more faithfully the complexities of the uncertain world, the risk that financial statements themselves may become more ambiguous ('information risk') increases. That ambiguity affects financial statements, broadly, in two ways. First, the financial statements themselves are uncertain and, second, there is uncertainty regarding the recognition, measurement and disclosure of elements within the financial statements.

Disclosure concerning the uncertain nature of financial statements has been suggested by the AICPA *Statement of Position* (1994). This disclosure is shown in Figure 6. It is similar to disclosure contained in the Directors' Responsibility Statement. It is not the objective of the Directors' Responsibility Statement to disclose the nature of financial statements but to clarify the responsibilities of the directors concerning published financial statements. In doing so, however it does reveal that the financial statements are prepared based on "suitable accounting policies, consistently applied and supported by reasonable and prudent judgements and estimates" (Committee on the Financial Aspects of Corporate Governance, 1992, Note 12). Where accounting policies are the manifestation of accounting choice, this disclosure is the manifestation of the uncertainties resulting from accounting choice. This disclosure does not change the uncertainty surrounding financial statements: it merely reveals it.

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the reporting date and revenues and expenses during the reporting period. Actual results could differ from those estimates.

Figure 6: The disclosure of the Basis of Financial Statement Preparation (AICPA, 1994, p. 14)

It could be argued that sophisticated users of financial statements are aware that a `true and fair view' does not imply certainty. However, "to the man in the street . . . the words `true and fair' are likely to signify that the accounts give a true statement of facts. He will be likely to associate facts with `actual profit' and `actual values'" (Edey, 1971, p. 440). As part of the implementation of the research, it will be important and interesting to assess the level of sophistication and experience of the users involved and to compare the reaction to this disclosure from users with different levels of `sophistication'.

As well as suggesting the disclosure that financial statements are a product of estimates by management, both Boritz and the AICPA suggest that financial statements should provide sufficient disclosure of significant uncertainties to allow users to assess those uncertainties. The essential elements of uncertainty, writes Rescher (1983), are the uncertain chance of the realisation or occurrence of an event and the outcome of that event if realised.

That uncertainty is of such a dual nature is reflected in the ASB's draft Statement of Principles (ASB, 1995, para. 4.11) which states that "recognition is triggered where a past event [occurrence] gives rise to a measurable change [outcome] in the assets or liabilities of the entity." The ASB, in FRS 5 *Reporting the Substance of Transactions*, outlines in greater detail the criteria necessary to allow recognition of an asset or liability in financial statements:

> Where a transaction results in an item that meets the definition of an asset or liability, that item should be recognised in the balance sheet if;

(a) there is sufficient evidence of the existence of the item (including where appropriate, evidence that a future inflow or outflow will occur); and
(b) the item can be measured at a monetary amount with sufficient reliability.

Again the dual requirement of evidence of occurrence and outcome is evident.

As noted earlier, the ASB demands greater evidence for the existence of an asset than for the existence of a liability. This asymmetrical approach is also found in SSAP 18 *Accounting for Contingencies.* Applying only "to conditions existing at the balance sheet date, where the outcome will be confirmed only on the occurrence or nonoccurrence of one or more uncertain future events" (ASC, 1980, para. 1), the Standard requires recognition or disclosure based on uncertainty of occurrence as set out in Figure 7.

Outcome	**Likelihood of occurrence**	**Accounting treatment**
Loss	Virtually certain	Recognise
	Probable	Recognise
	Not probable but not remote	Disclose
Gain	Virtually certain	Recognise
	Probable	Disclose
Loss / gain	Remote	Do not recognise or disclose

Figure 7: SSAP 18 and uncertainty

The recognition of gains and losses hinges on considerations of whether those gains and losses are remote, possible or probable. Uncertainty of outcome is addressed by the requirement that, in the case of gains and losses, the gain or loss must be estimable with "reasonable accuracy" (ASC, 1980, para. 15). If the outcome is "inestimable", uncertain gains and losses which are not remote should be disclosed, but with no indication of the (inestimable) outcome.

That the occurrence of an event is `probable' comprises part of the recognition criteria of the AASB (1992), ASB (1995), CICA Handbook, IASC (1994) and part of the definition of assets of the FASB (1984 and 1985). FRS 5 (ASB, 1994) uses the phrase `most likely' in setting out how the substance of a transaction should be determined. Such definitions, in the words of Sterling (1985), connect a word (e.g. remote, possible or probable) with the uncertain occurrence of an event and then recognise or disclose the outcome of that event in the financial statements. However, "the available literature indicates that there is large variability in the mapping of phrases to numbers" (Budescu and Wallsten, 1985, p. 391). Research by Budescu and Wallsten (1985), Chesley and Wier (1985), Chesley (1986) and Larsson and Chesley (1986) suggests that "phrases are not as crisp as numbers": phrases are "imprecise", "vague", "fuzzy" (Budescu and Wallsten, 1985, p. 403) and, as Nurmi might write, ambiguous.

One of the objectives of the research is to assess differences between uncertain assets and liabilities. However, assets and liabilities are, for the most part, treated asymmetrically. Exceptions are when the potential occurrence of the event is remote or probable. Remote gains and losses are neither recognised nor disclosed. Probable gains and losses are recognised. The research at this stage intends to explore *remote* uncertainties as these, although they exist, are not reflected currently in financial statements. (Remote is defined by a CICA ED *Measurement Uncertainty* (CICA, 1993) as a probability of less than 15%.) Concerns regarding remote probabilities feature in the accounting literature but also, for example, in the medical law field. Thornton (1983) discusses the problem of `zero-infinity' risks: those having a chance of occurrence close to zero but an outcome with almost infinite consequences. These remote events need not currently be disclosed in financial statements although "remote percentages of risk lose their significance to those unfortunate enough to be 100% involved." (McCarthy J. in Walsh v. Family Planning Services Limited, The High Court of Ireland, 1987 No. 1053P)

The intention is, then, to construct experiments where there is a remote possibility of an event impacting on specified elements of the financial statements. The outcome of the remote event is inestimable. In one instance, this event would not be disclosed (as currently), while in other instances more information regarding this uncertain event and its outcome would be disclosed.

The form this revelation or disclosure of uncertainty might take is suggested in several recent pronouncements of the ASB, the CICA and the AICPA. The AICPA's *Statement of Position* suggests that financial statements should provide sufficient discussion of significant uncertainties to allow users to assess these uncertainties. The ASB in its draft Statement of Principles comments that uncertainty creates variability in outcome (if not doubts regarding occurrence). This variability can be reduced by a transaction price, a market-based measure or by measuring the value of a group of homogenous but not identical outcomes of which the outcome in question would be a part. If, however, such evidence is not available (i.e. if the outcome is inestimable) and

> where assets and liabilities are subject to uncertainty, simply reporting a singe amount may create an impression of certainty of outcome that may not in fact exist. Hence where effect of the uncertainty is potentially significant, clear disclosure of the degree of uncertainty surrounding the estimate is necessary. Such disclosure might include the significant assumptions used, the range of possible outcomes, the basis of measurement and the principal factors that affect what the outcome will be. (ASB, 1995, para. 4.42)

The CICA ED *Measurement Uncertainty* (CICA, 1993) contains the same suggestion. A similar disclosure set out by paragraph 24 of FRS 6 *Acquisition and Merger Accounting* provides more information concerning contingent or deferred consideration: "The nature of any deferred consideration should be stated including, for contingent consideration, the range of possible outcomes and the principal factors that affect the outcome." The additional disclosures of remote and inestimable events that comprises the research instrument will be based on these suggestions.

The research instrument

In assessing changes in assets and liabilities, their accounting treatment (as well as the level of probability which triggers them) should be symmetrical. Potential losses only (i.e. decreases in assets or increases in liabilities) are presented. The losses in assets and liabilities must both be (potentially though not actually) recognised in the profit and loss account of the year under consideration. The losses therefore concern current assets and current liabilities. Furthermore, the potential extent of

losses must be identical. The maximum potential decrease in an asset for example is limited to the amount at which the asset is stated in the balance sheet, while potential liabilities may be unlimited. A liability was therefore identified which could be "capped" so as to limit potential losses. Products sold under guarantee is considered to be such a liability. Sales worth £900,000 have been sold under guarantee. There is a remote possibility of the guarantees arising and, if they arise, the outcome is inestimable (although limited to £900,000). In the case of assets, stock worth £900,000 is potentially obsolete. There is a remote possibility of obsolescence and, if the stock is obsolete, the extent of the losses is inestimable (although limited to £900,000).

Each subject is given the profit and loss account and balance sheet for three years of five companies. Each company is approximately the same size. Each has a share capital of 1,000,000 £1 shares. They are all in the same sector (information technology). This sector was chosen as it is characterised by uncertainty and the scenarios of obsolete stock and sales under guarantee are appropriate to the sector. The financial structure of one of the companies (e.g. its profitability, liquidity and fixed asset levels) is based on a real company within the sector. The other companies are limited variations of that structure. Each company has different characteristics based on the ratios suggested to be indicative of accounting beta (i.e. growth, liquidity, gearing, earnings variability and earnings covariability). The P\E ratio of the sector, which comprises only the companies in whose financial statements are supplied, is given for each of the last two years but not for the current year.

Subjects are asked to assess the performance and position of each company (on a scale of 0 to 100) and also to advise on a buying price for each company. The task is framed in the form of advice to a client. This is to limit confounding factors such as personal wealth and risk attitude. Participants are also asked to indicate their confidence (on a scale of 0 to 100) in their assessment. The assessment of performance, position and share price will be used to examine the `relevance' of the disclosures and (the share price in particular) its contribution to an `intersubjective, social reality'. The level of confidence in the decision will indicate whether the disclosure affects `subcertainty'.

The research instrument is included in the Appendix to the paper. The limitations of the approach adopted will be discussed later.

The experimental design

Various experimental designs are discussed in a seminal article by Campbell (1957). A discussion of some of these designs, and their weaknesses, will illustrate the potential confounding variables in behavioural experiments and how they might be limited. Such a discussion will also serve to explain why the experiments of this research were designed as proposed.

One potential experimental design is a `one group pretest-posttest design'. This design would be as follows:

$$X_1 \quad O_1 \quad X_2 \quad O_2$$

where X_1 = no disclosure, X_2= (for example) the disclosure of the nature of financial statements and O_1 and O_2 = subjects' reaction respectively.

In constructing this type of experiment, the experimenter is attempting to assess the influence of X on the perceptions or behaviour of the decision maker. In this design, as Campbell points out (1957, p. 298), there are however several "extraneous variables left uncontrolled which . . . become rival explanations of any difference between O_1 and O_2 confounded with the possible effect of X". The most immediate of these is that the participant reacts purely to the fact of disclosure rather than to its from or content. Intuitively it would appear that most new disclosures would elicit a reaction and therefore appear relevant. Other effects include an "ordering effect" and a "demand effect". The first of these suggests that participants will be influenced by the order in which the disclosures are presented rather than the disclosures themselves. The second suggests that, by exposing participants to all the disclosures, they may discern the objective of the experiment and react accordingly.

A reaction to such limitations has been to conduct experiments over a period of time, to allow for example a period of months to elapse between X_1 and X_2. This gives rise to further confounding variables such as history, maturation and mortality. The first of these describes the potential effect of news (other than X) on the participants. Second, the participants may mature, becoming older, wiser, hungrier, more tired.

Third, some participants may not be available for various reasons for the later experiment. The latter two of these effects imply that, effectively, the group at X_1 may not the same group as at X_2. All of these confounding effects are compounded by the fact that the experiment proposed is not in two parts but in eight parts as follows:

$$X_1\ O_1\ X_2\ O_2\ .\ .\ .\ X_8\ O_8$$

where

X_1 = no disclosure

X_2= disclosure regarding the uncertain nature of financial statements

X_3= disclosure that there is a remote chance that stock may be obsolete with an inestimable outcome

X_4 = disclosure that there is remote chance of a liability for sales under guarantee with an inestimable outcome

X_5 = as X_3 with more disclosure regarding the remote chance of ` occurrence

X_6 = as X_4 with more disclosure regarding the remote chance of occurrence

X_7 = as X_5 with more disclosure concerning the inestimable outcome

X_8 = as X_6 with more disclosure concerning the inestimable outcome

and

$O_1\ .\ .\ .\ O_8$ = the respective responses to these disclosures.

A further limitation of the `one group design' specific to the accounting context is that a fundamental assumption of accounting is that accounting treatment and disclosure should be consistent. To vary disclosure across companies within the same group of participants is to violate that assumption.

These potential limitations would strongly suggest that a `between group design' should be used. This design would vary the disclosures presented to participants between groups instead of within groups. Hence, the first group (the control group) would receive the five sets of financial statements with no disclosure, the second group would receive the five sets of financial statements with the disclosure of the uncertain nature of financial statements and so on. This approach is not without its limitations. The most significant of these is the question of whether differences

between the reactions of the groups are due to differences between groups rather than the disclosures themselves.

Campbell and others (e.g. Donaldson and Suppes, 1957 and Forcese and Richer, 1970) suggest that this confounding factor may be limited by the random allocation of participants to each group and by having large enough groups that individual differences will be diluted. In such a specific context as accounting, however, further steps are proposed to ensure that differences between groups are not significant. Of crucial importance in this experiment are the participants' ability to use accounting information (the aptitude of the participants) and the participants' *ex ante* perception of the reliability of accounting information (the attitude of the participants). Two tasks have been designed to assess whether the aptitude and attitude of the participants in each group is not significantly different and to allow conclusion to be drawn based on the responses of each group. The first of these asks a set of multiple choice questions to assess the aptitude of participants. The second elicits participants attitude to the reliability of various elements of financial statements. Both of these tasks will be performed before the experiments themselves. As a result, care has been taken to construct tasks which are general in nature (for example, with one exception not asking for the use of ratios) so that participants are not subsequently led in a particular direction by the tasks assigned. The tasks are also designed to be sensitive enough to distinguish between sophisticated and unsophisticated participants.

The proposed experimental design is as follows:

$$
\begin{array}{l}
A \;\; X_1 \;\; O_1 \\
A \;\; X_2 \;\; O_2 \\
A \;\; X_3 \;\; O_3 \\
A \;\; X_4 \;\; O_4 \\
A \;\; X_5 \;\; O_5 \\
A \;\; X_6 \;\; O_6 \\
A \;\; X_7 \;\; O_7 \\
A \;\; X_8 \;\; O_8
\end{array}
$$

where A = the allocation of participants to groups

and $X_1 \ldots X_8$ and $O_1 \ldots O_8$ are as outlined earlier.

The disclosure evolves from no disclosure (as currently) to disclosures which include disclosures proposed in a general context (e.g. by the AICPA and the ASB) or in specific context (by the ASB in FRS 6). The level of uncertainty does not change: it is merely revealed. The financial statements are as uncertain in each disclosure, the second disclosure merely reveals that this is so. The uncertain events are always remote (and therefore not currently disclosed) and inestimable, further disclosure merely reveals the basis on which judgment is made.

It is intended to have 35 to 40 participants in each group (i.e. up to 320 participants) comprised mainly of graduates of masters and undergraduate programmes in DCU over the past 3 years and current students of the later years of such programmes. All participants will be asked to supply personal and professional details such as age, qualifications, employment, experience and exposure to financial statements. (The data will be explored for differences arising due to these factors.) The experiments will take place at the same time, though in different locations. Responses will be anonymous. It is also intended to collect a small number of `protocols' from participants indicating their reaction to the experimental disclosures, their decision processes and their assessment of the realism of the information.

The research instrument and experimental design have been pilot-tested with a group of approximately 100 undergraduates specialising in accounting. The experiments were discussed with the group as a whole and, subsequently, with a focus group drawn from the class. While full results of the pilot-test are not yet available, feedback obtained has been very positive. The comments of the group concerning the understandability of the information disclosed, the range of attributes of the five companies and the structure of the tasks have been particularly encouraging. The final design of the research instrument will be carefully considered in the light of the comments obtained from the pilot and focus groups.

One final consideration in the experimental design is the need to provide incentives. Experiments carried out by behavioural scientists, for example, do not place a great emphasis on the need for incentives. The areas of economics and finance (e.g. Thaler, 1987; Roth, 1988; Thaler and Johnson, 1990) however, recently emphasise the need for incentives to render the experimental process more realistic, with the caveat that no incentive schemes are better than inappropriate ones.

In the context of these experiments, two issues are worthy of consideration. The first of these is that central to the thinking of the research is that there is not necessarily an objective reality, a right answer. To indicate otherwise to subjects by rewarding `right answers' is to undermine that thinking, to mislead participants and, perhaps, to re-establish the demand effects discussed earlier. Second, the work of MacCrimmon and Wehrung (1986), March and Shapira (1992) and Steil (1993) suggests that incentive mechanisms in organisations are complex and various and that behaviour in organisations is influenced by such incentives and targets. Such incentive mechanisms would be costly and difficult, if not impossible, to replicate in an experimental setting. It is intended to make incentives available to participants to encourage their earnest participation in the experiments. The incentives, however, will be available to those who participate fully in the experiments and will not be based on `adequate', `satisfactory' or `correct' responses. Participants who participate fully will be entered in a lottery where there will be a 1 in 10 chance of winning prizes ranging from £100 to £10.

Limitations of the research design

Having embarked on research in the general area of accounting and uncertainty, the manifestation of this research is relatively narrow. The strength of experimental research is the level of control which can be exercised. This is also its weakness as, very often, the exercise of such control requires a narrow focus. This leads to several limitaitions regarding the manner in which the research has developed. The discussion of these limitations is not exhaustive but discusses the broader concerns with the research as proposed.

The first of these is with regard to the financial statements supplied to participants. One of the aims of recent accounting standards has been to encourage a focus on a broad range of information available within financial statements. Users (and students) are encouraged to take a broad, non-myopic view of financial statements. Surveys by, for example, Lee and Tweedie (1977 and 1981) and Arnold and Moizer (1984) have found that users do not rely simply on the profit and loss account and balance sheet. Yet the research instrument proposed provides only a profit and loss account and balance sheet and the selected disclosures. Little background information and no annual report is provided.

Much of the previous accounting work which has used experiments has taken this approach (e.g. Libby, 1978 and 1979; Elias, 1972; Hendricks, 1976 and Chen and Summers, 1981). It is almost like establishing a bridgehead on a narrow front before moving beyond to a broader battlefield. Litterer suggests that decision makers perceive information by selecting from the broad information set. The experience of the decision maker, for example, influences this selection. The broader the information set that is provided, therefore, the greater the variation that may occur not because of the information itself, but because of its variety and the experience of the decision makers. By focusing on a narrow information set, the potential for variations in selection mechanisms to confound the process is limited. This does not necessarily mean that the research necessarily ends having established a bridgehead: having found that the bridgehead is tenable, the research may then expand beyond the limited frontier.

Second, the disclosure of additional information exposes participants to information of a nature and in a form possible not seen by them before. Birnberg (1976) and Chang and Birnberg (1977), for example, comment that additional disclosures may lead to `information overload' and `functional fixation'. Thaler (1987) argues on the other hand that users do not in fact have the opportunity to learn. They are instead sporadically exposed to new information which they are expected to understand without necessarily having the time to absorb and learn its significance. Furthermore, the research does not concern itself with changes in accounting treatment which has been the subject of numerous other pieces of research in accounting. It simply involves the disclosure of new information. The feedback from the pilot group (who would not be more sophisticated than the participants of the actual experiments) indicates that the information disclosed is not difficult to understand or apply.

A third issue concerns the nature of the disclosures. One wonders whether the research has become concerned with accounting for remote and inestimable contingencies rather than with uncertainty in general. Uncertainty affects financial statements in many ways. The exclusion of business risks and the focus on the uncertain nature of financial statements and remote contingencies represents a significant narrowing of the research. However, having decided to focus on proposals that are in the domain of current standard-setting, the means of making the hypotheses outlined concrete becomes narrower. Furthermore, perhaps the

focus should be on the end rather than the means: the research instrument is simply a way (and not the only way) of testing the hypotheses outlined. The research then becomes indicative and not definitive. Having described the world as a complex and change place which accounting struggles to reflect, perhaps research also can only capture a corner of the confusion.

CONCLUSION

Pervading the research is an attempt to illuminate rather than eliminate uncertainty. The uncertain context of accounting creates the need for subjectivity. The research mentioned the work of deFinetti in developing its hypotheses. DeFinetti (1964, p. 147) argued that "when one pretends to eliminate the subjective factors one succeeds only in hiding them . . . but never in avoiding a gap in logic." The paper suggests that uncertainty is the gap between what we know and we need to know and that such uncertainty creates `subcertainty' and a reluctance to act: Russell writes in the *History of Western Philosophy* (1961) that modern philosophy's main task is to teach man to live without certainty and yet not be paralysed by hesitation. Perhaps this should also be the task of accounting: not to eliminate uncertainty but to help users of accounting information "cope with the new rates of change" (Peters, 1989, p. 27).

APPENDIX

THE RESEARCH INSTRUMENT

Company: ___ (Office use only)

PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Turnover	10,858	11,752	**12,692**
Operating profit	2,794	2,993	**3,171**
Interest payable	0	0	**0**
Profit on ordinary activities before taxation	2,794	2,993	**3,171**
Taxation	616	678	**787**
Profit on ordinary activities after taxation	2,178	2,315	**2,384**
Dividends paid	100	120	**140**
Profit retained for year	2,078	2,195	**2,244**
Retained at beginning of year	4,087	6,165	**8,360**
Retained at end of year	6,165	8,360	**10,604**

BALANCE SHEET AT 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Fixed assets	2,865	3,408	**3,934**
Current assets			
Stock	2,301	2,926	**3,273**
Debtors	2,347	2,908	**3,441**
Cash at bank and in hand	1,305	2,221	**2,923**
	5,953	8,055	**9,637**
Creditors < 1 year	1,653	2,103	**1,967**
Net current assets	4,300	5,952	**7,670**
Creditors > 1 year	0	0	**0**
	7,165	9,360	**11,604**
Capital and reserves			
Ordinary share capital	1,000	1,000	**1,000**
Profit and loss account	6,165	8,360	**10,604**
	7,165	9,360	**11,604**

Company: ____(Office use only)

PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Turnover	11,548	11,656	**11,842**
Operating profit	2,656	2,681	**2,831**
Interest payable	283	271	**308**
Profit on ordinary activities before taxation	2,373	2,410	2,523
Taxation	293	217	**319**
Profit on ordinary activities after taxation	2,080	2,193	2,204
Dividends paid and proposed	55	55	**65**
Profit retained for year	2,025	2,138	**2,139**
Retained at beginning of year	2,963	4,988	**7,126**
Retained at end of year	4,988	7,126	**9,265**

BALANCE SHEET AT 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Fixed assets	2,578	2,930	**3,202**
Current assets			
Stock	3,103	3,937	**5,264**
Debtors	2,837	3,653	**4,948**
Cash at bank and in hand	719	1,103	**1,609**
	6,659	8,693	**11,821**
Creditors < 1 year	2,358	2,681	**3,541**
Net current assets	4,301	6,012	**8,280**
Creditors > 1 year	891	816	**1,217**
	5,988	8,126	**10,265**
Capital and reserves			
Ordinary share capital	1,000	1,000	**1,000**
Profit and loss account	4,988	7,126	**9,265**
	5,988	8,126	**10,265**

Company: ____(Office use only)

PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Turnover	11,084	10,308	**9,587**
Operating profit	2,788	2,093	**1,647**
Interest payable	219	223	**175**
Profit on ordinary activities before taxation	2,569	1,870	**1,472**
Taxation	477	420	**360**
Profit on ordinary activities after taxation	2,092	1,450	**1,112**
Dividends paid and proposed	150	200	**250**
Profit retained for year	1,942	1,250	**862**
Retained at beginning of year	1,397	3,339	**4,589**
Retained at end of year	3,339	4,589	**5,451**

BALANCE SHEET AT 31 DECEMBER

	1993	1994	**1995**
	£'000	£'000	**£'000**
Fixed assets	2,836	2,789	**2,786**
Current assets			
Stock	2,593	3,003	**3,192**
Debtors	2,425	2,844	**2,910**
Cash at bank and in hand	258	145	**128**
	5,276	5,992	**6,230**
Creditors < 1 year	2,157	1,994	**2,074**
Net current assets	3,119	3,998	**4,156**
Creditors > 1 year	1,616	1,198	**491**
	4,339	5,589	**6,451**
Capital and reserves			
Ordinary share capital	1,000	1,000	**1,000**
Profit and loss account	3,339	4,589	**5,451**
	4,339	5,589	**6,451**

Company: ____(Office use only)

PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Turnover	10,668	10,713	**10,852**
Operating profit	1,340	1,339	**1,356**
Interest payable	242	324	**327**
Profit on ordinary activities before taxation	1,098	1,015	**1,029**
Taxation	133	105	**110**
Profit on ordinary activities after taxation	965	910	**919**
Dividends paid and proposed	50	50	**50**
Profit retained for year	915	860	**869**
Retained at beginning of year	996	1,911	**2,771**
Retained at end of year	1,911	2,771	**3,640**

BALANCE SHEET AT 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Fixed assets	2,167	2,485	**2,674**
Current assets			
Stock	4,482	4,824	**5,199**
Debtors	3,248	3,638	**4,042**
Cash at bank and in hand	0	0	**0**
	7,730	8,462	**9,241**
Creditors < 1 year	5,238	5,373	**5,438**
Net current assets	2,492	3,089	**3,803**
Creditors > 1 year	1,748	1,803	**1,837**
	2,911	3,771	**4,640**
Capital and reserves			
Ordinary share capital	1,000	1,000	**1,000**
Profit and loss account	1,911	2,771	**3,640**
	2,911	3,771	**4,640**

Company: ____(Office use only)

PROFIT & LOSS ACCOUNT FOR THE YEAR ENDED 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Turnover	4,452	8,932	**13,454**
Operating profit	672	1,924	**3,410**
Interest payable	193	360	**415**
Profit on ordinary activities before taxation	479	1,564	**2,995**
Taxation	168	563	**989**
Profit on ordinary activities after taxation	311	1,001	**2,006**
Dividends paid	0	50	**100**
Profit retained for year	311	951	**1,906**
Retained at beginning of year	507	818	**1,770**
Retained at end of year	818	1,770	**3,676**

BALANCE SHEET AT 31 DECEMBER

	1993	*1994*	***1995***
	£'000	£'000	**£'000**
Fixed assets	1,658	2,408	**3,534**
Current assets			
Stock	1,015	2,657	**3,591**
Debtors	927	2,084	**3,487**
Cash at bank and in hand	0	12	**89**
	1,942	4,753	**7,167**
Creditors < 1 year	846	2,150	**2,855**
Net current assets	1,096	2,603	**4,312**
Creditors > 1 year	936	2,241	**3,170**
	1,818	2,770	**4,676**
Capital and reserves			
Ordinary share capital	1,000	1,000	**1,000**
Profit and loss account	818	1,770	**3,676**
	1,818	2,770	**4,676**

DISCLOSURE TO AND EXPERIMENTAL TASK FOR GROUP 1 (CONTROL GROUP)

My assessment of the financial position of the company at 31 December 1995 is (mark a point on the scale):

(Financial position includes the economic resources the company controls, its financial structure, its liquidity and solvency, and its capacity to adapt to changes in the environment in which it operates.)

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100
Poor					Average					Excellent

My level of confidence in this assessment is (mark a point on the scale):

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100
Very unsure					Average					Very confident

The price at which I would advise a client to buy a share in this company is (please identify a particular price and not a range):

_____

My level of confidence in this advice is (mark a point on the scale):

I	I	I	I	I	I	I	I	I	I	I
0	10	20	30	40	50	60	70	80	90	100
Very unsure					Average					Very confident

DISCLOSURE TO GROUP 2

Extract from the audited financial statements at 31 December 1995:

The preparation of financial statements in conformity with generally accepted accounting principles requires the Directors to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amount of revenues and expenses during the reporting period. Actual results could differ from those estimates.Extract from the audited financial statements at 31 December 1995.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 3

Extract from the audited financial statements at 31 December 1995:

Some sales of the Company have been made under guarantee (1994: none). The Directors are unable to estimate the ultimate cost of these obligations. The likelihood that a claim will be made against the Company in respect of these guarantees is remote. The estimated cost of fulfilling the Company's obligations if all guarantees were claimed would not exceed approximately £900,000. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of the guarantees.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 4

Extract from the audited financial statements at 31 December 1995:

Stock at 31 December 1995 includes finished goods costing approximately £900,000 which may be obsolete (1994: none). The Directors are unable to estimate the net realisable value of this stock. The likelihood that this stock is obsolete is remote. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of this stock.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 5

Extract from the audited financial statements at 31 December 1995:

Some sales of the Company have been made under guarantee (1994: none). The Directors estimate that the likelihood of a claim being made is remote. The cost of claims under guarantees are normally between 35% and 65% of the total obligation. The estimated cost of fulfilling the Company's obligations if all guarantees were claimed would not exceed approximately £900,000. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of these guarantees.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 6

Extract from the audited financial statements at 31 December 1995:

Stock at 31 December 1995 includes finished goods costing £900,000 which may be obsolete (1994: none). The Directors estimate that the likelihood that this stock is obsolete is remote. The net realisable value of obsolete stock is normally between 35% and 65% of cost. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of this stock.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 7

Extract from the audited financial statements at 31 December 1995:

Some sales of the Company have been made under guarantee (1994: none). The estimated cost of fulfilling the Company's obligations under guarantees would not exceed £900,000. No claims have yet been made against the Company and, on the basis of past experience, the likelihood of a claim being made is between 5% and 8%. The cost of claims under guarantees are normally between 35% and 65% of the total obligation. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of these guarantees.

Note: The experimental task for this group is identical to that for Group 1.

DISCLOSURE TO GROUP 8

Extract from the audited financial statements at 31 December 1995:

Stock at 31 December 1995 includes finished goods costing £900,000 which may be obsolete (1994: none). The Directors estimate that the likelihood that this stock is obsolete is between 5% and 8%. The net realisable value of obsolete stock is normally between 35% and 65% of cost. In the light of the uncertainties outlined, no provision has been made in the financial statements in respect of this stock.

Note: The experimental task for this group is identical to that for Group 1.

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