

**SOME THOUGHTS ON
THE INTELLECTUAL FOUNDATIONS OF ACCOUNTING**

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SOME THOUGHTS ON THE INTELLECTUAL FOUNDATIONS OF ACCOUNTING

Synopsis: We report on a panel discussion at the 2001 CMU Accounting Mini-conference under the title “Intellectual Foundations of Accounting.” We provide a background and the motivation for the discussion and present the remarks by the four panelists. A number of perspectives are taken. Sunder emphasizes dualities in accounting. Demski stresses the endogeneity of accounting measurement activities. Fellingham examines the core and superstructure of accounting. Ijiri observes the microcosmos in accounting and its philosophical connection. We also argue that accounting’s intellectual foundations are far from settled and an on-going discussion is likely to help reinvigorate accounting scholarship.

I am sure that all of us who teach accounting in universities suffer from the implied contempt of our colleagues, who look upon accounting as an intruder, a Saul among the prophets, a pariah whose very presence detracts somewhat from the sanctity of the academic halls.

*Henry Rand Hatfield
December 1923.*

Henry Rand Hatfield's December 1923 address to the American Association of University Instructors in Accounting, the predecessor of the American Accounting Association, was published in the *Journal of Accountancy* as "An Historical Defense of Bookkeeping." Hatfield was apparently motivated by the perceived meager status of accounting as a legitimate scientific discipline both outside and within the profession. In his true humanist style, Hatfield defended bookkeeping by giving all of us a history lesson on accounting's lineage and parentage, the company it keeps, and the service it renders to society.

Some eighty years later, the current president of the American Accounting Association, Professor Joel S. Demski, in his address to the 2001 annual meeting, observed a quiet "malaise" in accounting academy with symptoms of "flat progresses," reappeared "tribal tendencies," and "diminished joy." In response, he called for reinvigorating accounting scholarship.

Against such a backdrop and following the annual meeting, the Graduate School of Industrial Administration, Carnegie Mellon University organized a conference on the "Intellectual Foundations of Accounting" in Pittsburgh, Pennsylvania on August 31 and September 1, 2001. The conference opened with presentations by four panelists: Professors Joel Demski, John Fellingham, Yuji Ijiri, and Shyam Sunder.

This document is an effort to preserve and share the content of the discussion. It is intended to begin an additional round of discussions on foundational issues in accounting and perhaps offer some new perspectives in the process. It is not intended to be a survey or a

comprehensive treatise on the topic. Readers wishing to pursue further may follow the original references cited in our commentary. In the next section, an introduction sets up the context. Sections 2-5 contain the remarks by the four panelists. The document concludes with a call for educational and research efforts on foundational issues.

INTRODUCTION

At the heart of Hatfield's (and, to some extent, Demski's) speech lies the respectability of accounting as a scholarly discipline. The intellectual foundation of a discipline is a key to its respectability. Foundational issues are paramount, albeit controversial, in any academic discipline. The subjectivists-vs-frequentists debate in statistics and the search for a unifying foundation in physics are notable examples. The modern foundation of business management rests on principles of economics, applied mathematics, and organizational psychology.

Introducing quantitative methods into business research adds to its respectability.

Accounting, too, has had its share of foundational debates, and considerable progress made. In the search for modern foundations of accounting, Ijiri (1967) and Mattessich (1964) begin with mathematics. Sterling (1970) emphasizes decision theory. Mock (1976) introduces the elements of formal measurement theory. Gonedes and Dopuch (1974) and Beaver (1981) stress the capital market setting, paralleling modern finance. Demski and Feltham (1976) pioneer the information economics approach, extended by Christensen and Demski (2002). Hilton (1985) examines the implications of probabilistic choice models, which incorporates mathematical psychology, for the theory of accounting information choice and use. Watts and Zimmerman (1986) present a positive theory of accounting. Sunder (1997) offers a theory of

accounting based on contract theory. Advances made by these scholars raised the stature and respectability of accounting.

Scholarly attention to foundations is critical to the health of a discipline, especially in today's changing social and economic environment. Rapid environmental changes often render research findings on current developments in practice obsolete. Besides, increasing challenges from non-accounting information sources require continued reexamination of the accounting core—the foundations. Due to the decreasing costs of information generation and dissemination, accounting and accountants' status as the quintessential sources of information and expertise is being threatened, causing concerns within the accounting academy as well as accounting profession. In his presidential research lecture at the 2000 AAA annual meeting, Kinney (2001) called for refocusing on our core competency. Finally, fundamental changes in the way we think of accounting often occur as a result of lively discussions of foundational issues, usually based on new developments in a basic discipline. For example, classical economic thinking helped shape Paton (1922/62) and Canning's (1929) original accounting treatises in the early twentieth century. The modern information-economic thinking contributes to fundamental accounting breakthroughs in say, Ball and Brown (1968) and Demski and Feltham (1976). Continuing such discussions is also a good first-step to avoid what Demski (2001) called “intertemporal sameness” in accounting research and teaching.

DECISION MAKING AND CONTROL: AN ACCOUNTING DUALITY¹

A fundamental characteristic of accounting for organizations is its dual role in decision-making and control. Time is interwoven in these roles. At any instant over the continuous flow of time, we look at both the past and the future, albeit in different ways. The routine application of the qualifier "historical" to accounting does not do it justice. Accounts are not mere sediments of past business events. They are conscious creations of those who wish to mold the future in preferred directions through the interplay of record and anticipation.

Accounting is an information system to help make decisions. It is also an instrument of control—which can be defined as a correspondence between what agents choose to do and what other agents expect them to do under various circumstances. In both decision-making and control, the past serves as an instrument for seeking a better future. The tension between decision-making and control arises because the data and processes that help establish control are not necessarily the best for decision-making, and the same is true in reverse. Yet, today's control ensures better decisions for tomorrow; tomorrow's decisions justify today's control. Both are necessary in organizations where their interaction creates accounting tensions associated with several dimensions of decision-making and control.

The tension between decision-making and control is not merely "internal" to organizations; it pervades all of accounting including financial reporting, auditing, and taxation in publicly-held corporations, as well as government and not-for-profit organizations. For example, financial reports that best help investors choose among investment opportunities may serve them poorly in establishing control over managers. Tax rules designed to best direct the

¹ Contributed by Shyam Sunder.

incidence of taxes may fail the control criterion by inducing taxpayers to change their behavior. Fundamental problems of decision-making and control do not change with the legal form of organizations.

Opportunity Sets and History

Identifying opportunity sets—what is possible—is critical to choice. Opportunity sets exist in the future but we must identify them in the present, often by extrapolating from the past. For example, at the time of making a decision, the likelihoods of resource flows associated with various options, and often the options themselves, are matters of conjecture about the future states of the world. Anticipation of and conjecture about the future use models of our environment that are validated by experience. In the absence of history and models, anticipation becomes speculation. History, on the other hand, is not simply everything that happened in the past; we select facts and organize them when we believe they might be useful in the future. Accounting is this organization of facts selected for future use—settling up of the past commitments and modeling processes for future projections. Accounting also depends on the persistence of past relationships into the future. Absent persistence of relationships, there will be little use for settling up credit transactions, and perhaps few credit transactions.

Subjective and Verifiable

Information relevant to decision making is inherently subjective, and therefore a matter of personal belief and expectations about the future. There is no way of making the estimated cash flows from a project, and the uncertainty associated with them, objective. Others cannot verify subjective beliefs, even ex post. If the decision maker assesses the probability of rain to be 40 percent, there is no way to verify the assessment before or after the fact. Neither rain nor

shine verifies or negates the assessment. Information used for control settles contracts and commitments and must therefore reside as data shared among the relevant parties.

Private and Common Knowledge

Subjective information used in decision-making is necessarily private to the individual. Others cannot know this information except what the individual chooses to reveal. Even then, others cannot know the correspondence between what is revealed and what the individual actually knows or believes. Information for control, on the other hand, resides in the social space among the participating agents. It is common knowledge among them in the sense that (1) they all know, and (2) they all know that they all know, and (3) they all know that they all know that they all know, *ad infinitum*. Social systems rely on shared facts, or at least shared beliefs—e.g., in rules or fairness of the game—to function.² It is difficult to share what is not rooted in facts. However, unless carefully monitored and filtered, a shared knowledge base runs the risk of becoming a depository of irrelevant facts. Accounts are an important part of the shared knowledge base of an organization, with accountants serving as their gatekeeper and organizer.

Relevant and Accurate

Decision-making requires assessing the environment and the consequences of actions, both located in the future. In choosing an information source, “relevance” is critical, and “accuracy” is often sacrificed. Control requires a comparison of what happened and what was supposed to happen given the plans or budgets, and the realized circumstances. What happened can often be observed and recorded, and accurate measurement according to rules agreed upon in

² Sunder (1997, Chapter 1).

advance is critical. Inaccurate records generate conflict when used as a basis for resource allocation.

Individual and Social

Individuals do accounting in a social context. Decision-making is an individual function; control is a social phenomenon. A given accounting system could be strong for one but weak for the other. We can design a system that is best for one or the other purpose, or we can compromise on one that is good enough for both. Robinson Crusoe, living alone on an island, can count coconuts, and make his decisions to swim, eat or sleep. In the absence of control uses, it is not clear that he does any accounting.

Creativity and Accountability

Creativity is a desirable trait in management and decision-making, but suspect in control. Accountability is a virtue in control, but mere red tape in decision-making. This is a frequent source of tension in fast-growing entrepreneurial organizations, especially when larger, well-established firms acquire and integrate them into a corporate accountability structure.

Cooperation and Competition

Decision-making consists of the goals and actions of a single ego. Even when multiple egos are involved, their goals and information coincide. It is possible for a single or unified ego to choose by looking to the future. Control deals with the problem of multiple egos in a complex competitive/cooperative environment. Collective welfare—the size of the pie—can be increased through cooperation, but each participant also competes to obtain a bigger piece of the pie. Their collective future drives them to cooperate; their individual claims to the fruits of their efforts drive them to compete.

Specialized and Articulated Accounting Systems

At first approximation, some aspects of accounting are anchored in the past while others are linked to the future. This separation motivates us to create independent accounting systems for different purposes. Yet, the distinction becomes fuzzy under the demand for consistency, driving us to integrate and articulate the "separate" systems into a unified whole.

At the core of the accounting discipline lies this multidimensional tension between decision-making and control. Without this tension, accounting would not be interesting or intellectually challenging. No single resolution of this tension, even if supported by the force of authority, can be right. Dynamic interplay among the forces mentioned above, and of time, makes accounting fun. The day we close our eyes to this complex but fascinating structure and abide by prescriptions of authority, accountants can be replaced by software.

ENDOGENEITY OF ACCOUNTING MEASUREMENT ACTIVITIES³

Accounting surely concerns measurement; after all, we routinely produce and communicate in numerical terms. But what is it we purport to measure, and how might we think about the on-going management of this measurement activity?

First, on the measurement side, we have the formalities of measure theory, such as the splendid volumes on *Foundations of Measurement* by Krantz, Luce, Suppes and Tversky (1971). Here we encounter the idea of representing an "empirical relational system," say a group of individuals ranked by height, with a "numerical relational system," consisting of real numbers and the \$ relation. Important questions concern the mere existence of a measure as well as its uniqueness. The first step is identifying the empirical system, and even here we are unsettled.

³ Contributed by Joel Demski.

One view, the “value school,” stresses stocks and flows of resources. The empirical system is entities, with their resources and obligations, marching through time and some relationship defined thereon. We represent this via measurement of assets, liabilities, etc., again marching through time. When well done, the measures are interpreted as stocks and flows of economic value (e.g., Ijiri 1967 or Mock 1976, especially chapter 6). This is our heritage—manifested in classical work on depreciation and income—and it continues to this day in the current debate on intangibles and, more broadly, the fair value school in both its “mark to market” and “mark to model” versions. The difficulty, at least to me, is twofold: (1) if we have a mixed economy, value is simply not well-defined; and (2) judged, say, by market to book ratios being routinely well above unity we are failures at the exercise even in the case where prices are observable.

Another view, the “information school,” stresses information that might be useful in various activities, such as valuing the reporting entity or evaluating its management team. Here the empirical system is the event structure under which the entity operates, and some relationship thereon.⁴ Once again we represent this via measurement of assets, liabilities, etc. But notice the profound difference: the measurement apparatus, including the scale, is the same in both schools, but what is being represented is remarkably and fundamentally different.

I, to no surprise, am a fan of the information school, and stress the phrase “accounting uses the language and algebra of valuation to convey information” (Christensen and Demski 2002). For example, suppose a firm reports an inventory “valuation” of $\$1.5 \times 10^7$. The value

⁴ To throw a little notation at the issue, think of the entity’s eventual resources, x , as being determined by what it does, act a , and what uncertain state, s , eventually obtains: $x = f(s, a)$. The value school stresses different x profiles, so to speak, while the information school stresses different partitions of the set of possible states, partitions that are influenced by the entity’s act.

school would be concerned with how well this “valuation” approximates the value associated with this aggregate holding, such as replacement cost or anticipated net receipts. The information school would be concerned with how well this “valuation” conveys pertinent and appropriate information about the firm’s activities and prospects. Reporting $\$1.5 \times 10^7$ worth of inventory sounds like a value measure, and the number is even produced from within a double entry framework—in a manner that respects the algebra of valuation—but it is not a statement of value. It is a statement that the noted procedures applied to the activities in question resulted in this numerical outcome. Reporting this numerical outcome supplies, we hope, pertinent and appropriate information. But decoding that information, and mixing it with other information sources is well outside the model.⁵

Second is the issue of managing this on-going measurement activity. How, that is, do we grow and refine the system as the economy itself grows and refines? Here the value school closely parallels the way we teach accounting. The entity engages in some transaction, and given this transaction we must find the best way to numerically represent it, the best valuation so to speak. Naturally, when value is well defined this is a straightforward task, and we merely apply our scale to the transaction. Otherwise, we look for some approximating method. Importantly, the transaction is the beginning point in the activity.

The information school, though, lacks this clarity. To understand what to convey about this transaction requires we know the “finer details” that gave rise to the transaction in the first

⁵ To continue the prior note, application of the accounting procedure reveals something about the uncertain state that is present, something about the firm and its environment. In particular, the accounting method’s report depends on the uncertain state and the entity’s act, so we can write it as some function $g(s,a)$. This tells us something about the entity, its environment and its act; but there is no presumption this g function is closely related to the f function in the prior note.

place. The beginning point is not the transaction, but the circumstances that led the firm to engage in the transaction. Thus, the very things we measure are exogenous in the value school, but endogenous in the information school. For example, with hedging accounting, value school asks what is and how to measure the fair value to the entity; while information school asks first why the entity engages hedging activities and, second, how public or private information about such activities affect market or non-market interactions. This is far removed from the way we teach accounting. For that matter, simply having the infrastructure of uncertainty and information at center stage is far removed from the way we teach accounting.

In terms of fundamentals, then, it seems to me the issues are what are we trying to measure and how are we to manage that measurement activity? My fear is we are in the information business, intellectually and professionally, but have become addicted to thinking, teaching, learning, examining, regulating and communicating as if we were in the valuation business. This, unfortunately, is an isomorphism that does not exist, and pretending otherwise is a roadblock to our progress.

THE CORE AND THE SUPERSTRUCTURE OF ACCOUNTING IN THE CURRICULUM⁶

The task is to confront the foundational issues (questions and answers) in the academic discipline of accounting. It is appropriate to note at the outset the task is a little bit difficult, and that very difficulty is troubling, as it calls into question either the intellectual vigor of the discipline, the perception of the author, or both.

⁶ Contributed by John Fellingham.

This part of the discussion concentrates on two concepts that seem to pervade the academic discipline of accounting: information and double entry mechanics. Before dealing with those concepts, however, it is useful to consider a definition of "foundation" from *Merriam Webster's Collegiate Dictionary*: "a basis (as a tenet, principle, or axiom) upon which something stands or is supported." The definition is helpful in that it identifies two things to look for when trying to identify foundational material: the core of the foundation itself, and what is built upon the foundation—the superstructure.

As foundational issues should be easily recognizable in, and fundamental to, the teaching of accounting, consider teaching and curriculum design. In particular, consider the introductory courses. A thing to be noted is that information is typically not used as a foundational concept. My own perusal of introductory financial accounting textbooks leaves me disappointed. For example, the concept of a probability measure is seldom mentioned; also absent are representations of uncertainty. Uncertainty, let alone informational asymmetries, is rarely deployed to motivate particular accounting rules or practices. Antle and Garstka (2001) is an encouraging step; there may well be others of which I am not aware. Some sophisticated information economics issues may appear later in the curriculum, particularly in doctoral coursework. Nonetheless, it is hard to escape the conclusion that information is not treated as a foundational concept, due to a lack of a core foundation in the curriculum.

On the other hand, the double entry mechanism is pervasive in introductory accounting courses. The temptation, then, is to look for foundational results embedded in double entry; but, once again, disappointment ensues. Later courses in the curriculum offer little more understanding of, and results associated with, double entry. Other than new account titles, the

basic journal entry/financial statement procedures are the same as in the introductory courses. In terms of foundational properties in the curriculum, double entry has "core" properties, but no superstructure; conversely, the concept of information has superstructure, but not a discernible core.

Another way in which foundational issues can potentially be identified is in the ideas that are exported from accounting to other academic disciplines. Before proceeding it is appropriate to note that it is not clear accounting, as a discipline, aspires to exporting results. In accounting research, we often hear references to "source" disciplines like economics or psychology. It is the source discipline where, for the most part, research questions and theories are formulated. Accounting is treated implicitly, sometimes explicitly, as an applied discipline: a laboratory in which to test intellectual ideas generated elsewhere.

Should accounting so aspire, both concepts mentioned previously—information and double entry—may merit export. Accounting can be characterized as a science which studies information in an economic context. Information is a pervasive idea in other, non-economic oriented disciplines. Consider, for example, this quote from physicist John Wheeler (1998): "I think of my lifetime in physics as divided into three periods. In the first period... I was in the grip of the idea that Everything is Particles... I call my second period Everything is Fields... Now I am in the grip of a new vision, that Everything is Information. The more I have pondered the mystery of the quantum and our strange ability to comprehend this world in which we live, the more I see possible fundamental roles for logic and information as the bedrock of physical theory." (p. 63-64)

If accounting really is an information science, is it possible that information results encountered and derived in an economic context may, in fact, be relevant absent an economic context? Physics, as well as other academic disciplines such as computer science and coding theory, draw upon Information Theory in which there are at least two foundational results. The first is the Data Compression Theorem which specifies the maximum amount of compression possible without loss of information. The second result is the Channel Coding Theorem which specifies the maximum amount of information that can be sent through a noisy channel. Efficient coding schemes for use in noisy channels are implemented using redundancies. In a fundamental sense accounting both compresses, or aggregates, information, as well as adding the redundancy inherent in double entry mechanics. It seems possible to speculate that accounting and accountants can contribute to other disciplines that rely upon the foundational concepts of aggregation and redundancy of information.

A parallel question can be posed with respect to double entry. In double entry two accounts are connected by one journal entry, and direction matters, in the sense that a debit differs from a credit. The structure so formed, consisting of several accounts and journal entries, is a directed graph, around which an extensive theory has been developed in disciplines such as graph theory and optimization. Is it possible for accountants, as experts in a particular graph structure and accounting ideas, to contribute to other related academic disciplines?

ACCOUNTING AS A MICROCOSM⁷

Internal audit departments at major corporations often brag about the fact that a few years' experience in the department offers a fine training to become an executive because they

⁷ Contributed by Yuji Ijiri.

deal with a microcosm of the company's business and organization. Can we say more generally that accounting deals with a microcosm of a society?

I think that the answer is a profound yes. In fact, it is a microcosm as in snow flakes, where the same ingredients and patterns are repeated no matter how much they are enlarged. I would like to go even further and say that, by dealing with a microcosm of the society, accounting can be related with any other field or discipline of the society if we keep our eyes open.

Accounting subject matters can be taught and researched as a branch of business, economics, sociology, history, mathematics, science, technology, literature, fine arts, philosophy, or you name it. In return, some key elements of these disciplines can be seamlessly brought into accounting and taught or researched as accounting per se.

To take a simple example, one of the strongholds of accounting is performance measurement. It is carried out systematically under nationwide or worldwide standards and verified by audits. Very few, if any, performance measurement systems can make such a claim. As long as these other disciplines also have the need for performance measurement, accountants have a role to play.

In fact, we can spend a whole semester in an accounting course going over, for example, the philosophy of selfishness being beneficial to the society—"private vices, public benefits"—a philosophy which is at the core of free enterprise systems. Performance and incentives in management can be studied from this foundation. An income statement offers a good performance measurement under this philosophy, whereas a value-added statement may be a better one to use in a more altruistic society. Both societies need accounting.

I took a philosophical "accounting seminar" as an undergraduate in Japan, in which we spent the entire course on Thomas Carlyle's (1896) *Sartor Resartus* ("Tailor Retailored"). Here, we went over the philosophy of clothes and the indispensable role that clothes play in society, treating accounting also as indispensable clothes people wear, change and discard. Nearly a half-century later, it is still having impact on my thinking.

Learning accounting and philosophy in tandem, to take an example, is better than learning them separately, as accounting offers a "context" in which the "essence" of philosophy may be materialized. Although the essence is still important, the importance of understanding the essence along with the context is getting more widely recognized as we can now afford to pay attention to the context, thanks to information and other technology. This learning of essence and context in tandem forces us to throw away empty words by means of a "reality check" and prevents us from becoming dilettantes. Thus, accounting can be as foundational or as practical as we want it to be since we have our feet in both extremes.

Searching for foundations of accounting is very important. However, this is only half of the opportunities. This reflects the "reductionistic" view in science which values the essence of matters in the discipline. It seeks an "intersection" of knowledge that is commonly shared in diverse phenomena.

The other half of the opportunities is opened recently by the "contextualistic" view in science which emphasizes the importance of the "context" in which the "essence" appears. The search for accounting principles is important but the contextualism warns us that the context in which the principle is applied is also important.

In particular, contextualism emphasizes the emergence of heretofore non-existent

phenomena which occurs when two or more essential matters interact. Such an "emergence" cannot be explained by reductionism. Many evolutionary phenomena fall in this category. In this sense, this view may also be called "interactionism." Accounting has the potential for growing downward, searching for foundations, or growing outward, searching for new phenomena created when accounting interacts with other parts of the society. Both are necessary if it is to explore all opportunities. Accounting deals with a microcosm of the world. Accounting can be as "foundational," as in the search for *essence*, or as "interactional," offering an increasing variety of *context* in which the essence may appear, as we want it to be.

Failures do occur in accounting, as in any industry or profession, and they should be carefully analyzed and corrected. But we should not forget the tremendous contributions made by accounting. Imagine what the state of business and economy would look like without accounting. Imagine how the stock market would function without accounting standards, independent audits and earnings per share data. Such mental simulations are useful to highlight the indispensable contributions accounting made in the past and will continue to make in the future.

Indeed, the German economic historian, Werner Sombart, praised accounting and its bookkeeping tool saying: "One can scarcely conceive of capitalism without double-entry bookkeeping; they are related as are form and content. It is difficult to decide, however, whether in double-entry bookkeeping, capitalism provided itself with a tool to make it more effective, or whether capitalism derives from the 'spirit' of double-entry bookkeeping (1902)."

There are no better compliments to accountants than the fact that accounting numbers are used so widely in decisions and contracts involving large sums of money. Accounting

performance measures such as earnings per share or price-earnings ratios are so important for investment decisions that they are published in newspapers, not monthly or weekly, but daily. Stock price movements are often very sensitive to forecasted or actual earnings per share that the company or financial analysts report. Numerous executive bonus plans and employee profit sharing plans are developed based on accounting income. Across corporations, joint venture proceeds are allocated on the basis of accounting numbers and whether mergers and acquisitions occur often depends on accounting numbers. Few performance measures in other fields and disciplines can claim such a widespread, continuous, and serious acceptance of the measure.

Certainly, accountants' responsibilities loom large in this environment; ironically, this is because accountants did such a good job of developing a relatively reliable system of financial reporting and, more importantly, getting it accepted by society. No such responsibilities would arise if accountants developed measures nobody cared about.

Now is the time for all accounting academicians and practitioners to go back to the foundation, read classics like Carlyle's *Sartor Resartus* or Hatfield's "Defense," and gain the super-long-term perspective that history offers, from which to view contemporary events.

CONCLUDING REMARKS

Foundational questions in accounting are far from settled. In classrooms, research, and policy debates, we struggle with the fundamental accounting tensions, or what Sunder termed accounting dualities. Inconsistencies are common between how we teach—assuming certainty—and conduct research—assuming uncertainty. We speak of value measurement in an economy characterized by incomplete and imperfect markets where value is ill-defined; we speak of universal information quantities and qualities, such as relevance and reliability, when

such notions are also ill-founded (e.g., Blackwell Theorem 1951). These difficulties call for continued, lively foundational inquiries and debates.

Foundational issues have pervasive and long-lasting effects. They transcend accounting concepts and practices, as articulated in Sunder's remarks; and they dominate scholarly perspectives, as explained in Demski's remarks. Accounting's core is the anchor of its superstructure and serves as our bridge to other disciplines, as discussed in Fellingham's remarks. Ijiri's remarks expose us to accounting's full potential—a spectrum extending from philosophy at one end to business practice at the other.

Refocusing on foundations requires a commitment to foundation-awareness in all we do. Doing interdisciplinary research and integrating teaching and research helps. At Carnegie Mellon University, for example, many of the well-known contributions to business resulted from having researchers with expertise in basic disciplines—economics, mathematics, and psychology—teach applied courses in accounting, finance, information systems, and marketing. These include:

- Bounded rationality (Simon 1947)
- Dividend irrelevancy theorem (Miller and Modigliani 1958)
- Organizational theory of the firm (Cyert and March 1963)
- Rational expectations (Muth 1961 and Lucas 1972)
- Statistical auditing (Cyert and Trueblood 1957)

In accounting, the early ties were closest with mathematics, as evidenced by the work of Cooper, Ijiri, Kaplan, and others. See, for example, Charnes, Cooper, and Ijiri (1963) and Kaplan and Thompson (1971).

Teaching served as an important stimulus for research, and research was brought into the classroom even as it was being developed. The following advice given by Maurice Moonitz to

one of the conference organizers when he was a PhD student seems timeless in its relevancy: "Don't think of them [teaching and research] as independent. Make them interact. If you stress teaching per se, you will deplete your intellectual capital in about five years. After that you will be teaching other people's ideas; other people's work." Scholarly opportunities abound with a commitment to interdisciplinary research and teaching-research integration.

It is our hope that this commentary serves up a positive and ambitious outlook for accounting as a scholarly discipline. Hatfield reminds accountants of their proud heritage; Demski calls for renewed scholarly leadership. We think refocusing on foundational issues in both our educational and research endeavors will invigorate us as individuals as well as our discipline.

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