

**Producing Accounts:**  
**Finitism, Technology and Rule-Following**

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'[Finitism's] core assertion is that proper usage is developed step by step, in processes involving successions of on-the-spot judgements. Every instance of use, or of proper use, of a concept must in the last analysis be accounted for separately, by reference to specific, local, contingent determinants. Finitism denies that inherent properties or meanings attach to concepts and determine their future correct applications' (Barnes 1982, 30).

'[N]othing in the rule itself fixes its application in a given case' (Barnes 1995, 202).

An important theme in the work of Barry Barnes has been ‘finitism’. The theme emerged from Barnes’s work in the sociology of science, and in particular from his engagement with the philosophy of science of Mary Hesse (1974), and first became clear when Barnes made explicit the finitist aspects of the work of T.S. Kuhn (Barnes 1982). Subsequently, Barnes built finitism into the core of his approach to social theory and to the analysis of social order, for example elaborating Wittgenstein’s famous account of rule-following.

In this chapter, I will argue that Barnes’s finitism throws light on a domain quite different from that in which it was developed: accounting, and specifically financial reporting. Many of the relevant phenomena are familiar to practising accountants and to researchers on accounting, but this chapter suggests that finitism has the virtue of *systematically* making them salient. It argues that the distinction between finitism and the theory of meaning to which it is opposed – extensional semantics – helpfully clarifies fundamental issues to do with accounting.

After this short introduction, a second section of this chapter briefly recaps the main tenets of finitism, and gives a couple of simple illustrations of their application to rule following. The third section argues, very briefly, that finitism offers an appropriate viewpoint from which to analyze financial reporting. The more extensive fourth and fifth sections illustrate the analysis by drawing on an empirical case study of accounting and financial reporting in a U.K. mid-market company. The sixth section is the chapter’s conclusion.

### ***Finitism and Rule-Following***

From the viewpoint of this paper, finitism is best seen as a theory of the application of terms to instances or particulars. Consider a term ‘A’, which could be an everyday word such as ‘walk’ or ‘red’; a mathematical term such as ‘converge’ or ‘polyhedron’ (Lakatos 1976); or an accounting term such as ‘depreciate’, ‘asset’ or ‘finance lease’.

An apparently common-sense view of the application of terms to instances is to conceive of terms as having fixed meanings. Once we have decided, individually or collectively, what a term means, then the infinite universe of entities, processes, activities, states of affairs and other particulars is divided up into instances of A and of not-A: red entities and entities that are not red; walking and activities that are not walking, such as running; polyhedra and entities that are not polyhedra; purchases of capital assets and activities that are not purchases of capital assets; ‘finance leases’ and states of affairs that are not ‘finance leases’ such as operating leases,<sup>1</sup> and so on. Although many people hold this view of meaning quite informally, it is known technically as ‘extensional semantics’. A term’s ‘extension’ – the ‘set of things of which it is true’ (Barnes 1982,

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<sup>1</sup> A lease can be in effect a way of borrowing money to buy an asset, and regulators have been concerned that such leases – ‘finance leases’ – appear on a corporation’s balance sheet and so enter into calculations of the extent of a corporation’s borrowing and the level of return on its assets. See IAS [International Accounting Standard] 17, ‘Leases’ (IASB 2005, 887-914).

31) – is fixed in advance of usage of the term. It may sometimes be difficult to determine whether a newly-encountered particular is an instance of A or not, but if extensional semantics is correct the difficulty is merely empirical.

In contrast, finitism denies that the universe of all the instances or particulars that may ever be encountered should be thought of as divided into instances of A and of not-A. All we ever have – as individuals or as an entire culture – is a finite set of past applications of ‘A’ to particulars. When a new particular is encountered, the difficulty is more than the empirical one of determining its properties: we need to decide whether it is sufficiently like the previous particulars we have classed as A to warrant that classification. No two empirical entities or activities are ever entirely identical; there are always differences between them that could be pointed to as well as similarities; ‘every situation is in detail different from every other’ (Hesse 1974, 12).

Extensional semantics and finitism are neatly summarized by Barnes in the diagram I have reproduced as figure 1. Note that finitism goes beyond the assertion that meanings are social conventions; that assertion is entirely compatible with the extensional-semantics view that once the meaning of ‘A’ is chosen the instances to which it correctly applies are then fixed. Rather, in a finitist perspective every application of a term to an instance is implicitly a decision. Not only is the extent of similarity to previous particulars classed as A always in principle contestable, but

those previous instances are always revisable: we may decide that one or more previous applications of 'A' were mistaken.

Of course, applications of a term frequently do not feel like decisions. Often, our sense of analogy with previous instances of 'A' is overwhelming, and we feel that this object just *is* red; that figure is plainly not a polyhedron; this expenditure is obviously an expense, not purchase of an asset; that transaction is clearly a finance lease not an operating lease. Finitism in no sense denies the prevalence of such instincts, without which the smooth functioning of accounting or any other practice would be impossible. It does, however, assert that they can be analyzed without appeal to the 'intrinsic meaning' of the term in question. Training and habit, for example, are powerful sources of classificatory instincts.

An area in which finitism is of particular importance – both in social theory (Barnes 1988 and 1995) and in the case of accounting – is following a rule. According to finitism, the application of a rule to a specific situation is always in principle problematic, just as the application of a term to a particular is problematic. Consider, for example, the sixth commandment, 'Thou shalt not kill'. It seems a straightforward enough prohibition, but consider its application to enemy soldiers, enemy civilians (as 'collateral damage'), terminally ill people in great pain who have expressed a wish to die, human foetuses, animals (in experiments), animals (for food), and so on. What the commandment implies for each of these has been the object of fiercely varying instincts.

Murder may seem too easy a case with which to illustrate rule-finitism, but consider a harder case: chess. It is around a millennium old, so humanity has had plenty time to refine the rules of chess, and it lacks not just murder's moral and legal load but also its real-world complexities. Chess is a 'micro world' (see, e.g., Collins 1990): a limited, artificial domain, deliberately stripped of ambiguity, one that has, for example, been relatively easy to automate. Here, surely, we should find rules to which extensional semantics applies.

Consider, though, the puzzle reproduced in figure 2. White, to play, must deliver checkmate in a single move. Even the best of chess players could stare at this puzzle for many hours and not see how to solve it. The solution is that white moves its most advanced pawn to the eighth rank and replaces it with the rook that currently blocks the diagonal from the white bishop to the black king. The latter is thus exposed to check, and has no flight square: the rook controls the eighth rank. It is checkmate.

Any chess player will very likely respond that the 'solution' is not a legal move: it is contrary to the rules of chess. Consider, however, the pawn-promotion rule as it stood in the *Laws of Chess* in May 2005: 'When a pawn reaches the rank furthest from its starting position it must be exchanged as part of the same move for a queen, rook, bishop or knight of the same colour' (FIDE

2005a, rule 3.7.e). The solution to the puzzle is, surely, a reasonable interpretation of what it is to ‘exchange’ the pawn for a rook.

Indeed, in the summer of 2005 the rule was changed with the apparent aim of blocking this interpretation. The word ‘new’ was added, so it now reads ‘exchanged ... for a *new* queen, rook ...’ (FIDE 2005b, rule 3.7.e, emphasis added). However, the solution to the puzzle might still under some circumstances be argued to be allowable. Imagine the game is being played with an old wooden set, but that some pieces have been lost and the white rook currently on the board is a modern plastic replacement. Is that not ‘a new ... rook’? One can, of course, imagine a rule of interpretation being added to the laws of chess to specify what ‘new’ means in the context of the pawn-promotion rule. If finitism is correct, though, we would simply be entering a regress, for the rule of interpretation would itself contain terms that stand in need of interpretation.

At first sight, the finitist analysis of rule-following may appear to be a recipe for anarchy. Not so. Chess does not degenerate into chaos because moves akin to the puzzle’s ‘solution’ can, given sufficient imagination, be made out to be compatible with its rules. The puzzle is artificial: the mental habits of the experienced chess-player are such that a move analogous to the ‘solution’ would never be considered. If a player in a chess tournament made a move like the ‘solution’, he or she would be regarded by other players as ignorant, cheating or possibly even mad. Should a position similar to figure 2 arise in a game against a computerized chess program, it would be

impossible to input the ‘solution’, at least unless one had access to the program code and had the skills to modify it. As we shall see, factors such as these – experience and habit; the constraints that arise from other people; and the constraints that arise from things – are also important in making accounting the orderly process that it largely is.

### ***Finitism and Accounting***

The relevance of finitism to the analysis of accounting has been argued at length elsewhere (Hatherly, Leung and MacKenzie forthcoming), so let me summarize briefly. A fundamental process in bookkeeping and accounting is applying a term to a particular such as a transaction, an event or an entity (that is, determining what kind of particular it is, which often takes the concrete form of assigning a code from an organization’s ‘chart of accounts’: see figure 3), and ‘measuring’ it by assigning to it a numerical, normally a monetary, value. Such ‘primary’ acts of classification and measurement are the foundation of accounting: there is a sense in which everything else is built on top of them.

Measurement is ‘the process of determining the monetary amounts at which the elements of the financial statements are to be recognised and carried in the balance sheet and income statement’. Plainly, it ‘involves the selection of the particular basis of measurement’ (IASB 2005, 50). Classification is at least as consequential. For example, if an item is bought, the transaction needs classed either as an expense (in which case the expenditure is a direct deduction from a

corporation's income for the corresponding period) or as purchase of a capital asset, in which case it becomes an entry into the corporation's balance sheet, and is set against income only gradually, in the form of depreciation.<sup>2</sup>

The application of accounting terms to particulars cannot be made arbitrarily. In all developed countries, the acts of classification and measurement that generate a corporation's balance sheet, income statement and cash-flow statement are tightly rule-bound and regulated. For example, listed companies in the U.K. and other countries in the European Union have to follow the 2,000 pages of International Financial Reporting Standards (IFRSs<sup>TM</sup>) and International Accounting Standards (IASs) set by the International Accounting Standards Board (IASB 2005), while their counterparts in the U.S. have to follow similar but even lengthier standards laid down by the Financial Accounting Standards Board.<sup>3</sup>

The prominent role of standards in accounting and financial reporting makes the finitist analysis of rule-following relevant. Accounting standards are typically a mixture of 'rules' and

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<sup>2</sup> 'An asset is not recognised in the balance sheet when expenditure has been incurred for which it is considered improbable that economic benefits will flow to the entity beyond the current accounting period. Instead such a transaction results in the recognition of an expense in the income statement' (IASB 2005, 49).

<sup>3</sup> See [www.fasb.org](http://www.fasb.org).

higher-level ‘principles’ (along with supplementary material such as definitions, explanations, worked examples, interpretations, and so on). The European standards, for example, use bold type to identify principles. The distinction between a ‘rule’ and a ‘principle’ is an interesting and important one. However, for reasons of space the discussion that follows will not distinguish systematically between the two: the basic rule-finitist argument – that a rule in itself does not determine how it is to be applied to any given situation – is equally applicable to a principle.

### ***An Accounting System***

To investigate empirically how finitism might apply to accounting, I conducted a small empirical case study of accounting in a U.K. mid-market listed company. I interviewed half of the members of its small finance department, and also its warehouse and logistics manager and its vice-president for information services. Each interview was around 90 minutes long, and all interviews were tape-recorded and transcribed in full. The chief financial officer (CFO), who plays the most central role in the firm’s accounting, was interviewed twice. Because they are clearly an important audience for financial reports, I am also beginning a small set of interviews with auditors not connected to the case-study firm, and this is drawn on in a very limited way (I hope these interviews will indirectly permit me to address the issue of typicality discussed below).

The case study was thus interview-based rather than observational. However, each interview at the case-study firm was conducted in the office or at the desk of the member of staff

being interviewed, and I asked the interviewees responsible for data entry into the firm's computer system to show me on their screens what they did and how, and also to show me examples of the many paper documents that also play an important role.

It is, of course, a limited case study, and may not be typical. Most obviously, the very act of permitting me detailed access demonstrates the firm's confidence in the probity of its accounting. Its auditors shared this confidence: they had made no adjustments at all to its draft accounts in the previous three years. It is also noteworthy that the degree of automation of the firm's business activities was high. All its main commercial activities are coordinated, planned and tracked using a unified relational<sup>4</sup> database – an Enterprise Resource Planning (ERP) system – and much of its accounting is done using the ERP system's accounting subsystem. The application of the ERP system was clearly successful: although interviewees spoke frankly, and sometimes noted features of the system that were awkward or that they wished it had, I encountered none of the bitter complaints of unusability recorded, for example, in Button and Harper (1993). The resultant efficiency of its accounting helps explain how a firm with a mid-market valuation can operate with a finance department of limited size.

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<sup>4</sup> 'Relational' databases, introduced from the 1970s onwards, eliminated many of the technical restrictions in earlier hierarchical database design. In a relational database, '[a]ny table can be accessed directly without having to access all parent objects ... any tables can be linked together, regardless of their hierarchical position' (Powell 2006, 9).

Let me begin with the work of the accounts administrator I interviewed. She and her colleagues do the firm's bookkeeping. As already noted, this is done using the accounting module of the ERP system, although the traces of accounting's pre-electronic past are still there in the terminology used for the relevant parts of the relational database: 'purchase ledger', 'general ledger', and so on. As I sat with the administrator, she processed an electricity bill the firm had just received, applying to it the chart-of-accounts category 'Heat & Light – Electricity'. She did not need to ponder whether this was the correct classification, and she knows the appropriate code (86101) by heart. Measurement was equally straightforward: she simply entered the total stated on the bill into the appropriate box on the ERP screen. However, even this most 'obvious' of primary acts of classification and measurement occasionally gives rise to a problem. Because value added tax (VAT) can be reclaimed, a record is maintained in the database of the amounts of VAT that have been paid. The ERP system automatically applies the prevailing rate of VAT to calculate the component of the electricity bill that is VAT. Sometimes, though, that number is not exactly the same as the VAT amount stated on the bill, presumably because of differences in rounding algorithms. If that happens, the accounts administrator manually adjusts the number in the ERP system so that it is the same as on the bill.

Other acts of assigning terms to particulars are less obvious than applying the code for 'Heat and Light – Electricity' to an electricity bill. The administrator showed me an expenses

claim she had just received from one of the firm's employees. Colleagues from overseas branches of the firm had been visiting, and he had classed the payment for the dinner he had had with them as 'business entertainment', corresponding to the chart-of-accounts code 62101 (see figure 3). The expenses claim was entirely legitimate, but the administrator told him she was going to change the classification. For his original classification to be valid, external customers would have had to be present, but she knew that those present had all been employees.

A particular classificatory decision that has to be made by the accounts administrator, her colleagues and the financial controller (who sits at a nearby desk, is responsible for all day-to-day transactions, and is consulted on instances where the appropriate classification is not apparent) is whether a transaction is an expense or purchase of an asset. (As noted, the subsequent accounting treatment of the two will be quite different.) In the case of large purchases, which need higher-level approval, the decision will already have been made: an appropriate meeting will formally have approved a proposed transaction as purchase of a fixed asset. At other times, the decision is taken more informally. Often, this happens when a staff member who is ordering an item walks over to the finance department with a requisition form (which is the immediate context in which much of the coding of purchases is done). Amongst the considerations that the accounts administrator and the controller told me they took into account are the nature of the item, how long it is going to last, how much it costs, the consequences of the classification (for example, the fact

that an item classed as a fixed asset becomes an entry in the fixed-assets register, and in consequence its location thereafter needs to be tracked), the amounts remaining in the relevant budgets, and specific guidelines for the classification of certain categories of items such as information technology.

The controller does a final check of the primary acts of classification and measurement that her colleagues perform. When the accounts administrator and the controller's other colleagues classify a transaction, it is placed in a 'hold table' within the ERP system. While it would be far too time-consuming for the controller to inspect every entry in such a table in detail, she scans through the entries before permanently updating the relevant computerized ledgers. '[B]ecause of experience', she has a rough idea what to expect: for example, she is familiar with the names of regular suppliers and the typical amounts of purchases from them, and she can anticipate predictable fluctuations such as the dip in travel expenditure around Christmas. If the entries or totals in the hold table look odd to her – 'if they are very much out' – she will ask herself, for instance, whether 'something [has] gone in there that shouldn't really be in there?' and check in detail before 'posting' the record to update the ledgers.

Day after day, week after week, the accounts administrator, the controller and their colleagues perform thousands of acts of classification and measurement: applying terms – codes from the chart of accounts, cost centre codes, and so on – to particulars; entering into the ERP

system the appropriate monetary amounts corresponding to a given particular; and checking the results of such acts. Some indication of the volume of such acts was conveyed to me by a set of 14 large lever-arch files on a shelf close to the desks of the accounts administrator and controller. The files contained the paper documents – purchase orders, bills, invoices, expenses claims, and the like – corresponding to the previous month's acts of classification and measurement. (Although the firm's processes are highly automated, it cannot entirely abandon the materiality of paper.)

As noted, primary acts of classification and measurement of the kind performed by the accounts administrator and her colleagues are the foundations of accounting, yet they have almost never been the subject of examination in the literature of accounting or adjacent social sciences (the limited exceptions include Suchman 1983 and, especially, Anderson, Hughes and Sharrock 1989, 123-39). 'Routine' they may be, but aspects of these acts are nonetheless skilled. In particular, while the firm's ERP system can process the results of acts of accounting classification, it cannot itself perform such acts. While, as discussed in the conclusion, one can imagine their automation – perhaps via a neural network – accounting classification is still a human preserve in all the contexts of which I am aware.

Some of the knowledge needed to perform primary accounting classification is contextual: knowing whom the attendees at the dinner would have been, or understanding the nature of the goods or services bought from a specific supplier. Other aspects of it come from training and

experience in bookkeeping and accounting. Other employees of the firm also have the contextual knowledge, but because they lack training in accounting they do not normally do the most crucial classificatory work: that, for example, is why a member of staff drawing up a purchase order needs to carry it or send it to the finance department for coding.

The ERP system is, however, much more than simply a giant pocket calculator aggregating the results of primary acts of classification and measurement. For example, the system enforces double-entry bookkeeping, the basic discipline that underpins accounting (and that is, according to the classic argument of Weber, Sombart and Schumpeter, the basis of the rational business enterprise).<sup>5</sup> In double entry, every transaction is treated as a debit from one account and credit to another. (So a sale for cash, for instance, is a credit entry in a trader's sales account and – confusingly for the untrained – a debit entry in his or her cash account.) Although each transaction is entered into the case-study firm's ERP system only once, the system automatically makes the balancing entry, maintaining the fundamental property of double-entry accounts: that the sum of debit balances is equal to the sum of credit balances.

As well as enforcing double-entry bookkeeping, the firm's ERP system also supports modern accrual accounting. In this, 'the effects of transactions and other events are recognised when they occur (and not as cash or its equivalent is received or paid)' (IASB 2005, 37). In

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<sup>5</sup> For a re-evaluation of the classic argument, see Carruthers and Espeland (1991).

consequence, a company's profit in a given period, calculated on an accrual basis, is not the difference between the money it has received and paid out (which is what it would be in 'cash accounting'), but the difference between the revenue earned in the period and the costs incurred in earning that revenue, even if (for example) some or all of the cash receipts will not arrive until a later period and cash expenditures have been made in an earlier period.

The ERP system is set up so that specific entries into it (often made by non-financial staff, in particular storekeepers) trigger a transaction becoming a cost or a revenue. For example, when an item or set of items the firm has ordered arrives in one of its stores, its shipment labels are checked against the corresponding documentation,<sup>6</sup> and, if they tally, a storekeeper will fill in a 'purchase order receipt' note via the ERP system. In the words of the CFO, that is 'when it becomes a liability'. (The nature of that liability will already have been determined at the point at which the purchase order is coded, and is in this case an aspect that would later be recognized as a cost when the item in question is sold or used.) Similarly, when an entry is made into the ERP system indicating that a customer's carrier has uplifted a batch of the firm's products, the system 'will immediately recognize the invoice for the goods that have gone in the van out the door without actually us getting paid'. Again, the necessary coding will already have been done.

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<sup>6</sup> Contents of shipments are also sometimes checked.

Just as the apparently routine nature of much classification hides the skill involved, so the apparently routine nature of the process triggering the recognition of an expense or a revenue disguises the knowledge and experience needed to handle its day-to-day contingencies: the arrival in the warehouse of goods for which there is no purchase order, or for which a member of staff has prematurely ‘closed’ the purchase order; paperwork that should be numbered ‘13367B’ but because of poor print quality is read as ‘133678’; and so on. The case-study firm’s warehouse staff members are able to handle such contingencies: they know what to do when they occur, and the implementation of the case-study firm’s ERP system allows them to do it. (The inadvertent elimination of the capacity to handle such contingencies – contingencies that are familiar to those directly involved in the business process in question, but whose existence is sometimes not grasped by system developers or implementers with an idealized view of the process – is a major source of problems in automation of business processes in other contexts.<sup>7</sup>)

It is, however, correct to say that the ERP system ‘supports’ accrual accounting, not that it ‘enforces’ it. A significant amount of intervention, mainly by the financial controller, is necessary to ensure that accrued expenses (the cost of goods and services that have been received or consumed, but for which no invoice or bill has been received) and prepayments (the cost of goods and services that have been paid for but not yet received) are recognised in the appropriate

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<sup>7</sup> This is, for example, a main plank of the argument for a sociotechnical, even an ethnographic, approach to system development. See, for example, Suchman (1983).

financial period. Electricity, for instance, is a classic example of an accrued expense: the bill is sent only after it has been consumed, and it may not arrive until after the end of the accounting time period in which the electricity has been consumed. The bonuses earned by sales staff are another example of an accrued expense: they are obligations that accumulate throughout the time period over which they are calculated, even if they are paid only after it ends. Many maintenance contracts are examples of prepayments: they are paid for at the start of the time period they cover.

Another aspect of accounting that the firm's ERP system both supports and enforces is segregation of duties. Access to the system is password-controlled, and there is a matrix of 'read' and 'write' permissions for each staff member. The more obvious aspect of segregation of duties is to create barriers to fraud by ensuring, for example, that the payment corresponding to a purchase order raised by one person can be authorized only by a different person.

More subtly, however, access controls are set up in such a way that the ERP system 'solidifies' the myriad applications of terms to particulars by members of the finance department. The access-control matrix has the form of two triangles, one inverted. 'Read' permissions increase as one ascends the firm's organizational chart: those at the bottom can read little; those at the top have wide read access. 'Write' permissions, in contrast, diminish: for example, neither the CFO nor the chief executive have the 'write' permissions needed to amend a primary act of classification, measurement or recognition that has become a record in the ERP system. In

addition, if a record is amended, the ERP system creates an audit trail of what has been changed and by whom.

Of course, these structuring effects of the ERP system work only if those who maintain the access-control matrix do so appropriately, and if passwords are not shared (the latter is hard to police, though auditors have simple but useful ways of checking for password-sharing). Furthermore, the access controls build into ERP systems such as that in use at the case-study firm are unlikely to be robust enough to survive the full gamut of sophisticated ‘attacks’ considered in the case of systems on which national security depends (see MacKenzie 2001, chapter 5). ‘I have no doubt there could be loopholes: there are loopholes in every system’, says the vice-president for information services: ‘It’s about ensuring that our security procedures help us to discover and rectify potential loopholes before they are exploited by others.’ The sophistication that would be needed to find and to exploit them – like the sophistication needed to get a chess program to accept a non-standard move – put the relative ‘business risk’ at an acceptable level.

### ***Following a Rule***

The firm’s ERP system receives and processes inputs of the kind discussed above, and (as just discussed) it supports and enforces an appropriate segregation of duties, thus ‘solidifying’ primary acts of classification, measurement and the recognition of revenue and expenses. It also has a

‘report generator’ facility that can produce a wide variety of reports both for purposes internal to the firm and for external financial reporting. For example, in the period immediately prior to the case study, International Financial Reporting Standards (IFRSs) had become applicable for the first time, and the firm’s business planning manager had devoted considerable effort to ‘building a balance sheet in the format for the new IFRS’: that is, constructing a mapping from the chart of accounts to the categories of an IFRS balance sheet (and sometimes subdividing existing chart-of-accounts codes), so that the report-generator facility could be used to produce such a balance sheet.

The business planning manager had done his work well, but it would be naïve to think that adequate financial reporting could be achieved simply by using the ERP system to aggregate primary acts of classification, measurement and recognition, and then pushing the appropriate report-generator button. If one does that, the figures will be nonsensical, according to the CFO. Important adjustments to the aggregate results of primary acts of classification, measurement and recognition are necessary in order to produce adequate accounts, and they go beyond the adjustments, discussed above, that the financial controller makes for accrued expenses and prepayments.

The necessary adjustments are typically not made by using the ERP system directly: they are performed separately, normally using Excel spreadsheets, and then uploaded into the system. They are thus not subject to the system’s discipline, but are subject to discipline of a different kind:

the rules of financial reporting. As already noted, for a listed company in the European Union, the relevant rules are those of the ‘International Financial Reporting Standards’ (IFRSs) and ‘International Accounting Standards’ (IASs).

Let me concentrate on two standards – one longstanding, one newer – that the case-study firm has to follow.<sup>8</sup> The first is the longstanding (though recently revised) IAS 2, ‘Inventories’. It occupies twenty pages, but its central principle – set out in bold – is its clause 9: ‘Inventories shall be measured at the lower of cost and net realisable value’ (IASB 2005, 662).

One issue in following IAS 2 is knowing what the firm’s inventory consists in. Inventory is recorded in the ERP system, but the contents of the relevant registers cannot simply be assumed to correspond to the physical entities in its warehouses. This reconciliation is the province of the warehouse manager and his staff. The items in the warehouses are normally in packages labelled with a barcode corresponding to a record in the ERP system, so the manager and his colleagues can perform the ‘stock check’ by walking around a warehouse with a barcode scanner. Inevitably, though, there are records on the ERP system for which no corresponding physical object can be found. The degree of agreement, however, is typically over 99 percent.

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<sup>8</sup> These are the two standards the following of which was discussed most by interviewees. This may indicate that interviewees saw them as raising particular issues of judgement, but similar issues could also be identified when interviewees discussed the following of other standards, such as IAS 19 (‘Employee Benefits’).

Investigation can resolve many of the residual discrepancies, and those that remain are an example of a pervasive issue: 'materiality'. No accounting system, or set of accounts, is likely ever to be judged perfect. 'We always find errors', one auditor (not connected to the case-study firm) told me. An accountant or auditor must judge if a discrepancy is 'material': that is if (in the words of IAS 1, 'Presentation of Financial Statements') it could 'influence the economic decisions of users taken on the basis of the financial statements'. There is no set quantitative threshold, so materiality must be 'judged in the surrounding circumstances' (IASB 2005, 610, emphasis in original deleted). However, a stock discrepancy of well below 1 percent is most unlikely to be judged 'material', and the warehouse manager and his staff are indeed able to demonstrate to the firm's auditors that the 'reconciliation is ... good' and they 'have control of [their] stock'.

To follow IAS 2 obviously requires more than this, though: the 'cost' and 'net realisable value' of inventory both need to be measured. The firm produces large numbers of items, and it would not be sensible for it to try to calculate an actual cost for each individual item. Hence the 'cost' that it measures in following IAS 2 (and also uses for other purposes) is a 'standard cost': in the words of the CFO, 'effectively your best estimate of what you think the costs are based on what you're paying people just now and all the rest of it'. ('All the rest of it' includes not just items such as the cost of raw materials and of services, but also physical contingencies such the effectiveness of production processes and the results of product testing.) As invoices and the like

subsequently arrive and are processed by staff members and by the firm's ERP system, variances from this estimate are calculated automatically and scrutinized: 'we ... review ... our standard costs each quarter ... to make sure they're still in line with reality'. (The level of consistency between estimates and outcomes is indicated by the firm's goal that variances from its estimates of 'gross margin' should be less than a percentage point.) So 'cost' is tied tightly to the aggregate of the corresponding primary acts of classification, measurement and recognition, but it is not reducible to that aggregate.

Measuring the 'net realisable value' of inventory requires different judgements: will the products that the firm has in store be sold, and if so at what price? Following IAS 2's rules for valuing inventory thus means, in the words of the CFO, 'looking at things like stock obsolescence provisions. And slow-moving stock.' The resultant decisions are consequential. For example, the firm's auditors are (in the words of the financial controller) 'very fussy about say the stock provision. They always want to see all the backup for that.'

Every month, the CFO and another member of his staff meet with the relevant business planners and managers to discuss which items of stock should be classed 'obsolescent' or 'slow-moving'. For each product, the amount in inventory is compared with 'the number of units that the sales people see that they can sell over the next twelve months'. If the latter is less than the former, says the CFO, 'we will make a call on that to say, right, is this just a temporary blip ... or what is it?'

... [W]e say to the sales team, “can you justify to us why we shouldn’t provide for everything that’s not going to be sold in the next twelve months?” ... [W]hy are these parts not saleable?’ Is the cause likely to be temporary, or will it be permanent? (To ‘provide’ for obsolescence or slow movement is to reduce the measured value of inventory by an appropriate amount; the amount is the ‘provision’.)

Such decisions are often not entirely clear-cut. In making provisions, the CFO thus has to ask himself: ‘do I take a light touch or a heavy touch?’ In the first two inventory-provisioning meetings in a quarter, he tends to take a ‘light touch’ in regard to stock that seems not to be selling: ‘I’ll give them [sales staff] the benefit of the doubt in that first period’, says the CFO. That changes at the third meeting, as the time by which financial results need reported draws near, because ‘at the end of the day I have to support the numbers’. If at that point he can still see no clear evidence that sales of the relevant item have picked up or will pick up, he will insist on making a provision for slow movement or obsolescence.

Valuing inventory according to IAS 2 is thus a task that requires skilled judgement, but it is a familiar one: the CFO has much experience of doing it. However, not all the rules the case-study firm has to follow are familiar in this sense. Like other listed companies, it had just had to move from following the rules of U.K. Generally Accepted Accounting Principles (GAAP) to following

International Financial Reporting Standards (IFRSs). The case-study firm's 'corporate compliance manager' had taken primary responsibility for this demanding transition.

The new standard on which I will focus (IFRS 2, 'Share-based Payment', or its UK equivalent FRS 20) requires a firm 'to reflect in its profit or loss and financial position the effects of share-based payment transactions, including expenses associated with transactions in which *share options* are granted to employees' (IASB 2005, 143, emphasis in original). Like many others, the case-study firm issued considerable amounts of call options on its shares to its employees, and to follow IFRS 2 it thus had to measure the value of these options. (A 'call option' is a contract that gives its holder the right, but does not impose the obligation, to buy an underlying asset at a set price on or up to a given future date.)

IFRS 2 specifies in some detail how to measure the value of an option. It contains 'Application Guidance', which for example lays down that if 'market prices' of 'share options granted to employees' are not available (and they usually are not, because the detailed terms of these options will generally differ from those that are traded publicly) 'the fair value of the options granted shall be estimated by applying an option pricing model' (IASB 2005, 159). The standard does not, however, say which option-pricing model is to be used; nor, for example, does it specify in detail how to estimate expected share-price volatility (a key parameter in option-pricing models). The compliance manager also did not find within the standard an entirely clear answer to

a particular question that exercised her: the interaction between the treatment of options that had been issued before and after the standard came into force.

Because (unlike IAS2) IFRS 2 was new, there was no established practice within the firm for the compliance manager to turn to in following it. As well as herself studying the standard and the associated guidance in detail, she therefore also took careful account of the extensive discussions that were going on within the accountancy profession about how to follow IFRSs. One advisory firm had set up an area of its website ‘that was totally dedicated to IFRS, so that was very useful ... they also had a news feed, so any little snippet from articles ... that referred to IFRS or how companies were dealing with their IFRS projects ... popped up’. She found a detailed worked example, also issued by a professional advisory firm, particularly helpful. It was of a company that had a wide variety of types of share-based payments. It showed how the company accounted for them under existing GAAP, ‘and it took you through the process of it implementing IFRS for those different types of share-based payments. And that was much more real than perhaps what was in the standard.’ In general, says the compliance officer, ‘worked examples enhanced my understanding of what they, the words [in IFRSs], were trying to tell you to do’.

The difficult task of being sure that one was following IFRS 2 correctly was eased by the case-study firm’s auditors (‘they ... have technical departments ... that are reviewing other companies’ sets of accounts and I suppose advising clients that were in the process of doing IFRS

implementation as well’) and by hiring a specialised advisory firm that was valuing options for many other companies. The latter firm confirmed that the case-study firm was indeed following IFRS 2: ‘we’re drawing on [the advisory firm’s] experience to ensure that we had ... come to the right conclusions’, for example that the decision to use the Black-Scholes-Merton option-pricing model (see MacKenzie 2006) was the appropriate one in the circumstances.

The advisory firm also helped to calculate the appropriate volatility figure to input to the Black-Scholes-Merton model. The case-study firm’s stock-market listing was recent, making the historical volatility of its own share price unreliable. Under such circumstances, the guidance to IFRS 2 permitted ‘the historical volatility of similar entities following a comparable period in their lives’ (IASB 2005, 164) to be considered. The advisory firm compiled data on companies similar to the case-study firm that had been listed for longer. There was a large group that had similar volatilities and some outliers, so the latter were eliminated and the mid-point volatility chosen to be an appropriate estimate of share-price volatility

### ***Conclusion***

No empirical case-study – especially not such a modest one as this – can prove finitism correct and extensional semantics wrong. When the contingencies of the application of terms to particulars are demonstrated, as they have been here, the proponent of extensional semantics can always argue that they arise from poorly formulated or improperly grasped meanings, rather than from inherent

features of concept-application. A comprehensive rule book of accounting, applicable without ambiguity, is possible, such a proponent might argue – we simply have not yet discovered it.

So all that can be claimed is that the findings of this case-study are consistent with finitism, not that they show it to be correct. However, the nature of rule-following in the examples discussed above is just as finitism would predict. Applying IAS 2, for example, involved the CFO judging matters such as the strength of the cases that others were putting to him about likely sales of inventory, and what IFRS 2 implied was not fully evident from the standard itself: it had to be determined in part from how others were applying it. The usefulness of the worked example ('much more real than perhaps what was in the standard') is textbook finitism, akin to the central role of the 'paradigm' in the sense of the 'accepted problem-solution in science' (Barnes 1982, xiv).

The finitism of primary accounting classification – such as which chart-of-accounts code to apply to a transaction – is perhaps less evident than the finitism of rule-following, for the correct answer often seems 'obvious'. However, this 'obviousness' is a trained, habitual response, not a logically-necessary one, as is brought to light when an intelligent non-accountant (such as the staff member who thinks that a dinner over which business is discussed is thereby 'business entertainment') classes things differently. Even in the simplest case discussed here – an electricity

bill – one could imagine someone who did not know the sort of things that are classed as ‘maintenance’ choosing code 82101 (‘Maintenance – property’).

The scope of finitism is thus wider than the spectrum of acts of classification and measurement that accountants acknowledge as involving ‘judgement’. Much of the classificatory work of the accounts administrator, for example, does not involve judgement in that specific sense, but – as emphasized – it is still skilled. For all the case-study firm’s commitment to efficiency, it has not sought to automate this classificatory work, and this may well be wise: the automation of the finitist application of terms to particulars is problematic, for the reasons explored in Collins (1990). One can, as suggested above, imagine an automated system that would search purchase orders for ‘cues’ to use to code them, but it seems unlikely that such a system would improve upon the performance of an experienced human being with a good understanding of the activities of his or her organization and of the other contingencies of his or her context.

It is worth re-emphasizing that a finitist viewpoint does not imply that the application of terms to particulars is arbitrary, random or chaotic. As noted, the case-study firm’s accounting process were orderly and impressively efficient. Rather, what finitism suggests is that the sources of orderliness are not to be found in the terms themselves but in what is done with them. As Bloor puts it:

According to meaning finitism, we create meaning as we move from case to case. We *could* take our concepts and rules anywhere, in any direction ... We are not prevented by 'logic' or by 'meanings' from doing this ... The real sources of constraint [are] our instincts, our biological nature, our sense experience, our interactions with other people, our immediate purposes, our training, our anticipation of and response to sanctions, and so on through the gamut of causes starting with the psychological and ending with the sociological (Bloor 1997, 19-20, emphasis in original).

For example, the 'audience' for financial reports clearly matters. One key audience is the firm's auditors; another is the financial markets. More than ten stock analysts cover the firm intensively, for example making detailed predictions about upcoming financial results. Says the CFO:

If you're a public company your numbers are in the public gaze and people are anticipating and ... analysts are trying to second guess what the company is going to do all the time, and it's meeting that expectation, whether it's going to be good, bad or indifferent ...

While ‘the auditing profession ... never ... hit you hard for being too prudent’, undue prudence is discounted by the market, which adjusts its expectations accordingly with potentially adverse consequences for the company if those expectations are not met:

If the market keeps on saying ... ‘they’re always sort of underestimating what they’re going to do’, they will build that into their figures ... to say, ‘we know they always come good’. And of course ... the quarter that they think you’re going to come good, then ... you don’t come in at that level, [that] expectation, confidence is lost and all the rest of it. So people like no surprises. So that’s what you’re trying to even ... out over the piece.

Hence, for the CFO, the importance of consistency in accounting decision-making. Neither over-prudence nor over-optimism are consistent with his duty (and the obligation imposed upon him by the Companies Act) to give a ‘true and fair view’ of the company’s economic situation. He seeks, for example, to make provisions with a hand that is neither ‘too heavy’ (over-prudent) nor ‘too light’ (over-optimistic): ‘what we’re certainly trying to do is come up where it’s middle of the road’.

In the context of accounting and financial reporting, Bloor’s list could indeed be taken as a programme for empirical research that is much-needed: research of the kind sought by Cooper and Robson when they call for ‘examining not only the development of accounting rules, but also how

they are interpreted, implemented and audited' (2006, 428). In terms of this chapter's specific findings, however, I would add 'the technological' to Bloor's 'gamut of causes'. Thus the case-study firm's ERP system 'partitioned' the work of accounting into (a) primary classification, measurement and recognition, typically performed by less senior staff, the results of which the system was designed to solidify by constraining and making visible any subsequent alterations; and (b) secondary adjustments, provisions, and the like, made by more senior staff.

The ERP system the case-study firm uses is a well-regarded one – 'a tried and proven and trusted financial application', in the words of the vice-president for information services – and its financial module is integrated internally with its other modules, which means that from an auditing viewpoint, 'you don't have to prove the interfaces between the systems'. The firm's auditors can thus for practical purposes rely upon the system's technical trustworthiness, which is:

Absolutely essential. When you, from [an] audit point of view to know that when ... you push a button that information gets put into the general ledger and the sales ledger or purchase ledger, in the right way, the right time, gets flown through to the P&L [profit and loss account or income statement] and the balance sheet every time is absolutely essential.

A trustworthy technical system 'means that the whole audit cycle is much, much quicker'. The speed of the cycle in the case-study firm was impressive: its auditors had approved its most recent annual accounts in less than a month after the end of the reporting period.

All modern firms of any size will almost certainly be found to be doing their accounting using technical systems, albeit often stand-alone systems rather than integrated ERP systems. If those stand-alone systems are judged by auditors to be trustworthy (and there is some indication in my interviews that not all will be judged to be so), then the technical ‘partitioning’ of accounting found in the case-study firm may not be unusual. That suggests a hypothesis re auditing: that unless there is reason to suspect fraud, auditors will be content to deal with primary acts of classification, measurement and recognition on a sampling basis, perhaps delegating the work to more junior staff, while concentrating their attention on adjustments made by technical means (such as Excel) that are external to the main accounting system. One former auditor (not connected to the case-study firm) did indeed tell me that as an auditor one concentrates ‘on what they do with Excel’. Of course, that one data point doesn’t confirm the hypothesis, but if his response were found to be typical it would indeed suggest that technical systems play a structuring role.

Whatever the fate of that specific hypothesis, I hope this chapter has shown that finitism can throw interesting light on accounting. Whether finitism or extensional semantics is correct is not just a social-science question: it has a bearing upon policy as well as. How to regulate accounting is a major topic of debate, especially (but not exclusively) in the U.S. If extensional semantics were correct, then regulation could be improved by formulating more exact definitions and writing ever-tighter rules. If finitism is correct, that path is endless, and the regulation of accounting needs to involve factors that are hard to define, but important nevertheless: a

recognition of the importance, and skilled nature, of apparently 'routine' bookkeeping; the integrity of accountants, and their sense of being members of a profession as well as employees of a firm; the trustworthiness of technical systems; the independence of auditors; and so on. Accounting is crucial to the economic governance of modern societies, but it cannot be made orderly by meanings and rules alone.

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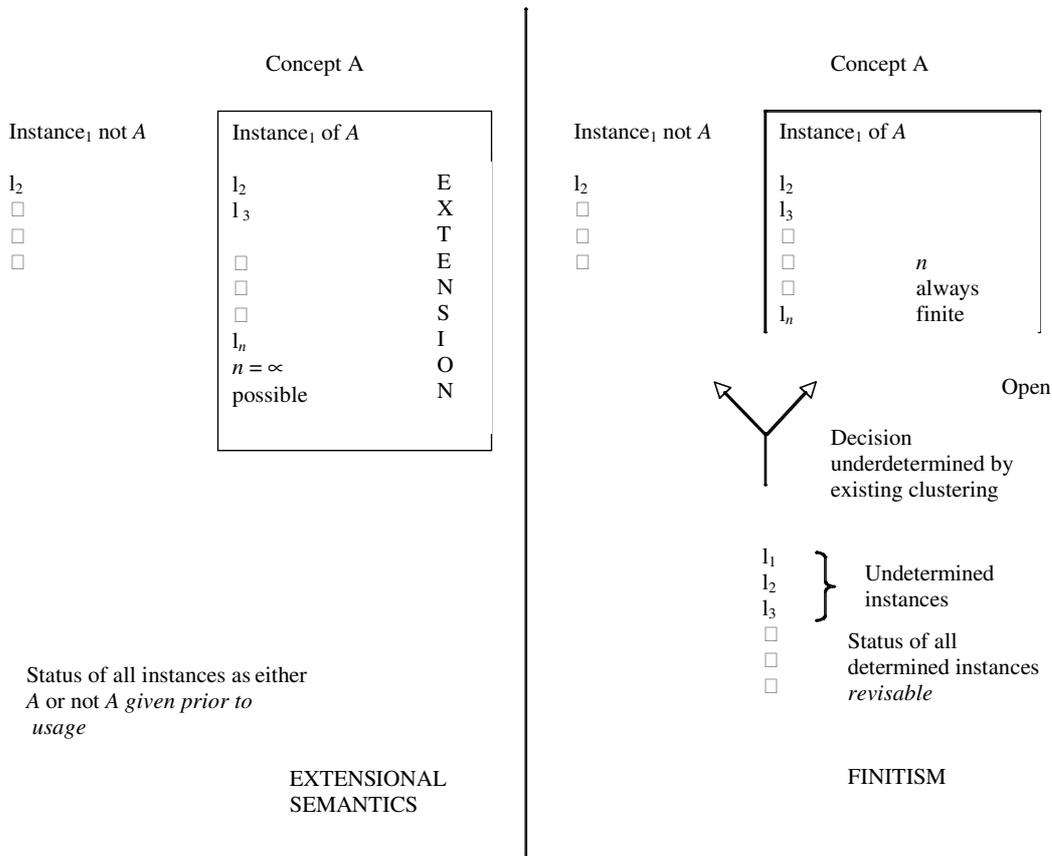


Figure 1: Extensional semantics and finitism. Redrawn from figure in Barry Barnes, *T.S. Kuhn and Social Science*, 1982, The Macmillan Press Limited, reproduced with permission of Palgrave Macmillan.

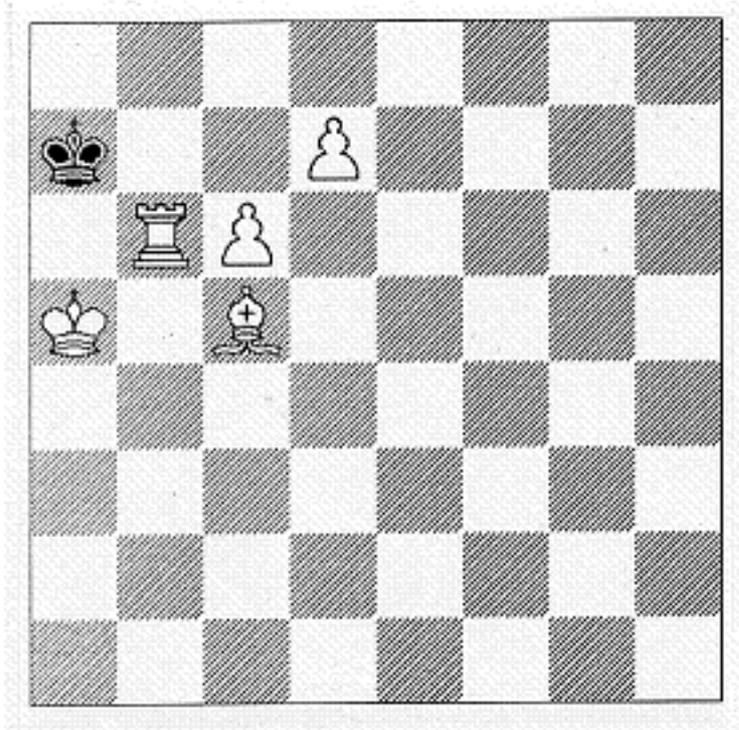


Figure 2: White to play and mate in a single move. Puzzle composed by Richard Haddrell.

11305 Plant & Machinery - Depreciation  
21101 Stock - Raw Materials  
21407 Stock - Finished Goods - Slow Moving Stock  
23101 Trade Debtors  
50401 Various - Sales  
51930 Other - Stock Variance - Revaluation  
62101 Travel & Accommodation - Business Entertainment  
82101 Maintenance - Property  
85103 Cleaning - Waste Disposal  
86101 Heat & Light - Electricity  
97105 Taxation - Deferred Tax

Figure 3: Examples of codes in the case-study firm's chart of accounts.