

**FIFTH ALTERNATIVE PERSPECTIVES ON  
FINANCE CONFERENCE**

**HARMONIZATION OF INTERNATIONAL ACCOUNTING  
STANDARDS: THE URGENT NEED FOR IMPROVED  
ACCOUNTING FOR HUMAN RESOURCES AND  
THE ENVIRONMENT**

**A PAPER SUBMITTED TO  
PROFESSOR ELTON (SKIP) MCGOUN  
DEPARTMENT OF MANAGEMENT  
BUCKNELL UNIVERSITY  
LEWISBURG, PA 17937 USA  
TELEPHONE: (570) 577-3732  
E-MAIL: [mcgoun@bucknell.edu](mailto:mcgoun@bucknell.edu)**

**BY**

**WILLIAM BRENT CARPER, PH.D., CPA  
PROFESSOR OF ACCOUNTANCY AND  
INTERNATIONAL BUSINESS  
SCHOOL OF BUSINESS, ECONOMICS AND  
COMMUNICATION  
THE AMERICAN UNIVERSITY IN CAIRO  
113 KASR EL AINI STREET  
P.O. BOX 2511  
CAIRO 11511 EGYPT  
TELEPHONE: (2-02) 357-6703  
FACSIMILE: (2-02) 355-7546  
EMAIL: [TeamCarp@aucegypt.edu](mailto:TeamCarp@aucegypt.edu)**

**UNIVERSITY OF DUNDEE**

**DUNDEE, SCOTLAND**  
**JULY 23-26, 2000**

Copyright © 2000 by William Brent Carper, Ph.D., CPA. All rights reserved.

## CONTENTS

|   |   |
|---|---|
| Executive Summary.....  | 1 |
| Resource Utilization.....   | 3 |
| The Importance of Human Resources .....                                   | 3 |
| The Impact on the Environment .....                                       | 4 |
| The Limitations of Current<br>Accounting Practice .....                   | 4 |
| Assets in General .....   | 5 |
| Intangible Assets.....  | 5 |
| Definitions.....  | 5 |
| Broad Definition.....   | 5 |
| Narrow Definition.....  | 6 |
| Goodwill.....   | 6 |
| FASB Exposure Draft: Business<br>Combinations and Intangibles .....       | 7 |
| Dramatic Shift in Production Functions.....                               | 7 |
| Standard & Poor's 500.....  | 8 |
| Ratio of Intangible Business Capital<br>to Tangible Business Capital..... | 8 |
| A Synthesis of Existing HRA Models .....                                  | 8 |
| Measurement of Human Resources.....                                       | 8 |
| The Current State of the Art .....  | 9 |
| Need for a Multi-Level<br>Performance Measure .....                       | 9 |

|  |    |
|--|----|
| Compliance with Current Accounting Standards .....                       | 9  |
| Measurement Level.....   | 10 |
| Accounting Standards .....   | 10 |
| Some HRA Applications .....  | 10 |
| Productivity.....  | 10 |
| Database Inputs .....  | 11 |
| Top Management Level.....  | 11 |
| Middle Management and Operational Management Levels .....                | 12 |
| The Evolving Concept of Environmental Accounting (Green Accounting)..... | 12 |
| Measurement of Environmental Assets/Liabilities.....                     | 12 |
| Alternative Valuation Approaches.....                                    | 13 |
| Current Cost.....  | 13 |
| Present Value Based on Estimated Future Cash Outflows .....              | 13 |
| Present Value Based on Current Cost Estimate.....                        | 13 |
| Qualitative Disclosure.....  | 14 |
| Recommendations for Further Research.....                                | 14 |
| Specific Research Requirements .....                                     | 14 |
| Development of Theoretically Sound Measurement Alternatives .....        | 14 |
| Identification of Valid and Reliable                                     |    |

|   |    |
|---|----|
| Extant HRA and EA Models .....  | 14 |
| Examination of the Cognitive and Behavioral<br>Implications of Human Resource and<br>Environmental Accounting ..... | 15 |
| CONCLUDING COMMENTS.....  | 15 |

**HARMONIZATION OF INTERNATIONAL ACCOUNTING STANDARDS:  
THE URGENT NEED FOR IMPROVED ACCOUNTING FOR HUMAN  
RESOURCES AND THE ENVIRONMENT**

*There is a rhinoceros in the room here today. We all know it. We have heard its heavy hooves in the criticisms from within the profession, and have certainly heard them from our external constituencies. Traditional financial reporting is increasingly irrelevant to both its internal and external constituencies. It is not my intention today to belabor these irrelevancies. I will, of course, identify the ones most pertinent [timeliness, trustworthiness and trajectory: emphasis added]; but none of them will come as a surprise to the members of this audience.<sup>1</sup>*

John Whitney, Executive Director  
Columbia University's Business  
School's Deming Center,  
"There's a Rhinoceros in the Room,"  
XV World Congress of Accountants,  
October 1997, p1.

**HARMONIZATION OF INTERNATIONAL ACCOUNTING STANDARDS:  
THE URGENT NEED FOR IMPROVED ACCOUNTING FOR HUMAN  
RESOURCES AND THE ENVIRONMENT**

**ABSTRACT**

The research opportunities for tangible answers to the many perplexing questions regarding human resource and environmental accounting are as diverse as the objects the respective models attempt to measure are complex -- people and the environment. Some individuals believe that the increased emphasis on the accounting and management of human capital and the environment will have as profound an impact on our ways of performing and regarding work and increasing productivity as the phenomenon of traditional capital investment did during the Industrial Revolution. Consequently, ultimate research payoffs resulting from improved accountability for human capital valuation and environmental conservation truly stagger one's imagination. Thus, it is urgently recommended that the International Accounting Standards Committee and other authoritative accounting bodies give serious consideration to adding both issues to their current agendas.

## Executive Summary

The success or failure of every enterprise including multinational enterprises (MNEs), is based largely on effective utilization of the entity's resources. Managers must attempt to optimize the acquisition, allocation, and development of the asset potential of the firm. While there is much concern for detailed information about the physical and financial assets of the entity, managers and accountants tend to ignore or half-heartedly pursue similar accountability for what are often key elements for success--an organization's employees and the firm's impact on the environment.

However, times may be changing. Several attacks on these issues are currently underway in the areas known as human resource and environmental accounting. Human Resource Accounting (HRA) has been defined as the process of identifying and measuring data about human resources and communicating this information to interested parties.<sup>2</sup> The focus of Environmental Accounting (EA) is on the accountability of the management of an enterprise for financial implications for managing the environmental resources entrusted to it, and that are linked to the enterprise's activity.<sup>3</sup> Both HRA and EA are still in the formative and definitional stages in which academicians concern themselves with abstract proprieties, and practitioners search for vehicles of implementation that hold promise of general understanding and acceptability.

For some time business managers have recognized that information (or the lack of information as the case may be) concerning both human resources and the environment can have significant influence on managerial decision-making and financial analysis. Nevertheless, current accounting practice continues to neglect both issues for the most part; consequently, it fails to measure any change in the corresponding value of the firm accordingly. Contemporary accountability for both human resources and the environment normally assumes an expense only posture, and ignores the fact that related expenditures often represent substantial long-term benefits and/or deferred costs to the firm.

The omission of human resources combined with that of a firm's impact on the environment tends to distort all financial statements, but the effect on reported earnings and cash flow may be the most significant. Cost reduction programs such as personnel reductions and cost cutting as relates to the environment may benefit current earnings and/or cash flow, but may obscure asset liquidation losses substantially greater than reported savings. From the other side, it also is more difficult for a manager to justify funds for building up human assets and/or environmentally sound policies when the expenditures will be written off against income in a single year.

The research opportunities for tangible answers to the many perplexing questions regarding human resource and environmental accounting are as diverse as the objects the respective models attempt to measure are complex -- people and the environment. Yet, the potential gains from successful implementation seem almost unlimited. Some individuals believe that the increased emphasis on the accounting and management of human capital will have as profound

an impact on our ways of performing and regarding work and increasing productivity as the phenomenon of traditional capital investment did during the Industrial Revolution.<sup>4</sup> Simultaneously, if mankind does not do a better job of conserving the environment, we will not have to concern ourselves with the likes of increased productivity. There simply will not be anything left to produce, or anyone to produce it including mankind! Consequently, ultimate research payoffs resulting from improved accountability for human capital valuation and environmental conservation truly stagger one's imagination. Thus, it is urgently recommended that the International Accounting Standards Committee and other authoritative accounting bodies give serious consideration to adding both issues to their current agendas immediately!

### **Resource Utilization**

The success or failure of every enterprise including multinational enterprises (MNEs), is based largely on effective utilization of the entity's resources. Managers must attempt to optimize the acquisition, allocation, and development of the asset potential of the firm. While there is much concern for detailed information about the physical and financial assets of the entity, managers and accountants tend to ignore or half-heartedly pursue similar accountability for what are often key elements for success--an organization's employees and the firm's impact on the environment.

However, times may be changing. Several attacks on these issues are currently underway in the areas known as human resource and environmental accounting. Human Resource Accounting (HRA) has been defined as the process of identifying and measuring data about human resources and communicating this information to interested parties.<sup>5</sup> The focus of Environmental Accounting (EA) is on the accountability of the management of an enterprise for financial implications for managing the environmental resources entrusted to it, and that are linked to the enterprise's activity.<sup>6</sup> Both HRA and EA are still in the formative and definitional stages in which academicians concern themselves with abstract proprieties, and practitioner's search for vehicles of implementation that hold promise of general understanding and acceptability.

### **The Importance of Human Resources**

The importance of human resources of companies, including MNEs, can be illustrated in several ways. The market prices of corporate securities often reflect values substantially different from those indicated by the recorded values of the individual assets. Obviously, some assets, including human resources, remain unrecorded.

Other evidence suggests that the replacement costs of human resources are quite substantial. In a well-known survey by Messrs. Likert and Pyle,<sup>7</sup> hundreds of corporate presidents were asked to estimate the cost of replacing their entire work force. Most estimates ranged from three to five times the annual payroll. Using this range, the human organization in a firm with a

\$500 million payroll could be worth \$1.5 to \$2.5 billion. Furthermore, since payrolls generally exceed earnings by eight to tenfold and since the human organization can be regarded as worth three to five times the payroll, the human organization could be valued at twenty-five to fifty times a company's annual earnings. A five percent fluctuation in the value of a firm's human resources easily could equal its reported annual earnings.<sup>8 and 9</sup>

The growing technical complexity of modern business and the increasing time required for personnel to gain experience are making brainpower a critical resource in our economy. For this reason it is not uncommon to learn of a large corporation purchasing small technologically superior firms – not for their plant and equipment but for their skilled managers, scientists, engineers and informational technological specialists.

### **The Impact on the Environment**

An increasing number of global firms continue to express their willingness to participate in the sustainable development and perpetuation of a healthy, safe, life-sustaining environment for plant and animal species including humans. This expression of concern and interest is apparently also genuine. The growing scarcity of some natural resources including safe drinking water, combined with continuing population growth, is causing firms large and small, including the MNEs, to closely scrutinize the judicious utilization of all resources that they consume—including those in the environment. For instance, successful combating of global warming will in all likelihood require companies to increasingly economize on the use of energy. Another example is “urban sprawl.” This phenomenon continues to bring people and industries closer together resulting in extremely serious air pollution around the world—from Atlanta to Zimbabwe. Obviously, these environmental changes are significant, and need to be dealt with by companies, individually and collectively, in a comprehensive, ethical, expeditious, and scientific manner that is in the best interest of all living species including humans, and not just corporate enterprise as measured by the “bottom line.”

### **The Limitations of Current Accounting Practice**

For some time business managers have recognized that information (or the lack of information as the case may be) concerning human resources and the environment can have significant influence on managerial decision-making and financial analysis. Nevertheless, current accounting practice continues to neglect proper accounting treatment for both cost components. Contemporary accountability for both human as well as environmental resources tends to assume an expense-only posture and ignores the fact that both employee and environmental related expenditures often represent substantial long-term benefits and/or deferred costs to the firm.

The omission of human resources including the specific environmental impact of various factors of production distorts all financial statements, but the effects on reported earnings may be the most significant. Cost reduction programs such as personnel reductions and/or environmental cost cutting programs may benefit current earnings but may obscure asset liquidation losses substantially greater than reported savings. From the other side it also is more difficult for a manager to justify funds for building up human assets and/or protecting the environment when the expenditures will be written off against income in a single year.

### **Assets in General**

The U.S. Financial Accounting Standard Board (FASB) defines an asset as follows.

Assets are probable future economic benefits obtained or controlled by a particular entity as a result of past transactions or events. Services are singled out as items that cannot be stored (are received and used simultaneously), even though information or learning from services can be stored for subsequent use and benefit.<sup>10</sup>

The FASB's definition thus creates for reportable intangible assets probable future economic benefit and ownership and/or control of these benefits. Traditionally, ownership of the future economic benefits of an asset has implied the corresponding ownership of the asset by many in the accounting profession. To the contrary, exclusive focus on the future economic benefit, as opposed to the ownership of the asset, provides the opportunity for the capitalization of the future economic benefits of human resources as assets. Concurrently, these same assets can never be "owned" by the business, because this would be tantamount to slavery!<sup>11</sup>

### **Intangible Assets**

#### **Definitions**

There is a wide range of possible definitions of intangible assets in conformity with generally accepted accounting principles (GAAP) as promulgated by the FASB and other standard-setting organizations.

#### **Broad Definition**

Intangibles are nonphysical sources of probable future economic benefits to an entity or alternatively all the elements of a business enterprise that exist in addition to monetary and tangible assets.<sup>12</sup>

### **Narrow Definition**

Intangibles are nonphysical sources of probable future economic benefits that have been acquired in exchange or developed internally from identifiable costs that have a finite life, have market value apart from the entity, and are owned or controlled by the entity.<sup>13</sup>

### **Goodwill**

Historically, purchased intangible assets resulting from the acquisition of a business that is a "going concern," have been treated for accounting purposes as a "bundle of assets" or goodwill. To the contrary, as businesses have become more complex (such as is the case with many MNEs), more intangible assets have continued to be created internally, as opposed to purchased. Thus, these assets now require valuations as separate assets rather than as a bundle. In this regard, "human resources" (although physical or tangible in the obvious sense), the component that is a source of future economic benefit for the purpose of the aforementioned broad definition of intangibles, includes peoples' skills, ideas and mental capacities.<sup>14</sup>

## **FASB Exposure Draft: Business Combinations and Intangibles**

The FASB, in its recent *Exposure Draft on Business Combinations and Intangibles* (issued September 7, 1999), refers to human resource broad-based intangibles as *workforce-based assets* -- intangible assets that relate to the value of the established employees or workforce of a company.

1. Assembled workforce, trained staff
2. Non-union status, strong labor relations, favorable wage rates
3. Superior management or other key employees
4. Technical expertise
5. Ongoing training programs, recruiting programs<sup>15</sup>

To the best of the author's knowledge, this represents the first formal acknowledgement ever regarding the accounting for human resources by an authoritative body responsible for the promulgation of accounting standards. This is indeed encouraging -- even if it is thirty (30) years late according to some accounting researchers. Some economists, including Sir William Petty (1623-1687), have actually recognized the concept of human capital for well over 300 years. Thus, according to these economists, the recognition of the existence of human capital by an authoritative, rule-making accounting body is even longer overdue!<sup>16</sup>

### **Dramatic Shift in Production Functions**

There has been a dramatic shift, a transformation, in what economists call the production functions of companies over the past several decades -- specifically the major assets that create value and growth. Intangibles are rapidly replacing physical assets in this regard. Simultaneously, there has been an almost complete stagnation of the traditional financial accounting measurement and reporting systems used in many developed nations around the world, as relates to these events. This includes both external and internal financial reporting systems -- all of which date back over 500 years to the time of Luca Pacioli, an Italian monk and mathematician who lived in Venice in the 1400s. He developed the double-entry bookkeeping system in order to provide business people a simple method for keeping track of their transactions. Supposedly, a primary purpose of Pacioli's developing the double-entry bookkeeping system, was to assist business people in making sense of the way in which they did business. Paraphrasing Pacioli, "if one cannot be a good accountant, one will grope his/her way forward like a blind person and may meet great losses." Or in the words of one contemporary accounting researcher, "being a good accountant does not guarantee good eyesight. The old lens cannot capture the new economy, in which intangible assets create value: ideas, brands, ways of working, and franchises."<sup>17</sup>

## **Standard & Poor's 500**

A brief review of the Standard & Poor's 500 (500 of the largest companies in the U.S., many of which are not in high tech industries) substantiates this point. The market-to-book ratio (the ratio between the market value of a company and its net asset value disclosed in the balance sheet) for these companies, currently is greater than six (6) to one (1). Interpreted this means that the traditional accounting measurement represented by the book value of net assets on the balance sheet represents only 10 to 15 percent of the total market value of these companies. Even if one reduces the aforementioned market capitalization by 50 percent due to inflation, investors still perceive a monumental difference between the market value and the value reported in the financial statements (statements of financial position or balance sheets).<sup>18</sup>

## **Ratio of Intangible Business Capital to Tangible Business Capital**

The aforementioned statement is reinforced by the work of Dr. John Kendrick, a well-known economist, who has studied the main drivers of U.S. economic growth for some years. He reports that there has been a general increase in intangible assets contributing to U.S. economic growth since the early 1900s. In 1929, the ratio of intangible business capital to tangible business capital was 30 to 70 percent. As recently as 1990, the ratio contrastingly was 63 to 37 percent. In all likelihood, the resulting numbers are not that different for major MNEs headquartered outside the U.S. Obviously, this represents a drastic turn around, and one that urgently needs to be successfully addressed by the global accounting profession.<sup>19</sup>

## **A Synthesis of Existing HRA Models**

### **Measurement of Human Resources**

Conceptually, the various HRA models proposed to date can be divided into four (4) separate classifications or combinations thereof: (1) historical or original acquisition cost; (2) replacement cost; (3) economic value models; and (4) non-monetary measures. *Historical cost* represents the original cost of human resources in the conventional accounting sense, and includes such costs as personnel recruitment, training, and development. *Replacement cost* is a current-dollar measure of the expenditure required for a business entity to replace its existing investment in human resources. *Economic value* refers to the appropriately discounted amount of net cash inflows generated by the human resources of a firm over their economic service lives. Some authors refer to the economic value method as the present value measuring technique or use the term in conjunction with the opportunity cost approach. Finally, *non-monetary measures* of human resources may refer to a simple inventory of skills and capabilities of people within an organization; to a list of professional credentials of key personnel within an

organization; or to the application of some non-monetary behavioral measurement technique for assessment of the contributions of various individuals or groups to an entity.<sup>20</sup>

### **The Current State of the Art**

Numerous proposed HRA models currently exist for accounting for human resources. Yet, given the developing state of the art, none of the models adequately measures **all** dimensions of an entity's human capital component at the individual, group, and organizational levels. The task of measuring the value of an organization's human resources continues to be quite formidable. Currently, no HRA model appears to be the answer, and proposed solutions will invariably have defects. However, substantial insight can be gained about human resource measurement through a critical evaluation of the various methods proposed to date.<sup>21</sup>

#### **Need for a Multi-Level Performance Measure**

Given the financial objective of reporting the **total** economic value of a firm, three levels of the future service potential embodied in humans must be considered: (1) the individual; (2) the group; and (3) the organizational level.

Unfortunately, no HRA model currently exists to adequately measure all three human capital elements. Some models attempt measurement of the individual's contribution to the entity (micro models), while other HRA models are designed to measure only the total value of an entity's human resources (macro models). What is needed, however, is a valid and reliable measurement technique to reflect both the micro and macro dimensions of the human capital component for a business enterprise.

#### **Compliance with Current Accounting Standards**

In conjunction with the need to develop a model that adequately measures the entire service potential for humans, is the need to create a model that meets certain accounting measurement standards. Specifically the informational content of the model must be:

1. relevant for decision-making purposes;
2. verifiable by independent sources;
3. free from subjective bias; and
4. quantifiable in meaningful accounting terms.<sup>22</sup>

Consequently, not only must an adequate human asset measurement technique consider all elements of the human's individual, group, and organizational value to a firm, the particular model also must comply with certain accounting standards.

### **Measurement Level**

The non-monetary behavioral approach appears to have substantial promise for successfully measuring all elements of the employee's **total** value to an entity. Although reasonable progress has been made in measuring the individual's value to a firm using either the historical or replacement cost technique, neither of these latter methods currently reflects the group and organizational dimensions of an individual's total value.

### **Accounting Standards**

As for the accounting standards (relevancy, verifiability, freedom from bias, and quantifiability), the historical cost approach to human asset valuation at first glance appears most promising. Unfortunately, this particular valuation technique is not relevant for decision-making purposes. Given the financial objective of reporting the true economic value of the total assets of a firm including human resources, aggregation of the historical acquisition costs of assets purchased at different points in time fails to reflect the current value of an entity. Consequently, adoption of the historical cost valuation alternative for human resources merely would serve to further muddy unclear waters.

On the other hand, the economic value approach certainly complies with the financial objective of reporting the total economic value of a firm, and is therefore relevant by definition. However, the valuation method also has serious pragmatic limitations. No known way currently exists to objectively identify the true cost of capital for properly discounting the net cash flows associated with the assets of a business enterprise. Hence, use of such a valuation technique for accounting for human resources could prove to be a highly invalid and unreliable means to both **measure** and **verify** the economic value of an organization's employees. Therefore, based on the foregoing evaluation relative to existing accounting standards, both the replacement cost valuation method and the non-monetary behavioral approach appear to offer the most promise for continued research and development.

## **Some HRA Applications**

### **Productivity**

Most if not all management decision-makers within a business entity should have access to a firm-wide human resource and personnel database. The database would contain elements necessary to meet company goals and objectives as relate to productivity.

## **Database Inputs**

Examples of inputs (i.e., data elements) to incorporate into the human resource and personnel database include:

1. dollar investment in human assets (personnel);
2. job description data;
3. salary data;
4. length of service data;
5. performance review data;
6. employee benefits data;
7. labor negotiations data;
8. employee level of job satisfaction data;
9. employee level of work performance data;
10. employee number, name, and skill code, and skill description data;
11. promotability data
12. personal information data (i.e., date of birth, dependents, foreign languages, travels to foreign countries, geographical job preferences, etc.); and
13. employee achievements data (i.e., in community, within organization, etc.).<sup>23</sup>

Once the data elements have been incorporated into the various database files, computer programs can provide appropriate outputs (reports and other information) to top, middle and operating levels of management.

## **Top Management Level**

The top management decision-making level would receive information about the total investment in human resources—by groups, individuals or both, in the form of a human asset index (HAI). The HAI index would be used in conjunction with return on investment (ROI) analysis to evaluate subordinate managers' productivity and efficiency. The HAI index would be computed using one of the previously discussed HRA models. Thus, by using the HAI and ROI indices together, top management would be provided with valuable internally produced information for decision-making purposes. This information, coupled with externally acquired information, then would be used to make optimal decisions regarding long-range organizational goals.<sup>24</sup>

## Middle Management and Operational Management Levels

A properly designed human resource and personnel database would be used to provide middle and operational managers information needed to make decisions related to: (1) manpower planning and development; (2) career planning; and (3) systems' modifications necessary to achieve organizational goals. Present personnel measurement systems routinely gather manpower information regarding items one and two above. Such information easily could be incorporated into a human resource database to better enhance decisions at the middle and operational management levels.<sup>25</sup>

## The Evolving Concept of Environmental Accounting (Green Accounting)

The concept of environmental or green accounting continues to evolve. A growing number of national and international accounting organizations, as well as non-governmental organizations continue to "weigh-in" on the subject. To date, there seems to be general agreement among the various standard-setting organizations that the underlying postulates applicable to the basic conceptual framework of accounting are also generally applicable to environmental costs and liabilities. It is important to note, however, that the historical development of accounting principles and/or standards has occurred exclusively in the context of providing information on **financial position**, performance and changes, assisting users in making **economic decisions**, and reporting the results of the **financial stewardship** and accountability of management with regard to the economic resources entrusted to it. Consequently, in this context, it is understood that the primary external users of the information are investors and creditors. It therefore, can be questioned as to whether or not conventional financial reporting standards are sufficiently comprehensive for **environmental** decision-making purposes. The primary **environmental** reporting objectives should include providing users information on a company's **environmental** position, performance and changes; and to assist users in making informed decisions regarding the **environmental** stewardship and accountability of management. Most practitioners and researchers seem to agree that the information produced by following a generally accepted framework of accounting and reporting is indeed appropriate; however, additional disclosures may also be desirable.<sup>26</sup>

## **Measurement of Environmental Assets/Liabilities**

A major conceptual difference between accounting for human resources and accounting for the environment is the following. HRA understandably emphasizes valuation of the human capital component or human assets of a firm. Whereas EA, emphasizes the valuation of the

environmental costs/expenses of a firm that also tend to manifest themselves in current/non-current liabilities dependent upon the life of the asset and/or production cycle to which they are directly associated. In this regard, one author has noted the following.

It follows that ...environmental expenses do not directly meet the definition of what constitutes an asset, but nevertheless conditions the capacity of a tool of production, to adapt to future constraints [**including regulatory: emphasis added**], and not asset maintenance in the present state.<sup>27</sup>

Thus, the primary valuation emphasis appears to be on the environmental cost attaching to a long-lived asset (deferred cost) and the simultaneous recognition of a corresponding long-term liability to the extent possible in accordance with current national and international accounting standards.

### **Alternative Valuation Approaches**

To date, several different valuation approaches have been proposed by national and international professional accounting and non-governmental organizations, especially as relate to the valuation of the long-term liabilities related to environmental costs associated with a long-lived assets. In this regard, the measurement alternatives that have been proposed are very similar to the measurement alternatives proposed for accounting for human resources. Alternative valuation methods that have been proposed by various groups include the following.

#### **Current Cost**

This approach measures the liability based on the estimated cost to perform the remediation, closure or removal activities in the current period.

#### **Present Value Based on Estimated Future Cash Outflows**

This approach measures the liability based on the present value of the estimated future expenditures that will be required to settle the remediation, closure or removal obligations, based on conditions, legal and other requirements that are expected to exist in the period of settlement.

#### **Present Value Based on Current Cost Estimate**

This approach measures the liability based on the present value of the estimated future expenditures that will be required to settle the remediation, closure or removal obligations, based on conditions, legal and other requirements that currently exist.

### **Qualitative Disclosure**

Similar to HRA, various research reports of different professional accounting and non-governmental organizations studying EA recommend relevant qualitative disclosures as footnotes to financial statements to the extent that objective quantitative measurement of environmental costs are not possible for valid and reliable use by decision-makers.

### **Recommendations for Further Research**

#### **Specific Research Requirements**

Further research is required in basically three areas relative to accounting for human resources and the environment: (1) the conceptual development of theoretically sound alternatives for measuring human resources and environmental impact; (2) the identification of valid and reliable extant HRA and EA models; and (3) the examination of the cognitive and behavioral implications associated with incorporation of human asset and environmental accounting data as part of conventional accounting information.

### **Development of Theoretically Sound Measurement Alternatives**

Four basic measurement alternatives have been proposed to account for human resources and the environment: (1) historical or acquisition cost; (2) replacement cost; (3) economic value models; and (4) non-monetary behavioral/qualitative alternatives. Unfortunately, each approach has its limitations. In the case of HRA, a general measurement alternative is needed that will both minimize the shortcomings of the existing measurement for the **total** value of an individual to a business entity (i.e., at the individual, group, and organizational levels). Similarly for EA, a general measurement alternative is needed that will validly and reliably measure the environmental cost attaching to a long-lived asset (deferred cost) and the simultaneous recognition of a corresponding long-term liability to the extent possible in accordance with current national and international accounting standards.

### **Identification of Valid and Reliable Extant HRA and EA Models**

A serious challenge exists to identify specific extant HRA and EA models that show the greatest potential for adequately assessing the economic value of the human capital and environmental

cost components. Specifically, the problem is one of **validity** and **reliability**. Promising models must be tested under real-world conditions to determine whether or not:

- (1) the models do in fact measure the human and environmental attributes that are intended to be measured (validity); and
- (2) the results of the implementation and utilization of the models can be replicated by independent sources (reliability).

Neither of these considerations is answered easily—especially when dealing with objects so qualitative as human beings and the environment. However, as is the case with most theories, the way to acceptance of human resources and environmental accounting as part of conventional accounting practice is via extensive testing and refinement of existing HRA and EA models. Continued generation of unproven accounting numbers hypothesized to reflect the future service potentials embodied in humans and the deferred costs associated with environmental issues is not sufficient.

### **Examination of the Cognitive and Behavioral Implications of Human Resource and Environmental Accounting**

Many **a priori** microeconomic and macroeconomic benefits have been suggested as a result of the eventual incorporation of human asset valuation and environmental accounting into conventional accounting practice. However, serious issues remain unanswered relative to the fruition of such benefits.

First, some individuals theorize that successful implementation of HRA and EA will have both an impact on the attitudes and beliefs of managers about both their employees and the environment. Concurrently, successful implementation of HRA and EA is anticipated to have a similar impact on employees including how they view their managers, themselves and their environment. At present, to the best of the author's knowledge, no known work has been done to substantiate or refute such contentions.

Second, some people suggest that successful implementation of HRA and EA will result in improved human asset and environmental management. In other words, the utility of accounting information for decision-making purposes will be improved through the adoption of HRA and EA for internal and external financial reporting purposes. To date, to the best of the author's knowledge, little known research has been accomplished to substantiate such a hypothesis.

### **Concluding Comment**

The research opportunities for tangible answers to the many perplexing questions regarding human resource and environmental accounting are as diverse as the objects the respective models attempt to measure are complex -- people and the environment. Yet, the potential gains from successful implementation seem almost unlimited. Some individuals believe that the increased emphasis on the accounting and management of human capital will have as profound an impact on our ways of performing and regarding work and increasing productivity as the phenomenon of traditional capital investment did during the Industrial Revolution.<sup>28</sup> Simultaneously, if mankind does not do a better job of conserving the environment, we will not have to concern ourselves with the likes of increased productivity. There simply will not be anything left to produce, or anyone to produce it including mankind! Consequently, ultimate research payoffs resulting from improved accountability for human capital valuation and environmental conservation truly stagger one's imagination. Thus, it is urgently recommended that the International Accounting Standards Committee and other authoritative accounting bodies give serious consideration to adding both issues to their current agendas immediately!

---

<sup>1</sup> John Whitney, Executive Director of Columbia University's Business School's Deming Center, "There's a Rhinoceros in the Room," XV World Congress of Accountants, October 1997, p 1.

<sup>2</sup> Committee on Human Resource Accounting, "Report of the Committee on Human Resource Accounting," *Supplement to Volume XLVIII of The Accounting Review* (1973), p 169.

<sup>3</sup> United Nations Conference on Trade and Development (UNCTAD) and Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (IASR): *Recommendations Adopted by the Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting*, (1998), p 22.

<sup>4</sup> C. Jackson Grayson, Jr., "How to Make Productivity Grow Faster," *Business Week*, July 14, 1973, p 16. Mr. Grayson is the President of the American Productivity and Quality Center (APQC) which he founded as a nonprofit organization in 1977. APQC's distinguished list of achievements include providing private-sector input for the first "White House Conference on Productivity," and spearheading the 1987 creation of the Malcolm Baldrige National Quality Award. Subsequently, APQC jointly administered the prestigious award program with the U.S. National Institute of Standards and Technology (NIST) for the first three years after the program's inception. Internet Worldwide Website: <http://www.APQC.org>.

<sup>5</sup> Committee on Human Resource Accounting, p 169.

<sup>6</sup> United Nations Conference on Trade and Development (UNCTAD), Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (IASR): p 22.

<sup>7</sup> Rensis Likert and William C. Pyle, "Human Resource Accounting: A Human Organizational Approach," *Financial Analysts Journal* (January-February 1971), p 75.

<sup>8</sup> *Ibid.*

<sup>9</sup> The monetary unit used throughout the paper is U.S. dollars.

<sup>10</sup> "Elements of Financial Statements," *Statement of Financial Accounting Concepts No. 6*, (Stamford, CT: FASB, December 1985), p. ix.

- 
- <sup>11</sup> Vincent C. Ross Institute of Accounting, Stern School of Business, New York University, "The Intangible Research Project," [database on-line]; available from <http://www.stern.nyu.edu/ross/ProjectInt/i/intangibles.html>; Internet; accessed 11 January 2000.
- <sup>12</sup> *Ibid.*
- <sup>13</sup> *Ibid.*
- <sup>14</sup> *Ibid.*
- <sup>15</sup> *Exposure Draft: Business Combinations and Intangible Assets* (Norwalk, CT: FASB, September 1985), p. 50.
- <sup>16</sup> For a detailed economic history of the concept of human capital including its implications for accounting for human resources, please see William Brent Carper, *An Inquiry into the Nature of Accounting for Human Resources and Its Feasibility for CPA Firms: A Dissertation* (Tuscaloosa, AL: The University of Alabama, 1973), pp 8-82.
- <sup>17</sup> Baruch Lev, "New Math for a New Economy," interview by Alan M. Webber, *Fast Company*, [journal on-line]; available from <http://www.fastcompany.com/online/31/lev.html>; Internet; accessed 9 January 2000.
- <sup>18</sup> *Ibid.*
- <sup>19</sup> *Ibid.*
- <sup>20</sup> For a detailed explanation of the various HRA models please see William Brent Carper, *An Inquiry into the Nature of Accounting for Human Resources and Its Feasibility for CPA Firms: A Dissertation* (Tuscaloosa, AL: The University of Alabama, 1973), pp 134-180; and also see William Brent Carper, *A Review, Critique and Synthesis of Existing Human Resource Accounting Models and Some Applications*, Fogelman College of Business and Economic Research Grant, University of Memphis, 1983, pp 2-38.
- <sup>21</sup> Eric G. Flamholtz, "On the Use of the Economic Concept of Human Capital in Financial Statements: A Comment," *The Accounting Review*, XLVII, January 1972), p 152.
- <sup>22</sup> "Qualitative Characteristics of Accounting Information," *Statement of Financial Accounting Concepts No. 2* (Stamford, CT: FASB, May 1980) p 15; and Committee to Prepare a Statement of Basic Accounting Theory, *A Statement of Basic Accounting Theory* (Evanston, Ill.: American Accounting Association, 1966), p 8.
- <sup>23</sup> Michael J. Cerullo, "Human Resource Accounting Modes for Management Decision Making," *The South African Chartered Accountant* (June, 1978), pp 193-204.
- <sup>24</sup> *Ibid.*, p 195.
- <sup>25</sup> *Ibid.*, pp 195-196.
- <sup>26</sup> United Nations Conference on Trade and Development (UNCTAD) and Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting (ISAR), *Environmental*

---

*Financial Accounting*, (November 1997), p 8.

<sup>27</sup> Francis Mer, President of Enterprises Pour L'Environment, Chairman of Usinor, "Enterprises and the Environment," XV World Congress of Accountants, October 1997.

<sup>28</sup> C. Jackson Grayson, Jr., "How to Make Productivity Grow Faster," *Business Week*, July 14, 1973, p 16.

**Note. The author reserves the right to modify the research paper as a result of on-going research and/or new publication of relevant authoritative pronouncements.**