

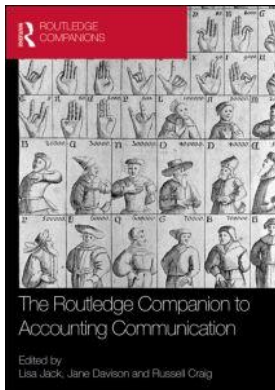
This article was downloaded by: 10.3.98.104

On: 21 Jun 2021

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



## **The Routledge Companion to Accounting Communication**

Lisa Jack, Jane Davison, Russell Craig

### **An historical perspective from the work of Chambers**

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9780203593493.ch3>

Frank Clarke, Graeme Dean, John Richard Edwards

**Published online on: 29 Apr 2013**

**How to cite :-** Frank Clarke, Graeme Dean, John Richard Edwards. 29 Apr 2013, *An historical perspective from the work of Chambers from: The Routledge Companion to Accounting Communication* Routledge

Accessed on: 21 Jun 2021

<https://www.routledgehandbooks.com/doi/10.4324/9780203593493.ch3>

**PLEASE SCROLL DOWN FOR DOCUMENT**

Full terms and conditions of use: <https://www.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

# An historical perspective from the work of Chambers

*Frank Clarke, Graeme Dean and John Richard Edwards*

---

## Introduction: illusion and reality

Early ideas on information and communication theory were fostered by those with an interest in mathematical logic. Some have claimed they arose from attempts by governments during World War II to crack security codes. Early developers included Claude Shannon from the Bell Laboratories' experiments in the 1940s (e.g. Shannon 1948, 1949; see also Shannon and Weaver 1949), Wiener's (1949) work on cybernetics, and the Alan Turing and von Neumann forays into artificial intelligence and automata theory (see Aspray 1985; Gleick 2011). Shannon and others led the development of a general theory of communication, including the need (i) to understand that the bigger the surprise, the more informative a message is, and (ii) to recognize, as Shannon did (Gleick, 2011: 281), that information is identified with entropy.

Their work was soon transported into many social-science arenas (see Aspray 1985; Gleick 2011) with accounting theorists drawing on insights provided by (amongst others) Cherry (1957) on communication and Wiener (1949) and Beer (1961) on cybernetics. Prominent amongst the early accounting theorists is Chambers' work on management decision making (1952, 1955a, 1955b, 1957, 1961, 1962, 1966), which reveals that the notion of communication was critical to his understanding of the function of accounting. The key requirements that need to be satisfied for accounting communication to be effective were later reflected upon in correspondence with Abraham ('Abe') Briloff:

I believe several generations of teachers are to blame (though the fault lies not only there) ... man may clothe his utterances in words of his own choice. But communication rests on cognitions shared by the speaker and his audience; *if he is* to convey any message, his freedom of choice is thus restricted, disciplined, by what his audience can grasp ... when an accountant adds up numbers which auditors make some assuring noises about, we do not expect the result to be, or to be intended to be, an illusion. And yet it is, if the aggregation is logically improper. ... Until accountants have established the linkages between specific kinds of information and their specific uses (separately or in combination), it cannot be claimed that their processes are 'disciplined', and the prospect of weeds over-running the garden will persist.

*(Chambers, 22 March 1979, USA P202, #5788)<sup>1</sup>*

Chambers' concerns have current resonance given the development by financial engineers of the instruments that arguably underpinned the recent global financial crisis (GFC) and the related currency crisis. Patterson (2010) shows that Chambers and his fellow travellers drew heavily on their understanding of information theory as it related to accounting and securities market prices. Chambers' observations on the difference between illusion and reality is, therefore, particularly apt. His letter to Briloff notes that when an accountant adds up numbers and auditors make assuring noises regarding their veracity, we do not expect the result to be, or to be intended to be, an illusion. And yet so frequently it is the former and all too often also the latter. Communication is thereby frustrated.

The remainder of this chapter is organized as follows. In the next two sections, ideas about how communication and information were introduced into the accounting literature in the 1950s are explained. The following section considers the issue of 'bad communication', generating entropy, giving some examples of how misstatements (insofar as they are about nonsense in the first place) and failure to communicate (inform, etc.) were evident in the aftermath of the unexpected collapses and financial difficulties of several large corporates during the GFC and related currency crisis. In particular, we consider the brouhaha surrounding the prescribed mark-to-market accounting treatment by the Securities and Exchange Commission (SEC), the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB). The last two sections of this chapter focus on a possible way forward to better accounting communication with a particular focus on 'telling it as it is'.

## Communication in accounting

The idea that business entities should prepare and publish accounting statements showing the state of their financial affairs has prevailed since the public at large began to invest in joint-stock companies and to become shareholders. This is evident in companies legislation worldwide since the creation of the modern company by registration under the UK Joint Stock Companies Act 1844. That theme has been expanded over nearly 170 years through extending the composition and form of compulsory published financial statements, the timeliness of their presentation to the public, compulsory audit and the imposition of a compulsory quality criterion – that those financial statements had to provide (according to the current terminology)<sup>2</sup> *a true and fair view of the company's financial position and financial performance*. Hence, accounting data have to satisfy technical and social communication criteria.

While perhaps the role accounting data had in financial communications was obvious, nonetheless, neither communication as a technical domain nor accounting as a means by which it was prosecuted entered the accounting literature until the early 1950s. This occurred through the work of a small coterie of scholars consisting mainly of accounting's *golden age theorists*<sup>3</sup> such as Chambers, Robert Sterling, Richard Mattessich, Maurice Moonitz, Yuji Ijiri and scholars (on accounting) from other disciplines like Kenneth Boulding and Samuel Hayakawa.<sup>4</sup>

## Chambers on information and communication

One of the first accountants to draw heavily on the technical aspects of communication was Raymond John Chambers, founder of the *Sydney School*.<sup>5</sup> Accordingly, this account of communication in accounting draws heavily upon his thoughts and enquiries, through his publications, readings and correspondence. In that context, Chambers' own academic work is characterized by very careful and meticulous use of language (his desk was always littered with an array of dictionaries, books of synonyms and antonyms, thesauruses and similar wordsmiths'

tools), by tight logic that could be demonstrated graphically, by the use of empirical data that was directly to the point being argued, and conclusions that could clearly and exclusively be drawn from the preceding argument – all of which are demonstrated *par excellence* in *Accounting, Evaluation and Economic Behavior* (Chambers 1966) and *An Accounting Thesaurus: 500 Years of Accounting* (Chambers 1995).<sup>6</sup>

Chambers was keen to use words properly. For him, the lack of terminological rigour was a major reason for the problems plaguing accounting thought and practice. Recently, Sterling (2006), upon being inducted to the Ohio State University Accounting Hall of Fame, lamented that his career had to be described properly as a failure since:

Accounting is very nearly the same in my end as it was in my beginning [p. 8] ... what was being put in accountants' minds ... [in the current texts are] the same useless concepts, invalid claims and senseless numerals that I studied in my first accounting class circa 1952 ... Strike one [p. 9] ... the careless use of language [p. 9] ... If avoiding equivocal terms requires jargon, invent it. Jargon is undesirable but it is better than equivocation. In my beginning I identified this error and its solution. In my end I am still identifying it. Strike two. [p. 10]

Chambers' 22 March 1979 response to Abe Briloff's earlier communication (5 March 1979, #5787) noted that, in developing his theory of accounting, communication, measurement and identifying the function of accounting were fundamental issues. Briloff's 1964 doctoral thesis (published as 'Briloff 1967') also examined the issue of communication, though not the aspect canvassed by Chambers, Mattessich and others in the 1960s. Briloff focussed on the nomenclature of the audit opinion rather than the accounting data upon which it was based. Mattessich (1964), Ijiri (1967), Lev (1968, 1969), Feltham and Demski (1970) and Feltham (1972) were consistent with Chambers when drawing on developments in mathematics by Shannon and others but, in other respects, addressed the communication issue in very different ways. Marschak (1955; see also Marschak and Radner 1972) is another who should be mentioned as arguably influencing the thinking of those pursuing another information path, namely information economics (Mattessich 1980: 169, fn. 27).

When Maurice Moonitz of the University of California, Berkeley, enthusiastically endorsed Chambers' (1966) *Accounting, Evaluation and Economic Behavior* in correspondence with the University of Sydney Registrar (Moonitz 1972), he particularly praised the emphasis on communication:

The book probes more deeply the 'foundations' of accounting than any other similar work. .... explores the contributions of related fields in a manner that if not unique, is certainly not equalled by any other work with which I am familiar. For example, I found his Chapter 7, 'Information and Information Processing', Chapter 8, 'Communication' and Chapter 12, 'Financial Communication Within Organizations', to be lucid summaries of the work done recently in those fields, summaries ... superior in many respects to those prepared by scholars in the fields themselves.

To provide a fuller assessment, Moonitz appended material from his 1971 'UCLA Berkeley Spring 1971 Course Notes' that contained references to the accounting system described in Chambers (1966). Points 7 and 8 below are taken from that source (Moonitz 1972):

7. This book [Chambers 1966] is more elegant than Mattessich's, more compact, less diffuse. Its scope is narrower since it probes more deeply into the characteristics (including

the limits) of the ideal accounting system. Chambers explicitly acknowledges his debt to recent developments in the theories of organization, communication and regulatory systems. ...

8. Chambers leads a group which agrees with Mattessich (and others) on the need for increased rigor in accounting analysis, but disagrees sharply on the concept of the field (scope of accounting). Chambers holds firmly to the notion that accounting is measurement, and that future events cannot be measured. ... Accounting properly supplies data on the present position, but it does not properly supply estimates of the future (e.g. in budgeting or even in its valuation procedures).

A major theme in Chambers' early works was his criticism of the failure to communicate precise financial information about an entity's financial position and performance – notions he regarded as being well understood by the lay person – because of the loose terminology used in technical accounting discourse. See, for example: 'Blueprint for a theory of accounting' in *Accounting Research* (1955a); 'A scientific pattern of accounting theory' in *The Australian Accountant* (1955b); 'Detail for a blueprint' in *The Accounting Review* (1957); 'Measurement and misrepresentation' in *Management Science* (1960); 'Towards a general theory of accounting', Australian Society of Accountants Annual Research Lecture (1961); and *The Resolution of Some Paradoxes in Accounting* (1962).

Chambers' early literary forays also focussed on precision in the use of accounting terminology. For example, his 1964 NZ *Accountants' Journal* article 'Conventions, doctrines and commonsense' carefully distinguished between postulates, principles, standards, rules and stressed the need for commercial 'commonsense' to underpin usage. Consider also his major works on 'Information Processing and Communication', Chapters 7, 8 and 12 from *Accounting, Evaluation and Economic Behavior* (1966), and extracts focussing on these aspects of communication in *An Accounting Thesaurus* (1995).

Chambers drew on the 1940s and 1950s technical analyses of information processing and communication (Shannon 1948, 1949; Shannon and Weaver 1949; Wiener 1949; Cherry 1957) in his early works on management decision making within organisations (1952, 1955a, 1955b, 1957, 1961, 1962). Thus Lee's (1982) contribution to a festschrift, prepared to mark Chambers' retirement from formal university appointment, describes Chambers' penchant for discussing accounting communication in terms of the 'transmission of messages about economic events and effects' with signs and symbols being the means of transmission. This view of accounting as a language contrasted with the conventional view of accounting as a procedural device. Lee (1982: 155) also observed that Chambers regarded one of the major problems of accounting communication being the faulty information processing by the accountant who acts as an agent for the entrepreneur.

Chambers' *communication* journey therefore drew on his wide readings on management which had provided the foundations for his early teaching. Thus an internal, as much as an external, decision-making focus was to the fore. In the papers cited in the previous paragraph, Chambers suggested that accounting statements were an established means of communication between entrepreneurs (actors) and the several parties on whose participation business organizations depend, namely investors, creditors, workers and consumers. The nature of these communications may influence the confidence and willingness of those interested parties to participate. They affect the economic life of a community, and they enable the evaluation of the influence of conventional accounting and of alternative accounting systems on all who make decisions having economic consequences.<sup>7</sup> Specifically, financial and cost accounting statements are part of the systems of internal communications by which an organization adjusts its activities

as internal and external exigencies arise; and it is necessary to consider whether existing accounting techniques or variants of them are equal to this task.

The 1953 edition of Chambers' *Financial Management* summarized well his early thoughts on communication. There, communication is said to rest on cognitions shared by the speaker and his or her audience. The 1986 edition of that book is particularly apt. Chapter 7 'Organisation' discusses communication and feedback matters in some depth, deftly using diagrams and text it summarizes general issues and those especially pertaining to accounting. Consider the following:

Integrated direction, interaction and co-ordination depend on interpersonal communication. 'An organisation might almost be defined as a structure of roles tied together with lines of communication' (Boulding, 1961, 27). '... without communication there can be no organisation, for there is no possibility then of the group influencing the behaviour of the individual' (Simon, 1949, 154). Communication is the transmission of verbal and other messages or signals, with the object of providing or influencing the premises of judgment and choice.

Messages may be oral or documentary. Oral communication may suffice where prompt or personal action is required by one person of another. But there are few circumstances in which oral communication alone is used. Documented messages are protection against fallible recollection of oral messages on the part of the transmitter or receiver. They are the protection against faulty transmission where lines of communication are long. They may be prepared in sets or copied where knowledge of the authorisation or completion of tasks is required at a number of points in an organisation. And, where, for any reason, the persons assigned particular tasks change over time, documentary messages may serve as organisational memory.

All messages are formally arranged sets of signs or symbols. The signs may be words of the vernacular language, terms of technical languages, numerical and mathematical terms, diagram; a message may be any combination of such signs. All signs and the messages constructed of them are artifacts. Every sign has a referent, an observable or imaginable object, action, event, quality or property, or another sign. But the referent of any sign is not unique. ... Many of the terms used in respect of financial matters may have a variety of referents – value may mean value in use or value in exchange; price may mean buying price or selling price; a number preceded by a money symbol may refer to the outcome of a calculation or the amount of an observable price; the same money quantity may have widely different significance for judgment or action at different dates. Ambiguity and confusion are inevitable unless such general terms are qualified by description or date and unless the duly qualified usage approximates what is commonly understood among the varied persons who may, or may be expected, to respond to message or discourse.

*(Chambers 1986: 93–4)*

Chambers then notes that, in any organization, classes of communications vary. Again using diagrams as well as text, he describes 'factual', 'prescriptive', 'motivational', 'appraisive' and 'advisory' communication classes. Among these, he observes that factual messages are the only class that relate to the organization itself:

Since the capacity of an organisation to satisfy its participants depends on its factual state and the factual outcome of its operations, and since the facts of a situation are inevitably among the premises of directives, opinions and judgments, the greater the correspondence between

factual messages and the events and states they purport to depict, the greater is the possibility of apt response. Writing of descriptive sentences generally, Russell (1940, 178) observed: 'A sentential sign present to an organism is true when, as a sign, it promotes behaviour which would have been promoted by a situation that exists, if this situation had been present to the organism.' To satisfy these conditions, the matter represented should be an observation made under known or specified conditions; the content of the message should be couched in terms understandable to the recipient; and there should be no cause of interference or distortion in the channel or line of communication. There may seem to be no good reason why the conditions would not be met. However, there are reasons. They stem principally from the synthetic linkages between the individual observers and agents of an organisation, and the dependence of those agents on processed information. The possibility of misdirection is reduced if there are means of judging the quality of processed factual information, and means of rectifying the system that produces it.

(Chambers 1986: 95–6)

He continues, observing that this is the role of feedback within an organization. An organization can be maintained by adaptation that responds to the feedback process. Figure 3.1 (which is Figure 12 from *Accounting, Evaluation and Economic Behavior* (Chambers 1966: 317)) encapsulates those ideas. The debt to Shannon and the early information and communication pioneers who sought to understand information, entropy, feedback and other coordination issues within organizations are evident from the content of Figure 12 and other diagrams in Chambers (1966: Figures 7, 8 and 11) and Chambers (1986: Figures 7.71–7.73). Those diagrams also demonstrate the fact that Chambers' ability to capture succinctly the essence of economics and measurement theory as it relates to accounting was matched by his skill in transporting into accounting the relevant information and communication ideas developed in cognate commercial fields.

Chambers' well-honed views on communication are captured in the following extract<sup>8</sup> from a letter addressed to G. McAuslan, of IBM, who served as an official of the NSW Computer Society. It captures well Chambers' mid-1960s views on communication in general, and on the need for a reformed accounting communication in particular:

The firm is generally regarded as fixing its own goals and norms. [Its] consequential emphasis on communication and control leads to a purely formal approach to information selection and processing and to disregard the functions of information selection in adaptive behaviour. The principles of isomorphism and feedback, basic to physical systems, are equally apposite to the economic aspects of organisations generally. Their adoption entails information and communication systems differing materially from conventional systems.

(8 March 1965, USA P202, #01411)

Chambers' voluminous entries on information and communication in *An Accounting Thesaurus* (Chambers 1995) provide further evidence of his intimate knowledge of these issues. Consider, for example, the implied connections he encourages by the sub-areas examined in Chapter 2 ('The Psychological and social background of accounting'): 'Belief and action', 'Observation and inference', 'Signs, symbols, language', 'Information and communication', 'Measurement and measuring' and 'Measurement in accounting'. The extracts there reveal, indirectly, the strong connections he made between two major elements in his accounting theory development, namely the need to view accounting as both information-cum-communication and as measurement systems.<sup>9</sup> When one examines the *Thesaurus* quotes within the relevant sub-section areas, it is evident that Chambers refers to many authors well known for their early

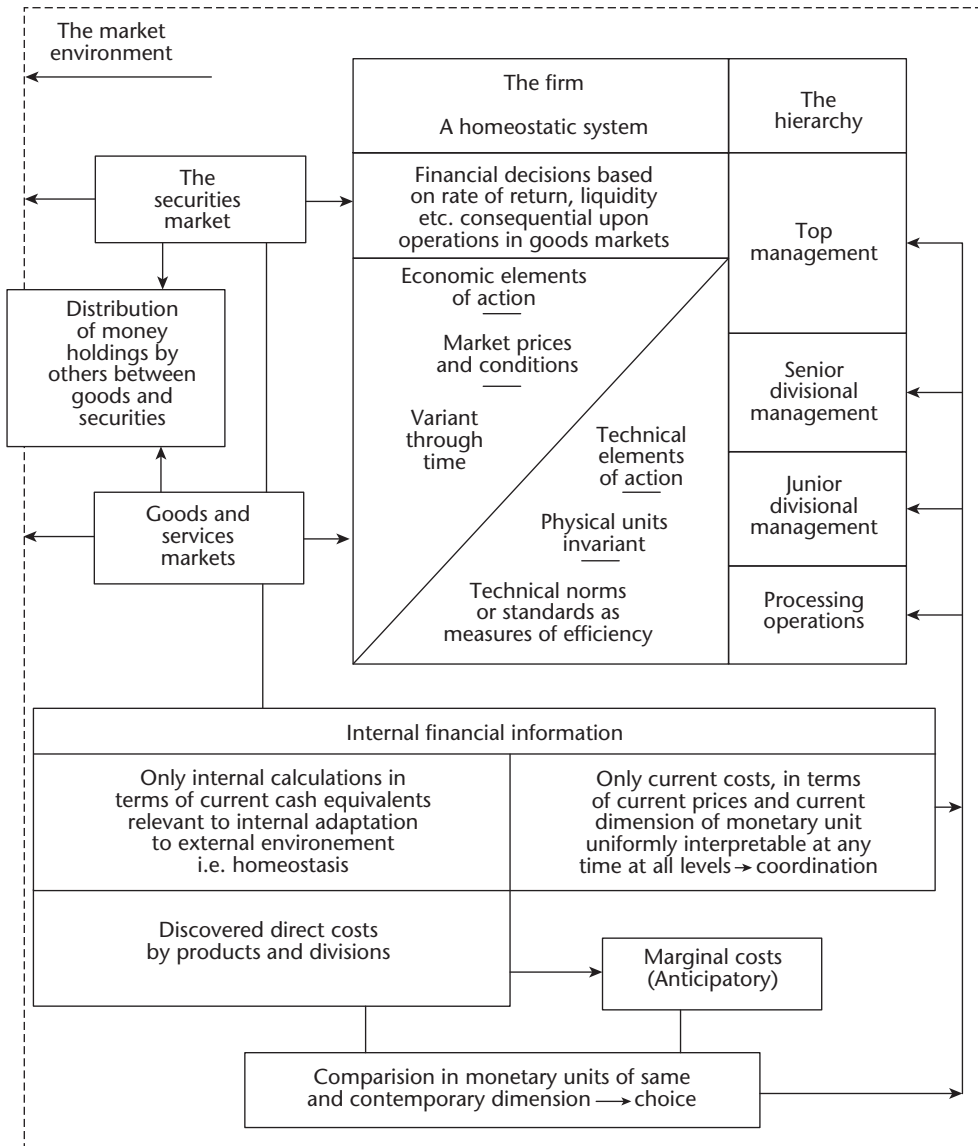


Figure 3.1 Financial communication within organizations  
 Source: Chambers (1966: 317)

thoughts on signs, symbols, language, information and communication within the 'home' literatures and more generally within the management and organizational literatures.

### GFC, currency crisis and accounting: cold comfort from financial delusions

Accounting miscommunications of the kind Chambers wanted to avoid were aptly illustrated during the 2007–09 GFC and persist during the consequential currency crises. Receiving messages



that tell only what one wants to see and hear, were a feature of that period. From bankers, in particular, communications regarding financial wellbeing portrayed known errors – delighting but deluding their recipients. There, a desire for publishing derivative valuations known to be in excess of the market’s indication of current worth overrode the communication principle of ‘telling it how it is’. Inbuilt noise in the communication system created the clear potential for entropy and a financial system meltdown.

That episode also provides evidence of the business community’s strange penchant for shooting the messenger rather than rooting out the problem. Of course, politicizing things is never far from the surface. Quickly, there were cries of ‘told you so’ from those who opposed the introduction of the relevant accounting standards – Statements of Financial Accounting Standards (FAS) 157 (Fair Value Measurements) in the US and International Accounting Standard (IAS) 39 (Financial Instruments: Recognition and Measurement) in Europe. Academics soon followed (see Katz 2008; Ryan 2008; Whalen 2008; Magnan 2009). US politicians enthusiastically intoned such a litany with the apparent approbation of the (by then) Presidential candidate John McCain. The refrain was that having to write down assets to their market prices had ‘caused’ the financial collapses of US corporates Bear Stearns, Lehman Brothers, AIG and the UK’s Northern Rock, and the near collapse of numerous others. That causation chain is said to have necessitated the \$US700b Troubled Asset Release Programme, ‘cash for trash’, bailout in the US. It was also suggested that Iceland’s near bankruptcy was another ‘fair value’ casualty. Such sentiments soon resurfaced in the discourse surrounding the sovereign debt problems of Europe’s so-called ‘PIIGS’, namely Portugal, Ireland, Italy, Greece and Spain.

Thus, accounting standards were, for some, the cause of these crises, or at the very least that they made things worse. This line of argument has its historical precedents. The practice of mark-to-market was law in the United States until the late 1930s when President Roosevelt succumbed to pressure from the banks to repeal the rule as part of a measure designed to avoid deepening the Great Depression (‘A mark-to-market history lesson’ 2011).<sup>10</sup> The problem emerged again in the US during the latter stages of the economic boom presaging the 1980s Savings and Loans crisis when President Regan allowed the write-up of investments as part of his liberalization campaign.

Marking assets to their market prices had long been a permitted accounting practice in the UK and elsewhere when that measurement procedure gained impetus, in 2005, through numerous countries adopting International Accounting Standards. Among these, IAS 39 specified that certain financial instruments (which featured particularly in bank balance sheets) be accounted for at ‘fair value through profit and loss’ – that is, that they be *marked-to-market*. In 2007 a renewed US push for the application of a current value accounting system came with the FASB’s promulgation of FAS 157. And, whereas FAS 157 was voluntary with respect to many assets, other FASs also permitted current values to be used.

In many respects the brouhaha surrounding FAS 157 reflected the tensions between the accounting standards setters in the US and those in the UK and Europe, as well as prudential and securities regulators in various countries.<sup>11</sup> That accounting data are a primary means for the communication of factual financial information seems to have been almost forgotten in this stand-off.

Matters came to a head after Lehman Brothers’ collapse in October 2008. Congress rose to the cause. For some commentators accounting’s (FAS 157’s) mark-to-market prescriptions were said to be *exacerbating* the financial system’s procyclicality. For others it was the *cause* of the GFC.<sup>12</sup> In *Alchemists of Loss*, Dowd and Hutchison (2010: 310) opine: ‘In the event, FAS 157’s timing was terrible’ for Goldman Sachs and Bear Stearns. But these commentaries illustrate a

misunderstanding of accounting's communicative role of informing financial decisions, 'telling it how it is'. This issue is now considered.

National standards setters were concerned about adopting fair value accounting in markets where items regarded as valuable to those owning them had no buyers other than in a fire-sale-like setting. In an attempt to overcome this inactive markets problem, a five-level hierarchy was proposed. Eventually three levels were agreed upon culminating in the FASB injecting FAS 157 with the following hierarchy of assets for valuation purposes:

*level 1 assets* – for which a market and prices are available;

*level 2 assets* – where the existence of a market for like assets allowed some discretion for owners regarding which prices they chose and;

*level 3 assets* – where markets are inactive, and owners could mark-to-model, or 'mark-to-myth' as Buffett (quoted in Davies 2010: 114) called it.<sup>13</sup>

But the agreed hierarchy did little for some. For those analysts willing to look beyond the reported asset balances (in aggregate), this classification merely exposed the perilous state of many institutions. Goldman Sachs, for example, was shown to have level 3 assets amounting to '3 times its capital', and Bear Stearns \$28 billion in level 3s with 'a net equity position of only 11.1 billion' (Dowd and Hutchison 2010: 311).

Complaints from compliant institutions being forced to make considerable write-downs as a result of mark-to-market accounting were common, as evident in the comments made by Standard and Poor's' Mark Zandi in *Financial Shock*. There, he advocated allowing a gradual writing-down process:

The FAS 157 [mark-to-market] rules put pressure on institutions to quickly adjust the book value of their assets to market prices but I propose that, markdowns ... could be tweaked so that changing assets [read also liabilities] values could be phased in over time. . . . Banks would still have to lower their holding as prices fell, but not as rapidly.

(Zandi 2009: 237–38)

Such a sugar-coating by Zandi's suggested 'phasing in' completely negates, of course, the purpose of communicating the current financial position.

The introduction of the mark-to-market accounting rules to achieve better communication was also perceived to be a serious problem by Munchau (2011: 211), who argued: 'If accounting rules had not been temporarily relaxed many banks and insurance companies would have had to file for bankruptcy.' As Isaac and Meyer (2010: 10) complained:

The SEC and FASB did not act immediately to correct its most egregious problems ... we really needed a repeal of all vestiges of mark-to-market accounting to restore much of the \$500 billion capital in our financial system that mark-to-market accounting had so senselessly destroyed.

But it was far from being a one-sided debate. Many serious observers perceived mark-to-market accounting as providing much needed transparency. Adopting a line put forward by the then Chief Executive of the ICAEW Michael Izza, Davies (2010; see also Ball 2008) saw the drawing of a causal link between mark-to-market accounting and the GFC as a case of 'shooting the messenger', noting with approbation Laux and Leuz's (2009, 2010) finding that there was little evidence that the GFC was the result of mark-to-market accounting. Bonaci et al. (2010)

provided further strong defence of reporting fair values, while Dowd and Hutchison (2010: 310) explained that, in reality, ‘FAS 157 was just bringing to the open that Wall Street had taken exorbitant risks based on Modern Finance risk management and valuation models that were pure fantasy’.<sup>14</sup> Contestable analyses of fair value accounting’s impact or otherwise on the GFC continue: Cheng et al. (2011); Gebhardt and Novotny-Farkas (2011); Badertscher et al. (2012); Cheng (2012).

Recent commentaries by US standards setters (Linsmeier 2011; Mosso 2011) adopt the stance that current data of the fair value genre are essential for the effective and efficient operation of capital markets. One can reasonably infer that the focus on write-downs, by many observers at the time of crisis, misdirected attention to its symptoms rather than its cause. Whilst the level of transparency invoked by the mark-to-market rule drove prices down, it would only do so if those in the market accepted that the reduced prices better reflected what the securities were worth – to them. That is how markets work. When it is thought that securities are underpriced, buyers will move in and, ordinarily, prices will rise. So, whereas it is possibly true to say that the write-downs were major drivers of the loss in confidence underpinning the collapse of the world’s stock markets and the related pessimism, marking-to-market did not ‘cause’ the initial loss in the worth of the securities, collateralized debt obligations (CDOs) and credit default swaps (CDSs). In principle, marking-to-market simply forced current asset prices to be disclosed by requiring financial institutions to ‘tell it as it is’.

But it seems that many of the interested parties, particularly in the US, perceived virtue in ignoring the truth about market prices, found comfort in being deluded, were content, even happy, to ‘push the can down the road’ by invoking marking-to-model. In early October 2008, Christopher Cox, Chairman of the SEC, declared the relaxation of the mark-to-market valuation. FAS 157 effectively could be ignored. This endorsed ‘less transparency’ and allowed institutions to report what they thought assets were worth rather than what the market disclosed regarding their worth. It legitimized a return to the ‘mark-to-magic’ practices of the not-too-distant past, epitomized by Enron’s ‘mark-to-model’ of future energy price returns.

### **A possible way forward: the pursuit of *serviceability***

To inform, to communicate, to tell it how it is, the data in financial statements must be serviceable, fit for the uses ordinarily made of them. This necessitates data in published financial statements to be indicative of a company’s current and past financial progress, and indicative of its financial position – the nature, composition and money’s worth of its assets and the nature and the amount of the liabilities enforceable against the company. The data must therefore be serviceable for the purpose of deriving indicators of financial performance, rate of return, liquidity, solvency, debt to equity and similar gearing indicators, asset backing, whether a company satisfies its debt covenants, and the like. That is a rather tight specification. Where no market exists for an item at the accounting date and, therefore, doesn’t have a market price, or where a highly specialized item results in a thin or an inactive market, such information needs to be communicated, not ignored. For the owners of the particular item with no market price, the options regarding its use are limited, and owners need to know that is the case. Perhaps the item can be used to produce a revenue stream, it can be retired, allowed to sit idle, given away, but no market price means simply that the item generally cannot be exchanged for cash, cannot be pledged as collateral for borrowing and cannot contribute directly to the fund to extinguish debts.

The above actions draw and rely upon the facts as they are at the date of the financials. It is preferable to be aware of ‘what is’, and to use that information as the base for speculating ‘what might be’ in the future, and to act accordingly. There is nothing to stop directors injecting

their accompanying statements with anticipatory data, of course, so long as they clearly label them as such. What is reported in the financials does not preclude expectations that the future will be different, that an item currently unsaleable (not having a price now) may later be saleable, or those currently saleable may later be marketable for something different than the current price, or that any obligation of an entity is more or less based on current prices and price levels. Neither does it preclude communication of those expectations as a memorandum in, for instance, the notes to the accounts, nor from being the basis for (say) a directors' statement. Indeed, everybody trading in the equities market might be expected to consider the marketability of their holdings. Consistent with the plea by James Chanos (2009) in the *Wall Street Journal*, financial statements need to be factual, even when the facts offer 'cold comfort', as they do in respect of the so-called 'toxic assets' held by financial institutions since 2007. Those assets are not simply 'poorly performing' in the jargon of earlier days – they represent a bad investment. The financial effect of that bad investment needs to be communicated.

It follows that the prices of items reported in dated financial statements hold only for that precise point in time. Positions thereafter must recognize subsequent deviations. That is why we date positions – financial positions have dated balance sheets to specify the time-spans between which either income has been earned or losses incurred. Without recognizing the dates of measurements, we cannot evaluate performance, assess progress or regress. Indeed, without reference to specified dates, 'progress' and 'regress' are meaningless terms. Specifying dates is inherent in notions of *improvement and decline, increase and decrease, expansion and contraction, increase and diminish*, etc. Expectations regarding such matters must *follow* the current position. That is what *expectation* entails; departure from the present is the inherent nature of every anticipatory calculation. Indeed, without knowledge of the present state-of-play, the present market position, predictions of the future market prices are without a market foundation. Resort to an expectational-based model – *marking-to-model* – when a market is thin or no market exists is to produce a reported figure that replaces market truth with make-believe. Bromwich (2007) evocatively observed that this produces 'imaginary prices and in mystical markets'.

The Credit Suisse Equity Research Report (Zion et al. 2009) reveals that the need to communicate the non-existence of markets, and therefore market prices, or the existence of thin markets, for whatever reason, is shared by some practitioners:

So would changing the current rules, maybe providing a time-out from fair value accounting, save the market from its sins? We don't think so. Just ask yourself a simple question: Which information is more relevant today, what you paid for an asset in the past or what it's worth right now? Ultimately, the job of accounting should be to provide information to creditors, investors, and counterparties to help them in their decision making process. It should reflect economic reality, not a company's preferred view of what the economic reality should be ... For example, contrast the investment banks that got hit by the first wave of 'write-downs' as many of their assets are reported on balance sheet at fair value and marked-to-market through earnings, with many of the banks, insurance companies, and GSEs that have not yet taken other than temporary impairments of investments in debt and equity securities, or the banks where most of their loans are not reported at fair value and instead could get hit slowly and painfully by increasing loan losses over the next few years. We would prefer to see all financial instruments on the balance sheet at fair value with changes in fair value run through earnings. ... To make the information more useful to investors, we would also like to see the mark-to-market changes highlighted separately in earnings, which companies are only required to provide today for Level 3 assets.

Market prices (whatever they may be) should be reported. The GFC and currency crisis episodes witnessed a familiar form of ‘special pleading’ by some in the press and elsewhere in a different setting: namely, that ‘block sales’ potentially distort reporting on a market price basis. Elsewhere two of the current writers have contended that:

Information is never complete. But the market prices of items are as objective an evaluation of their contemporary money’s worth, of their current contribution to the wealth of their owners, as can be found. The better the information, the better the evaluation, the better the financial assessments, the better – should be – decisions to invest and disinvest. Properly informed securities markets require accurate information of the current wealth and past financial progress of companies. Share prices might reasonably be expected to capture not only their companies’ current financial position and an understanding of how it arose, but also impound all the expectations and fears for the future that the information might evoke.

(Clarke and Dean 2007: 199)

### Telling it as it is

In sum, whether in respect of prices where block sales occur, or when an asset does not have an observable market price, such as for the GFC’s financial institutions’ ‘toxic’ mortgage-based assets and liabilities, the role of a factual accounting is, and indeed can only be, to ‘tell it as it is’. Only if this happens can it be described as an ‘honest accounting’. As this chapter is being finalised, some analysts and markets continue to claim that declines in the values of toxic assets are ‘temporary’ and hence do not need to be recognized in financial reports, defying the ‘truth’ of the situation.<sup>15</sup> The Chambers (*to Briloff*) letter revealed different interpretations of communication. That dichotomy persists. The observations reproduced above from Zion et al. (2009) show an ongoing concern about accounting’s lack of serviceability for decision uses, whilst reviews from the UK and EU regarding audit quality (Financial Reporting Council 2008) note auditing’s need to improve communication regarding matters contained in the audit report.

Confirming the need to understand accounting’s communicative role is the recent announcement that US federal regulators have filed lawsuits against 17 financial institutions alleging that, during the period prior to the GFC, they ‘sold mortgage giants Fannie Mae and Freddie Mac nearly US\$200 billion in mortgage backed securities that later soured’ (Schwarz and Rosse 2011). Amongst other matters, the focus, will be on when that ‘souring’ took place and the reporting of it. And suggestions will be made that accounting ‘did not tell it as it is’, that the sub-prime mortgages in their CDO formats should not have been reported *as if* they were AAA assets. Risk assessments are alleged to have been based on that misinformation. Importantly for our story, these are not new problems with, for example, similar allegations made concerning the role of faulty accounting in the aftermath of the 1980s savings and loans crisis.

Chambers’ early insights into information and communication were gleaned from developments in cognate business fields. His wide reading, as extracts from *An Accounting Thesaurus* (Chambers 1995) clearly testify, led to him to be very careful with words – a true wordsmith. We have sought here to show some of those literary wordsmith’s skills, and especially those associated with his desire to rid accounting of loose terminology and to achieve recognition of accounting as a communication language with the associated need to reduce entropy when one receives financial signals from financial reports.

The accounting discipline has failed to progress in the fifty or so years since communication was a major issue occupying the attention of leading accounting theorists. There is an opportunity to redress this if accounting is properly recognized as a communication device, in the way

that Shannon and others perceived information and communication generally. This ideal will be achievable only when accounting *tells it as it is*.

## Notes

- 1 Reference here and below is made to material from the University of Sydney Archives, USA P202. This archive contains the hard copy of thousands of correspondence items involving Chambers from 1947–1999. That material is now digitized under the university's Market Price Accounting Archive – accessible as at the end of 2012 from [www.sydney.edu.au/business/mpa](http://www.sydney.edu.au/business/mpa).
- 2 The phrase has changed sequentially from 'full and fair' to 'true and correct' and now 'true and fair' – but the general ethos has endured.
- 3 It is generally acknowledged (see Gaffikin 1988) that the phrase was coined by Nelson (1973: 4).
- 4 Other early writers included Avery (1953) and, in the 1960s, Mattessich (1964), Briloff (1967; the published version of his 1964 PhD thesis) and Lev (1968, 1969). In the economics literature, Boulding (1961) and Theil (1967a, 1967b) addressed communication issues. An alternative approach to communication was shepherded by Jacob Marschak and Roy Radner, arguably assisting the development of the information economics view of the world (see Mattessich 1980).
- 5 Clarke et al. (2010) provides an account of the 'Chambers Years' and the founding of the 'Sydney School of Accounting'.
- 6 One of the writers, Dean, who was a research assistant for Chambers from 1974 to 1976, recalls often being sent to the University of Sydney library to check the exact meaning of words Chambers was considering using. Chambers wanted to be certain that the usage was precise. Augmenting extracts below from Chambers' *An Accounting Thesaurus* (1995) is Chambers' extensive library of over 2500 books that now form part of the Chambers hard copy collection (see note 1). It contains many publications focusing on language and discourse, including Ayer's *Language, Truth and Logic* (1952), Breal's *Semantics: Studies in the Science of Meaning* (1964), Hayakawa's *Language in Thought and Action* (1965), Campbell's *Grammatical Man* (1984) and Postman's *Amusing Ourselves to Death* (1987).
- 7 This is explored in depth in the 1986 edition of Chambers' *Financial Management*, and is especially revealed in Figure 6.1 in that book and the related text.
- 8 It formed the abstract of an address to the NSW Computer Society on 29 July 1965 under the title: 'The firm as an information complex' (Chambers 1965).
- 9 Measurement matters are discussed in a chapter studying this aspect of Chambers' theory (Dean and Clarke 2010).
- 10 Walker (1992) provides a contrary explanation for the SEC's contestable 'banning' of asset revaluations.
- 11 Davies (2010: 111) notes also tensions between US and European politicians regarding accounting and between prudential and the corporate regulators – implying that, whereas the IASB was promoting a set of international standards with a view to a 'convergence' with US GAAP, the SEC merely went along for the ride without any real commitment to achieve such an outcome.
- 12 Magnan and Markarian (2011: 216) note the following as examples of this group: Katz (2008), Whalen (2008), Gingrich (2008) and Zion et al. (2009). They also note that others (as we do) perceived accounting as 'merely an uninvolved messenger' (e.g. Ball 2008; SEC 2008; Turner – quoted in Johnson 2008; Veron 2008; Bonaci et al. 2010; Badertscher et al. 2012).
- 13 The recent IASB International Financial Reporting Standard 13 (Fair Value Measurement, 2011) adopted a three-level hierarchy equivalent to FAS 157.
- 14 Disconcertingly, this 'fantasy' suggestion was not new. Some informed observers, such as Taleb (2004, 2007) and Mandelbrot (1999), had been issuing warnings for over a decade.
- 15 Gottlieb (2011) has suggested that the US Federal Reserve appears to be committing the 'unpardonable banking sin' – seeking the truth.

## References

- A mark-to-market history lesson 2011. Online. Available HTTP: <http://ftalphaville.ft.com/blog/2009/03/53587/a-mark-to-market-history-lesson/> (accessed 21 September 2011).
- Aspray, W. (1985) 'The scientific conceptualization of information: a survey', *Annals of the History of Computing*, 7(2): 117–40.

- Avery, H.G. (1953) 'Accounting as a language', *The Accounting Review*, 28(1): 83–87.
- Ayer, A.J. (1952) *Language, Truth and Logic*, New York: Dover Publications.
- Ayer, A.J. (1955) *Studies in Communication*, London: Secker & Warburg.
- Badertscher, B.A., Burks, J.J. and Easton, P.D. (2012) 'A convenient scapegoat: fair value accounting by commercial banks during the financial crisis', *The Accounting Review*, 87(1): 59–90.
- Ball, R. (2008) 'Don't blame the messenger... or ignore the message', working paper. Online. Available HTTP: <http://faculty.chicagobooth.edu/brian.barry/igm/ShootingtheMessenger2008-10-12.pdf>. (accessed 10 January 2012).
- Beer, S. (1961) *Cybernetics and Management*, New York: John Wiley.
- Bonaci, C.G., Matis, D. and Strouhal, J. (2010) 'Fair value and crisis: defense welcomed', *Proceedings of the 8th WSEAS International Conference on Recent Advances in Management, Marketing, Finances*, Penang, Malaysia, 23–25 March, pp. 71–75.
- Boulding, K.E. (1961) *The Image*, Ann Arbor, MI: University of Michigan.
- Breal, M. (1964) *Semantics: Studies in the Science of Meaning*, New York: Dover Publications, Inc.
- Briloff, A. (1967) *The Effectiveness of Accounting Communication*, New York: Frederick A. Praeger.
- Briloff, A. (1979) 5 March letter to Chambers, Chambers Archive, USA P202 #5787.
- Bromwich, M. (2007) 'Fair values: imaginary prices and mystical markets', in P.J. Walton (ed.) *The Routledge Companion to Fair Value and Financial Reporting*, London: Routledge, pp. 46–68.
- Campbell, J. (1984) *Grammatical Man: Information, Entropy, Language and Life – the Story of the Modern Revolution of Human Thought*, New York: Pelican.
- Chambers, R.J. (1952) 'Accounting and business finance', *The Australian Accountant*, November: 14–23.
- Chambers, R.J. (1953) *Financial Management*, 2nd edition, Sydney: The Law Book Company.
- Chambers, R.J. (1955a) 'Blueprint for a theory of accounting', *Accounting Research*, 6(1): 17–25.
- Chambers, R.J. (1955b) 'A scientific pattern of accounting theory', *The Australian Accountant*, February: 73–80.
- Chambers, R.J. (1957) 'Detail for a blueprint', *The Accounting Review*, 32(2): 206–15.
- Chambers, R.J. (1960) 'Measurement and misrepresentation', *Management Science*, 6(2): 141–48.
- Chambers, R.J. (1961) 'Towards a general theory of accounting', Australian Society of Accountants Annual Research Lecture, University of Adelaide, 2 August.
- Chambers, R.J. (1962) 'The resolution of some paradoxes in accounting', Australian Society of Accountants Annual Research Lecture, University of Tasmania, 30 April.
- Chambers, R.J. (1964) 'Conventions, doctrines and commonsense', *Accountants' Journal*, February: 182–87.
- Chambers, R.J. (1965) 'The firm as an information complex', address to the NSW Computer Society, 29 July; abstract of which appears in Chambers letter to Mr G. McAuslan, 8 March 1965, USA P202, #014111.
- Chambers, R.J. (1966) *Accounting, Evaluation and Economic Behavior*, Englewood Cliffs, NJ: Prentice Hall.
- Chambers, R.J. (1979) 22 March letter to Briloff, Chambers Archive, USA P202 #5788.
- Chambers, R.J. (1986) *Financial Management*, 4th edition, Sydney: The Law Book Company.
- Chambers, R.J. (1995) *An Accounting Thesaurus: 500 Years of Accounting*, Oxford: Pergamon.
- Chanos, J. (2009) 'We need honest accounting: relax regulatory capital rules if need be, but don't let banks hide the truth', *Wall Street Journal*, 23 March.
- Cheng, K. (2012) 'Accounting discretion and fair value reporting: a study of US banks' fair value reporting of mortgage backed securities', *Journal of Business Finance & Accounting*, 39(5/6): 531–66.
- Cheng, M., Dhaliwal, D.S. and Neamtiu, M. (2011) 'Asset securitization, securitization recourses and information uncertainty', *The Accounting Review*, 86(2): 541–68.
- Cherry, C. (1957) *On Communication: A Review, a Survey and a Criticism*, Cambridge, MA: MIT Press.
- Clarke, F.L. and Dean, G.W. (2007) *Indecent Disclosure: Gilding the Corporate Lily*, Cambridge: Cambridge University Press.
- Clarke, F.L., Dean, G.W. and Wells, M.C. (2010) *The Chambers Years: The Sydney School of Accounting*, Sydney: Sydney University.
- Davies, H. (2010) *Financial Crisis: Who is to Blame?* Malden, MA: Polity Press.
- Dean, G.W. and Clarke, F.L. (2010) 'Unresolved methodological questions at the cross-section of accounting and finance', in T. Wise and V. Wise (eds) *A Festschrift for Bob Clift, special issue of International Review of Business Research Papers*, 6(5): 20–32.
- Dowd, K. and Hutchinson, M. (2010) *Alchemists of Loss: How Modern Finance and Government Intervention Crashed the Financial System*, New York: John Wiley.

- Duncan, H.D. (1968) *Communication and Social Order*, New York: Oxford University Press.
- Feltham, G. (1972) *Information Evaluation*, Studies in Accounting Research #5, Sarasota, FL: American Accounting Association.
- Feltham, G.A. and Demski, J.S. (1970) 'The use of models of information evaluation', *The Accounting Review*, 45(4): 623–40.
- Financial Reporting Council (2008) *The Audit Quality Framework*, London. Online. Available HTTP: [www.frc.org.uk/documents/pagemanager/frc/promoting\\_audit\\_quality\\_responses/audit%20quality%20framework%20for%20web.pdf](http://www.frc.org.uk/documents/pagemanager/frc/promoting_audit_quality_responses/audit%20quality%20framework%20for%20web.pdf) (accessed 10 January 2012).
- Gaffikin, M.J.R. (1988) 'Legacy of the golden age: recent developments in the methodology of accounting', *Abacus*, 24(1): 16–36.
- Gebhardt, G. and Novotny-Farkas, Z. (2011) 'Mandatory IFRS adoption and accounting quality of European banks', *Journal of Business Finance & Accounting*, 38(3/4): 289–333.
- Gingrich, N. (2008) 'Suspend mark-to-market now!', *Forbes*, 29 September. Online. Available HTTP: [www.forbes.com/2008/09/29/mark-to-market-oped-cx\\_ng\\_0929gingrich.html](http://www.forbes.com/2008/09/29/mark-to-market-oped-cx_ng_0929gingrich.html) (accessed 21 September 2011).
- Gleick, J. (2011) *The Information: A History, a Theory, a Flood*, London: Fourth Estate.
- Gottlieb, R. (2011) 'Lurching into a banking crisis?', *Business Spectator*, 19 August.
- Hayakawa, S. (1965) *Language in Thought and Action: How Men Use Words and Words Use Men*, London: George Allen & Unwin.
- Ijiri, Y. (1967) *The Foundations of Accounting Measurement*, Englewood Cliffs, NJ: Prentice Hall.
- Isaac, W.M. and Meyer, P.C. (2010) *Senseless Panic: How Washington Failed America*, Hoboken, NJ: John Wiley.
- Johnson, C. (2008) 'Wall Street points to disclosure as issue', *Washington Post*, 23 September.
- Katz, I. (2008) 'SEC recommends keeping fair-value rule with changes', *Bloomberg*, 30 December.
- Laux, C. and Leuz, C. (2009) 'The crisis of fair-value accounting: making sense of the recent debate', *Accounting, Organizations and Society*, 34(6/7): 826–34.
- Laux, C. and Leuz, C. (2010) 'Did fair value contribute to the crisis?', *Journal of Economic Perspectives*, 24(1): 93–118.
- Lee, T. (1982) 'Chambers and accounting communication', *Abacus*, 18(2): 152–65.
- Lev, B. (1968) 'The aggregation problem in financial statements: an informational approach', *Journal of Accounting Research*, 6(2): 247–61.
- Lev, B. (1969) *Accounting and Information Theory*, Studies in Accounting Research #2, Chicago: American Accounting Association.
- Linsmeier, T. J. (2011) 'Financial reporting and financial crises: the case for measuring financial instruments at fair value in the financial statements', *Accounting Horizons*, 25(2): 409–17.
- Magnan, M. (2009) 'Fair value accounting and the financial crisis: messenger or contributor?', working paper, CIRANO – Scientific Publications Paper No. 2009 s-27.
- Magnan, M. and Markarian, G. (2011) 'Accounting, governance, and the crisis: is risk the missing link?', *European Accounting Review*, 20(2): 215–31.
- Mandelbrot, B.B. (1999) 'A multifractal walk down Wall Street', *Scientific American*, 280(2): 70–73.
- Marschak, J. (1955) 'Elements for a theory of teams', *Management Science*, 1: 127–37.
- Marschak, J. and Radner, R. (1972) *Economic Theory of Teams*, New Haven, CT: Yale University Press.
- Mattessich, R. (1964) *Accounting and Analytical Methods: Measurement and Projection of Income and Wealth in the Micro- and Macro-Economy*, Homewood, IL: R.D. Irwin.
- Mattessich, R. (1980) 'On the evolution of theory construction in accounting: a personal account', *Accounting and Business Research*, 10(37A): 158–73.
- Moonitz, M. (1972) 'UCLA Berkeley Spring 1971 Course Notes', appended to letter from Maurice Moonitz, 16 May, to the University of Sydney Registrar in support of Chambers being awarded a DSc of Economics, University of Sydney Archives, USA (P202 #12253).
- Mosso, D. (2011) 'Financial analysts need sharper accounting tools', *Accounting Horizons*, 25(2): 419–35.
- Munchau, W. (2011) *The Meltdown Years: The Unfolding of the Global Economic Crisis*. New York: McGraw Hill.
- Nelson, C. (1973) 'A priori research in accounting', in N. Dopuch and L. Revsine (eds) *Accounting Research 1960–1970: A Critical Evaluation*, Urbana, IL: Center for International Education and Research in Accounting, pp. 3–19.
- Patterson, S. (2010) *The Quants: How a Small Band of Maths Wizards Took Over Wall Street and Nearly Destroyed It*, London: Random House Business Books.



- Postman, N. (1987) *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*, London: Methuen.
- Russell, B. (1940) *An Inquiry into Meaning and Truth*, New York: W.W. Norton.
- Ryan, S. (2008) 'Accounting in and for the sub-prime crisis', *The Accounting Review*, 83: 1605–39.
- Schwarz, N. and Rosse, K. (2011) 'I want you: Uncle Sam sues banks for billions', *Sydney Morning Herald*, Business Day, 5 September: 1, 4.
- Securities and Exchange Commission (SEC) (2008) *Report and Recommendations Pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-to-Market Accounting*, SEC. Online. Available HTTP: [www.sec.gov/news/studies/2008/marktomarket123008.pdf](http://www.sec.gov/news/studies/2008/marktomarket123008.pdf) (accessed 21 September 2011).
- Shannon, C.E. (1948) 'A mathematical theory of communication', *Bell System Technical Journal*, 27: 379–423, 623–56.
- Shannon, C.E., (1949) 'Communication in the presence of noise', *Proceedings of I.R.E.*, 37(1): 10–21.
- Shannon, C.E. and Weaver, W. (1949) *The Mathematical Theory of Communication*, Urbana, IL: University of Illinois.
- Simon, H.A. (1949) *Administrative Behavior*, New York: Macmillan.
- Sterling, R.R. (2006) *Accounting Hall of Fame Remarks, Citation and Response*, 'Response by Robert R Sterling', AAA Meeting, Ohio State University, Fisher College of Business, 7 August, pp. 7–13.
- Taleb, N. (2004) *Foiled by Randomness: The Hidden Role of Chance in Life and in the Markets*, London: Penguin.
- Taleb, N. (2007) *The Black Swan: The Impact of the Highly Improbable*, London: Penguin.
- Thayer, L.O. (1961) *Administrative Communication*, Homewood, IL: Irwin.
- Theil, H. (1967a) *Economics and Information Theory*, Chicago and Amsterdam: Rand McNally and North Holland Publishing.
- Theil, H. (1967b) 'On the use of information theory concepts in the analysis of financial statements', Report 6722 of the Centre for Mathematical Studies in Business and Economics, University of Chicago.
- Veron, N. (2008) 'Fair value accounting is the wrong scapegoat for this crisis', *Accounting in Europe*, 5(2): 63–69.
- Walker, R.G. (1992) 'The SEC's ban on upward asset revaluations and the disclosure of current values', *Abacus*, 28(1): 3–35.
- Whalen, R.C. (2008) 'The subprime crisis: cause, effect and consequences', Networks Financial Institute Policy Brief No. 2008-PB-04. Online. Available HTTP: <http://ssrn.com/abstract=1113888> (accessed 12 September 2011).
- Wiener, N. (1949) *Cybernetics*, Cambridge, MA: MIT Press.
- Zandi, M. (2009) *Financial Shock*, Upper Saddle River, NJ: FT Press.
- Zion, D., Varshney, A. and Cornett, C. (2009) 'Focusing on fair value', *Credit Suisse Equity Research Report*, 27 June.

This page intentionally left blank