

## COMMENTARY

Robert K. Elliott

*Robert K. Elliott is Chairman, KPMG Peat Marwick LLP, AICPA Special Committee on Assurance Services.*

### The Future of Assurance Services: Implications for Academia

The AICPA Special Committee on Assurance Services was set up in response to a decline in the market vitality of the audit. (See Elliott 1994a and 1994b for background.) Our purpose is to develop ideas and initiate steps to refurbish the profession's product. This mission was conceived in response to the current and emergent audit/assurance environment, the obvious context for considering the vitality of the audit.

The current audit is surely very valuable to the capital markets and to our economy, but it is a mature product that has not been growing. Over the last six years real accounting and auditing revenues for the top 60 firms have been flat despite growing GDP.<sup>1</sup> The market seems saturated; there is overcapacity and price competition; and the inherent reliability of accounting data has increased with improvements in business information systems. The audit service is generalized—a one-size-fits-all product—rather than tailored to the individual needs of investors and creditors and other users, yet responding to individual customer needs is one of the great messages of the last decade of economic change. Meanwhile, software that can do audit functions is a long-term threat. Imagine banks purchasing or developing such software and auditing their own debtors, institutional investors auditing investees, or internal auditing bolstered by advanced software that drastically reduces the evidence needed for an audit opinion.

A large part of the immediate problem is

the limited usefulness of today's financial statements. They don't, for example, reflect information-age assets, such as information, capacity for innovation, and human resources. As a consequence, they have been a declining proportion of the information inputs to investors' decision making. That translates into a declining share of the information marketplace for auditors (and, for that matter, financial accountants). Were financial statements as central to investors' decision making as they were thirty years ago, there would be relatively little concern over the vitality of the audit.

However, the Committee was not intended to address improvements in financial reporting. That was the job of the Special Committee on Financial Reporting (the Jenkins Committee), which completed its work last year. Its recommendations have not yet been enacted, but it would nevertheless have been superfluous to appoint an additional committee devoted to refurbishing financial reporting.

Our task is to refurbish the profession's "product" in a different sense: to identify new services in the wider area of the assurance function, an area that includes the basic audit, but goes beyond it. This must take place

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<sup>1</sup> Derived from data published in *Accounting Today*.

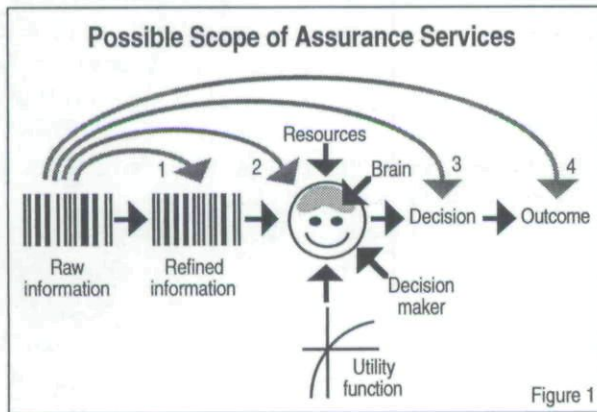
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This article is adapted from Mr. Elliott's plenary address at the AAA's annual meeting in Orlando on August 16, 1995.

with an eye to the future, for the committee is charged to take a long-term view.

### POTENTIAL SCOPE OF ASSURANCE SERVICES

What beyond the audit might the Committee recommend? The full potential scope is illustrated in figure 1.



This figure depicts a decision maker with resources to allocate, a utility function (his or her own, in the case of personal decisions; the entity's, in the case of entity decisions), a brain (incorporating knowledge and experience), and information. Decisions (e.g., to invest in a product) result in outcomes (e.g., a profit or loss).

The four gray arrows represent possible scopes for assurance services. In the case of arrow 1, raw information is refined into reliable information. This scope of assurance goes no further than the current attestation standards. Note that it is also independent of the decision maker. Any raw information can be refined, regardless of whether it is used for decision making at all.

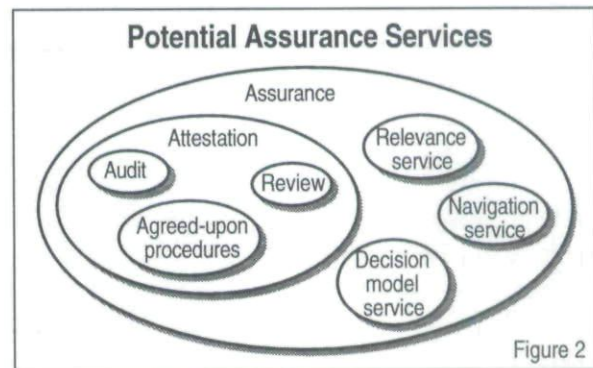
Arrow 2 represents services that improve decision making, including those that enhance not only the reliability of information, but also its relevance and availability for the decision maker.

Arrow 3 represents services that improve decisions, including those that improve the decision maker's store of knowledge (beyond the decision information itself), decision models, and decision processes. For example, an assurer might assist the decision maker in framing the decision problem, modeling the

decision process, identifying the information requirements, sourcing the information, evaluating the information, monitoring outcomes, and providing feedback to the decision maker and information sources.

Arrow 4 represents services that improve outcomes. Such services resemble insurance more than assurance, however.

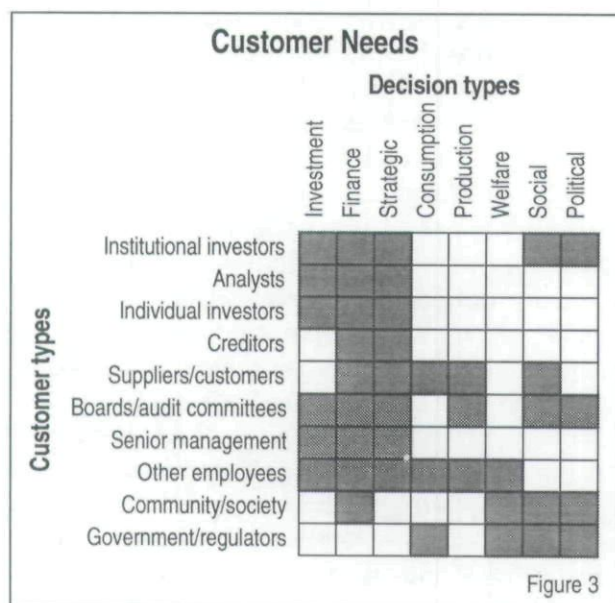
Figure 2 shows the relationship of audit, attestation, and assurance services. Attestation includes traditional audits of financial statements, but also such other products as reviews and agreed-upon procedures. These services do not exhaust the attestation space, however. Assurance includes attestation, but goes beyond. The figure shows some candidate services (yet to be specified), but includes much more space for the development of future services.



### THE COMMITTEE'S APPROACH

The Committee's primary method for identifying potential services, however, has been much more inductive. It has been based on researching customer needs. In-depth interviews have been the major research method applied so far. We have interviewed institutional investors, investment analysts, creditors, suppliers, managers in industry (including members of senior management), members of corporate boards, government regulators, and state and local governmental officials. The purpose of the interviews was, first, to determine interviewees' needs when they perform decision making. We found that customers for current attest services, for example, have quite a variety of unfilled needs in using information for decision making. You

can get a fuller picture of this approach from the matrix in figure 3, which has potential customer types and decision types as its two axes. The gray cells appear to be high potential cells (sufficient volume and significance to warrant potential assurance services).



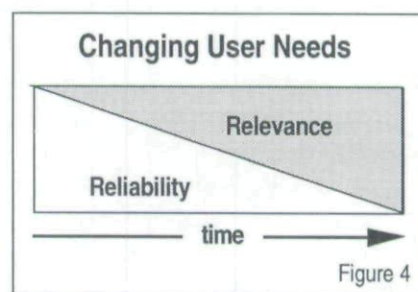
To a limited extent we also tested, in these interviews with customers, what marketing people call "permissions," that is, whether such customers believe that they would likely purchase such services from CPAs if we offered them. It is possible to develop permissions for new services, but this would be more costly than exploiting existing permissions.

Without this customer-oriented approach we could not fulfill our strategy of identifying services that are to be voluntarily purchased. The Committee has not attempted to devise new reporting or auditing requirements for companies and doesn't intend to do so. It is customer-oriented in the sense of seeking their needs and trying to identify what they would be willing to purchase because they think it can help them fulfill their objectives.

The research design does not rely on interview data alone. A later phase in the customer needs research will be focus groups, which should provide support for some conclusions and enable us to refine or eliminate others.

Although it is necessary for us to study customer needs, it is not sufficient. First, customers are not generally articulate about unmet or emerging needs. Second, external trends they are unaware of may change their needs. So the Committee has also been studying the nature of the audit-assurance environment and how it will change. This kind of research focuses on long-term trends. This research helps us to determine which customer needs will be intensified by long-term trends and which will tend to diminish or even vanish. This will allow us to concentrate development energy on those needs with the greatest potential.

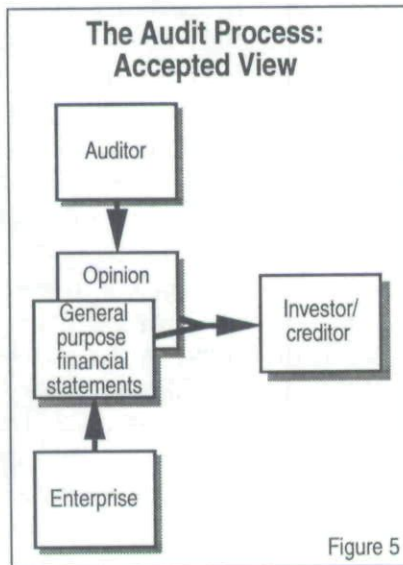
Our findings from interviews and from studying the audit-assurance environment show a shift in information users' needs (figure 4). They have less need for assurance about reliability and more need for relevance. This should not be too surprising. Computerized information is less prone to errors than manually prepared information; there is more information to choose from than in the past, which puts a premium on relevance; and the conditions affecting the outcomes of decisions are more complex and changing faster, also putting a premium on relevance.



### The Customer-Driven Model

Our research has reinforced in the strongest way the customer-comes-first message from the marketplace and what it might mean for expanded services. In the industrial era, the emphasis was on mass production to drive down costs. Customers benefited from low prices, but were stuck with one-size-fits-all products. In the post-industrial era, companies can use information technology to "demassify" products and services (i.e., tailor

them to the specific needs of market segments, and ultimately individual customers) while still keeping costs low. Once technology makes this possible, competition makes it inevitable. The result is a huge shift in power from producers to consumers. This power shift has restructured entire industries, and it will likely do so to the accounting profession as well. If any producer's goods and services are not designed to meet customers' changing needs and tastes, some other producer will provide a substitute and take over the laggard's market position.



The audit counterpart of this economic shift is illustrated in figures 5 and 6, which depict the current and future audit model for a commercial organization (a not-for-profit organization would be analogous).

The current model's user, an investor/creditor, is on the right, the passive recipient of audited financial statements. The enterprise preparer of general purpose financial statements is management. Input is provided by the auditor in the form of audit procedures leading to the audit opinion. The audited financial statements then go to the investor or creditor for use in decision making.

But the diagram doesn't describe the present very well, much less the future.

Audited, general purpose financial statements often arrive after investment or credit decisions have already been made. They are not

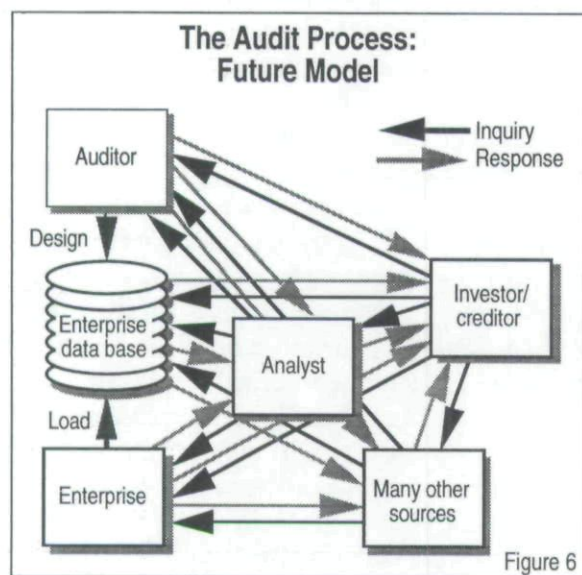
a full information set for decision making. There are many more sources of information and there are often analyst intermediaries who provide advice on the basis of the financial statements and other sources of information.

More important than the mere presence of other information sources is the higher level of dependence on them and the fact that they are selected as the individual user believes they should be selected. These selections are the opposite of the general-purpose, one-size-fits-all approach in figure 5's current model. Thus the depiction of the passive user is false. Users—say, institutional investors—interact with the entities in order to obtain information: meeting with management, for example. Analysts do, too, and the financial press does far more than passively print corporate press releases. Providing investment information and advice is a business in itself, and it takes initiative in seeking corporate information.

Figure 5's diagram is even less realistic as a view of what is likely in the future and of the changes information technology is bringing. In the future we will have real-time business reporting with real-time auditing. Users will be online to corporate databases because corporations will find it in their interests to inform capital suppliers, the customers of external business reporting, more fully. The relevant "accounting" standards will consist primarily of standards for data definitions and data elements and perhaps arrangements for data security and data access. Software houses and, perhaps, accounting firms would supply analytical tools and reporting packages, and online investors would create their own presentations according to their individual needs. In other words, they would do what we currently think of as financial accounting. But it would be a far more encompassing exercise.

The well-known demands for additional segmentation in financial reporting, for example, would be met by users applying segment-analysis software to databases. Users would make choices based on their needs, which we know are diverse. Investors approach financial analysis from a vantage point different from that of creditors, and

different investors take different approaches as well. Real-time database access with chosen analytical software would address those differences.



Naturally, companies will not want to reveal data that are competitively damaging, and no one wants to damage corporate vitality. But competitively harmful data can be screened, and selective access can be otherwise refined. Attitudes toward what is competitively disadvantageous are likely to change with rapidly diminishing cycle times for new products and services.

Technological progress favors such a change. Processing power will continue to skyrocket and the cost per unit of processing power will continue to plummet (Moore's Law: one computer generation equals eighteen months). Meanwhile corporations and other entities are learning to take greater advantage of the new capabilities. EDI networks (electronic data interchange) and the Internet are in place and growing, and corporate mergers and other positioning moves are reconfiguring telecommunications capabilities. Thus, there is good reason to believe that the capabilities for real-time, widespread user access to corporate databases will be technologically feasible.

The question is whether there will be sufficient user demand. But here again the fu-

ture seems bent on creating the necessary conditions for real-time user access to databases. The role of institutional investors is growing; the number of parties they represent is growing too; and appreciation is widening that today's GAAP accounting cannot provide as much of what investors are going to need as it once did. As SEC Commissioner Steven M. H. Wallman told an audience at Stanford Law School in June, if investors are to continue to provide capital at reasonable costs, they are going to continue to demand an increasingly better understanding of the uses of such capital and the risks associated with particular investments (Wallman 1995, section II, C). The benefits of readily available capital at reasonable costs would weigh on the side of meeting the informational demand.

The revised audit-process diagram (figure 6) shows two-way arrows to indicate the interactions I have mentioned. A two-way arrow also depicts the relationship between the user and the auditor. The user could want commentary on investee risks from the auditor, as might the analyst. The Jenkins Committee found some demand for it today. The user—say, an institutional investor—might want in addition evaluations of other information, systems, or processes and be willing and able to pay for it.

Moreover, the enterprise has a great interest in supplying the user with information to lower the cost of capital, and the pursuit of that interest could be a source of demand for the expertise of assurers. Independent accountants could be called upon to help design information systems, to be the outsource for information processing, or to attest to the design of the information system. Many such services are already provided today, but not in an assurance context. They take shape as potential assurance services when one transforms the current model of the audit process into the future, customer-driven version.

Returning to figure 4, it should be noted that reliability is more of a producer-oriented attribute than relevance. Information can be made more reliable without respect to whether it is used, whereas relevance can only be as-

certained with respect to a particular decision maker faced with a particular decision.

**Auditors' Competencies**

Another line of Committee research is the study of auditors' competencies. The idea behind this task is twofold. First, knowledge of CPAs' capabilities can contribute to designing services. Second, knowledge of CPAs' capabilities is essential to assess the feasibility of any proposed service and what kind of training would be needed to provide the service. The basic relationships are shown in figure 7. Any gap between the competencies we have now and those we will need in the future implies the need for a migration strategy for the profession.

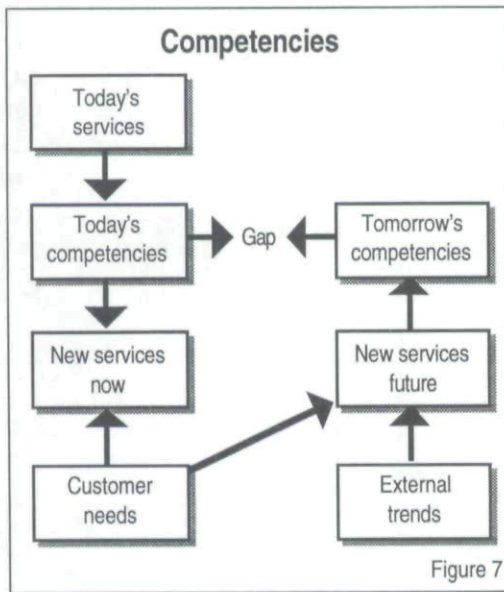


Figure 7

		Competencies	
		Weak	Strong
High opportunity		Advanced analytical skills Right-brain skills Technology	Ethics and integrity Left-brain skills Model building Verification
			FASB technical-rules mastery AICPA rules mastery

Figure 8

tribute to future new services. (Low-opportunity, weak competencies are theoretically limitless and not worth illustrating.)

**IMPLICATIONS FOR COLLEGES AND UNIVERSITIES**

Now I want to examine briefly what the Committee's work means and might mean to higher education—to professors and students and to colleges and universities as institutions. The first issue is the relationship between the potential scope of assurance services and the curriculum. If the audit is a component of attest services and attest services are a component of a wider set of assurance services, what would become of courses introducing auditing?

In the intermediate-term future, there will continue to be audited financial statements. They are and will continue to be valuable, even if they could be much more helpful to users and therefore more important in the marketplace. So there will continue to be a need for course work in auditing financial statements. But the attest function will be broadened to the assurance function. It seems likely that future professionals who go into public practice will be receiving some sort of training in colleges and universities in the wider scope of services.

Adapting accounting programs to the changing demands of practice could have institutional ramifications. These are likely to involve competition with other disciplines simultaneously redefining and defending their places. The greater the change in the discipline, the more likely competition with other disciplines.

Figure 8 shows examples from two sets of high-opportunity skills, that is, skills that can contribute to new assurance services. Those in which we are relatively weak (advanced analytical skills, right-brain skills, and technology) are tomorrow's competencies, to use the language of figure 7. If this projection is correct, and borne out by our subsequent work, the profession will have to close the gap on these competencies. Low-opportunity competencies in which we are strong (the lower right cell) are essential to the maintenance of the current audit function, but are unlikely to con-

## RESEARCH OPPORTUNITIES

Academic research could and should play a major role in the way practitioners arrive at customer-driven services in the future. The long-standing issue over the relevance of academic research on accounting and auditing to practitioners could become a thing of the past, because opportunities for research unmistakably needed by practitioners are now building up like fast-flowing water arriving at a dam. In many cases there is a one-to-one relationship between curriculum needs and the research; in others, the curriculum need will follow changes in practice aided by the research.

We need research in three basic areas:

- Who are the potential customers for assurance?
- What are their assurance needs?
- What technologies are needed to meet those needs?

Too little is known about the customers and potential customers for assurance services. They are decision makers by definition, and the more obvious of them have been at least interviewed by our Committee and by the Jenkins Committee. But study commensurate with the importance of the question—the full range of potential customers and the needs of their decision-making processes—has not been done. A broader range of identified customers and customer needs would affect approaches to adapting curricula as well as assist practitioners in adapting to the future.

Following is a partial list of customer needs that would affect the curriculum and those that would present areas for research:

### **Curriculum:**

- Decision model selection and specification.
- Information requirements.
- Information sourcing.
- Information analysis and interpretation.
- Implementation of decisions.
- Outcome feedback.

### **Research:**

- Relevance enhancement.
- Decision processes and how they will change under the influences of information technology.

The curriculum set is based on the sequence of activities in decision making. A decision maker needs a decision model suited to the demands of the decision. And based on that model and the decision to be made, there will be information requirements. When those requirements are defined, the information must be obtained, which means identifying sources and access, and also may mean cutting through excess to isolate only what is needed. Once obtained, the information must be analyzed. Finally, decisions made must be implemented, and feedback on outcomes should be obtained to refine the decision-making and information-acquisition processes.

The counterpart research includes decision processes and how they change, which would create input to refine the related curricular segment.

We certainly need to understand as fully as possible the range of needs for relevance enhancement. This includes types of information needed because they are relevant or add relevance, but would be more embracing. Systems should be designed to capture and report the relevant, for example, and to avoid time-consuming deluges of the irrelevant. This research would also create input to refine related curricular segments.

Following is a partial list of the curricular and research opportunities on technologies to fulfill customer needs.

### **Curriculum:**

- Communications.
- Real-time focus.
- Meeting customer needs on demand.
- Systems.
- Reliability by design.

### **Research:**

- New modes of reliability enhancement:
  - By design, not by inspection and correction.
  - Multivariate-triangulation and electronic-data-interchange approaches.
  - Information dual.
  - Massive redundancy.
- Real-time auditing.

There is certainly a great need for research on new modes of reliability enhancement and real-time auditing.

Reliability enhancement through design has precedents, but its future lies before it. Today we audit systems very much by inspection of their performance. We evaluate general controls, which includes systems development, but systems-development procedures mindful of inspection controls are not the same as building reliability into design so that inspections play a far smaller role—ideally, are made unnecessary. They would be replaced by preventive controls embedded in transaction processing systems. Auditing focused on inspection controls and system outputs would be replaced by auditing design and preventive controls directly. This is analogous to the progress in quality management in manufacturing, where quality assurance based on inspection and rework has been largely replaced by the redesign of processes and products to eliminate the sources of defects.

Preventive controls are particularly important if we are to realize the potential of electronic commerce. The dependence on system integrity in such a world was nicely captured by Kevin Kelly (1995, 208) when he wrote: "An online civilization requires online anonymity, online identification, online authentication, online reputations, online trust holders, online signatures, online privacy, and online access."

A good design would employ devices to thwart intruders breaking security and otherwise violating the integrity of the system. Sensors can detect changes in physical conditions, and software agents can identify changes in data and files that trigger notifications to designated parties. They will play a great role not only in reliability enhancement through design, but also in real-time auditing.

Sensors and software agents will monitor types of transactions and data based on predetermined ranges of acceptable transaction types and values. When the ranges are exceeded, exception reports will be sent to the auditor for immediate investigation. Sensors and software agents will also be important in assuring the reliability and integrity of information systems other than those for financial reporting. They can be particularly important

in executive decision making, because key risk and performance indicators can be monitored by sensors and software agents, with reports provided at predefined tolerances. To take some mundane examples, cycle-time increases, levels of foreign currency exposure, excessive reject rates, cost overruns, and disappointing customer satisfaction ratings could all be detected as promptly as management believes is necessary for corrective action.

Our research on customer needs has turned up some strong interest in monitoring and reporting these kinds of entity risk features. The interest illustrates awareness of the increase in the volatility of the business environment. The stakes in successfully adapting to the changing environment are growing, and those responsible for guiding organizations know it. The environmental changes increase the potential for new information services and add to the challenge in performing both traditional and newer services.

Consider an example of a challenge to reliability enhancement that calls for research: complications caused by short-lived, joint business efforts.

More and more organizations are joining hands to perform mutually advantageous tasks from research and development to production and marketing. Various designated by the catchall term strategic alliances or called joint ventures, cooperative or collaborative relationships, technology swaps, and still other names, they vary in their legal and economic characteristics. Many of these relationships are intended to overcome potential barriers to doing business beyond the borders of one's country; others are designed to pool different competencies or other economic advantages, such as licenses; and still others are customer-supplier relationships so close the two virtually share business objectives. Some are long-term relationships, others comparatively brief. The increasing importance of knowledge work in the evolving economy together with advancing information technology is likely to facilitate more short-term alliances, where organizations team for limited objectives in the near-term and dissolve the bond



when the objectives are achieved. Several subsidiaries of a single firm could be engaging in such affiliations, weaving in and out of them.

As these forms proliferate, we will need a better grasp of what they mean for accounting, auditing, and other assurance services. The economic potential of an entity created for the express purpose of bringing together expert personnel and technologies cannot be assessed effectively by focusing on the historical cost of its physical assets. For some of the entities, arm's length transactions could be the exception rather than the rule. The definition of the reporting entity could be blurred, bearing a less direct relationship to the legal entity, and the notion of going concern could be irrelevant when organizational goals are short-term.

However, the closer relationships between entities that will develop as we move deeper into the information age will also bring new opportunities for audit evidence. Project yourself, for a moment, into the coming era of real-time reporting, routine data interchanges among customers and suppliers, and electronic money. On the one hand, it will be difficult to audit without greater knowledge of the various business parties connected to the auditee. On the other hand, the very level of connectedness would be a potential source of evidence. The auditee would be located in an economic matrix, with its peers and partners on other axes. Relationships between data on performance and conditions for these parties would be a form of audit evidence, achieving validity by triangulation.

Creating this kind of audit evidence would be very challenging, but it is also potentially very powerful, combining elements of what we now call analytical review and confirmation. At this time it is an unexplored opportunity.

Further in the future is the "information dual"—real-time information versions of reporting entities. They will be real-time because they will change as the entity changes. They will be constructed by algebraic computer languages and data from sensors and software agents that monitor all features of the entity.<sup>2</sup>

Demand for the information dual will come from its "real-time dials on the business" and its capacity to be deliberately modified in order to determine the effect of the change. Thus it will be possible for entities to try out different policy scenarios and learn much more than they can today from their strategic planning. And because it is in real time, the information dual could be used to test tactical decisions and risk sensitivities as well. In addition, the information dual will allow monitoring on a level more profound than is done now, because the relationship between changes in processes and changes in the organization will be available. This too will contribute to demand.

Despite its potential advantages and the demand they are likely to generate, the information dual will not spring full-blown on the business community as soon as the technology reaches some threshold. Piecemeal introduction is almost inevitable. There will be information duals for individual processes before there are information duals for whole entities, and there will be information duals for physical processes before they are constructed for knowledge-work processes. Nevertheless, the information dual could one day replace GAAP assertions as the deliverable for financial reporting. Most of the advantages that could establish managerial demand for the information dual would also make it prized by investors. Whether or not that happens, any potential user of an information dual would want to know whether it is reliable or in any way fraudulent.

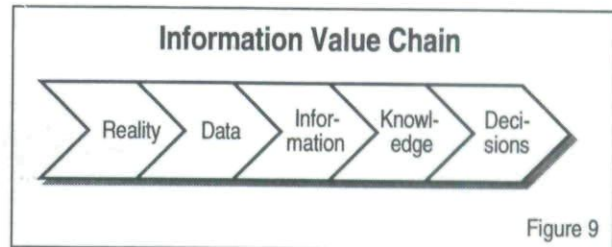
We need research on the information dual and its implications for attest work. What kind of contribution could independent accountants make to users of the information dual? They might help to design information duals and make them secure and auditable. When auditing them, accountants would have to verify the algebraic bases for the information duals or the systems that developed and installed them and to evaluate the validity and effec-

<sup>2</sup> The information dual is discussed in more detail in Elliott (1994a, 109–110).

tiveness of the array of sensors and software agents. An important service might be to evaluate the way in which the information dual was used—e.g., whether appropriate procedures were in place to assess and follow-up on the findings available from the information dual. These kinds of tasks would call for a new, high level of understanding of computerization and measurement, for the information dual would effectively be an ongoing series of measurements of the entity's processes, a series so rapid that it is available in real time.

The realization of the information dual and accompanying assurance work is more distant than other potential features of the audit/assurance environment, but research could make that day sooner.

Mutually reinforcing progress by practitioners, on the one hand, and by the academic community, on the other, will jointly advance the profession on what I choose to call the information value chain (see figure 9). Information can be graded according to its power in decision making. Other things being equal, raw, unprocessed information confers less decision-making power than processed informa-



tion, and processed information confers less decision-making power than knowledge. These terms can be defined with more or less precision, but that is not my purpose. All that is necessary is to appreciate that there is such a gradient. The profession's services increase in value when they pertain to more highly graded information than less highly graded information.

As information technology advances, the profession will have to move up the information value chain or its services will decline in value. There is likely to be more competition among service providers on the lower level of the value chain than at the higher level, because the higher level will demand more intensive educational preparation. The profession will have to create its niche, just as it did when the audit was invented and refined.

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