THE ROLE OF ACCOUNTING IN THE ECONOMIC DEVELOPMENT OF THE MODERN STATE

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The aim of this study is to determine why, how and to what extent the methodology of accounting has a part to play in the economic development of the modern state. It is argued that accounting is more usefully seen as a planning methodology, the control function being derived from the planning function.

The importance of abandoning unnecessary assumptions is emphasized, in particular, the assumption of profit-maximizing behavior which underlines traditional work in accounting theory. A new accounting theory is based on the account and the identification of an acceptable set of beliefs concerning the real world to which it must be related. Criticisms of accounting emanating from accountants

and economists are stated in order to specify the objections which a new theory of accounting must overcome.

The "Sombart Propositions" are critically examined, particularly in the light of Yamey's attacks on them. An alternative hypothesis to Sombart's view of the rise of capitalism is put forward, which permits the restatement of the Sombart propositions in support of a theory of accounting as a planning and control methodology. A translation of the relevant passages from Sombart's *Der Moderne Kapitalismus* forms an appendix to the study.

The foundations of accounting theory are shown to rest upon the assumption of price theorists that investment and production can be studied from the consumer pole. Many theorists assume that behavioral factors relevant for a consumer model of the economy are equally relevant for a producer model, in spite of the observation that Say's law no longer applies. The weakness which results from this error is the absence of a usable model of a production economy, in particular, of acceptable beliefs about the organization and processes of the firm. An alternative model derived from corporation finance is examined; this is shown to be based on the assumption of a nonexistent physical "flow" of liquidity. The cybernetics models of the firm are likewise rejected, on the grounds that the only beliefs about reality which they incorporate are, in fact, images of the computer.

An accounting model of the firm is presented. This model is shown to have great generality, and to be applicable to nonprofit firms, such as government agencies, in both the planning and control phases.

The two principal approaches to social accounting are examined in the contexts of the U. S. and Soviet systems; these are seen to display the same defects as are found in business accounting theories. The accounting model of the firm is shown to be adaptable to the production economy of a nation, leading to the conclusion that national product and national income are distinct concepts.

The French experiment in using accounting explicitly as a social planning and control instrument is described and evaluated. It is shown that the model underlying the French experiment is essentially the same as the accounting model presented in this study.

In conclusion, conventional criticisms of accounting are refuted. The error involved in viewing valuation as measurement, akin to those measurements used in the physical sciences, is discussed in relation to the additivity of values, and it is asserted that, since all values are subjective, objectivity lies in interpersonal agreement and not in existential phenomena. The study points the direction in which a developing modern state would be able to move with the aid of accounting methodology.

CHAPTER I

INTRODUCTION

The aim of this study is to determine why, how and to what extent the methodology of accounting has a part to play in the economic development of the modern state. It will not be necessary to assume for this purpose that accounting methodology plays a principal part in such development, or a major one, nor need we devote attention to those other methodologies which have a claim to be considered in this context, such as the Domar-Harrod growth models, the econometric models of Klein and Tinbergen, or the models of "optimum theorists" such as Von Neumann, Samuelson and Morishima.[1] It is not even necessary to exclude the relevance of simple macro-economic models of the so-called "classical" and "Keynesian" types. Each of these methodologies is potentially useful to the analyst and planner, who will presumably consider all available mathematical models, including those of linear and nonlinear programming, simulation and probabilistic strategies, and a variety of others both heuristic and stochastic, to assist in the processes of planning and control. None of these will be examined here, and we shall be concerned exclusively with accounting.

It is common knowledge that accounting has flourished in those states we categorize as prosperous, and that, as their prosperity declined, so did their accounting. Typical was the situation of the pre-Christian Chaldeans and Greeks, who left many records of their wealth and economic transactions in a form which can be recognized as accounting, together with descriptions of their accounting and auditing methods. The post-Christian dark ages, which began when Goths and Vandals disrupted established patterns of international trade, drove this tradition underground; it emerged only after the Crusades reopened the old trade routes to the East. Modern accounting dates from the Renaissance which the Crusades made possible.

Students of the history of accounting have tended to see its role in ancient and medieval times primarily in terms of the stewardship of wealth. According to this hypothesis, the creation or accumulation of wealth leads to the formation of institutions for its preservation, and with them goes a responsibility to account for the processes whereby the wealth is administered. This hypothesis underlies the various "investor" theories of accounting--the proprietary theory, the entity theory, the fund theory, and so on. As a hypothesis, it purports to explain the development of accounting at the level of the institution within the state, the state itself, and even internationally as, for example, in balance of payments accounting.

There are, however, a number of modern instances of political recognition that accounting may have a significant role to play in the process of economic development. Perhaps the most striking is the French National Accounting Plan following the second World War. Prior to that war the French people had enjoyed what was in some ways the highest standard of living in Europe, but they ended it with their economy at a standstill, and much of their capital destroyed. It was evident that any postwar government would stand or fall on its ability to restore per capita income and consumption to their prewar levels, in a fairly short space of time. One of the first legislative acts of the postwar French government was to establish a National Office of Accounting in the Ministry of Finances, which proceeded to regulate the practice of the profession of accounting and to lay down a framework for accounting at the macro- and micro-economic levels, with the aim of strengthening its functioning in government, industry and trade. Similar tendencies, albeit less marked, can be seen in Holland, Greece and Japan and other countries attempting rapid economic development; it is also noteworthy that some former British colonial and other territories are travelling the same road, for example, Singapore and Malaysia.

It appears that the stewardship role may play a considerably less important part in these phenomena than

the traditional theory would imply, and that accounting as a tool of planning and decision-making, which historians suppose to be a relatively modern development, should be given precedence in any theory of accounting. David F. Linowes recently commented[2] on his experiences during visits to three developing nations. He found that leaders in those countries envisaged a more extensive role for accounting than would be recognized in the United States. In particular, he drew attention to the view that accounting should be part of the central planning process which such nations find essential to rapid expansion of industry and agriculture, a view which can also be identified in the unified budgetary systems of the centrally planned economies of Eastern Europe. Linowes referred to his own participation, under the auspices of the U. S. State Department or the United Nations, in missions to Turkey, Iran and Pakistan, aimed at establishing accounting professions in those countries.

It was brought home to him in this work that the scope of accounting had to be broadened to include the measurement of available resources and control of their use. In developing countries, the problem of providing planners with adequate information became critical, and could be resolved by the use of accounting data; hence the urgency and importance of creating an accounting profession. A similar conclusion was reached by Enthoven as a result of

his experiences with the Investment Department of the International Finance Corporation between 1964 and 1967.[3] Enthoven starts from the investor theory of accounting and ascribes the growth of accounting in modern times to its usefulness for showing the effects of changes in wealth. He sees cost accounting as a separate and recent development which culminates in "management accounting," and the second of the articles cited describes the many ways in which management accounting can be used as "economic development accountancy."

We see from this the paradoxical situation that greater importance is placed on accounting for poor and developing states than for wealthy, established ones, and this observation throws doubt upon the validity of those theories which treat accounting as primarily a record-keeping and reporting function. We shall therefore advance an alternative hypothesis, namely, that the methodology of accounting constitutes a conceptual framework, of the nature of a nonexplicit behavioral model of a closed system, designed purposely for planning and control functions rather than in the light of catallactic or custodial needs.

In Chapter II we shall attempt to delineate the field of accounting and establish its links with economic science; in doing this we shall draw attention to conflicting views concerning the usefulness of accounting.

Chapter III will be devoted to a critical evaluation of the Sombart proposition, that accounting was a necessary factor in the rise of capitalism following the European Renaissance in the thirteenth and fourteenth centuries, which has obvious relevance to our hypothesis. In Chapter IV we shall identify the assumptions which underlie some of the more significant contributions to accounting theory, and the reasons why it has proved impossible to build a consistent theoretical structure upon them; in Chapter V we shall examine another model, which is capable of reconciliation with accounting theory and practice, which is consistent with the relevant parts of economic theory, and which supports the planning hypothesis. This chapter will also show how the model can be applied in the important area of control of public expenditure. In Chapter VI we shall discuss the implications of the model for social accounting and the representation of the national income. Chapter VII will describe the French experience with a uniform chart of accounts, and in Chapter VIII we shall state the conclusions we derive from this study which may be of interest for the economic development of the modern state.

We shall endeavor to make clear our assumptions at appropriate places throughout, but a preliminary word on the general nature of the problem involved may be apposite here. The contemporary taste for an axiomatic approach to

the development of theories in the behavioral sciences has had several unfortunate results. In the first place, we see a tendency to assume that the required axioms are relatively few in number; this assumption seems to have made its way into accounting theory from economic theory, and into economic theory from the physical sciences. Quite apart from the question of scientism, this assumption does not appear necessary for the conduct of our inquiry, and we shall not rely upon it.

In the second place, we may note the rise of "methodological nominalism," a term coined by Karl R. Popper to designate the assumption that usefulness in prediction is the criterion by which to evaluate an assumption.[4] This viewpoint has been adopted by Milton Friedman,[5] who argues that an assumption is admissible if it leads to conclusions which predict successfully better than 50% of the observations for which it is used. Friedman provides an illustration of the use of such an assumption in the statement that "the distance travelled by a falling body is equal to one-half the gravitational constant multiplied by the square of the time the body falls," which depends upon the unrealistic assumption that the object is falling in a complete vacuum.

We shall distinguish between methodological assumptions of this type, resembling the *ceteris paribus*

assumption used so successfully in economic theory and the "going concern" assumption of accounting theory, and behavioral assumptions, particularly those which involve attributing behavior to concepts. The former are intrinsically equal, and choice between them can only be made on the basis of usefulness; scientific progress is a continuous abandonment of assumptions which have outlived their usefulness. Behavioral assumptions, on the other hand, are always true in the sense that corresponding behavior can be observed in people, yet their usefulness can never be demonstrated.[6] To say that businessmen are motivated to maximize profits, or wealth, is demonstrably correct, no matter how these concepts are defined, yet this is quite inadequate for explaining actual decisions unless reduced to a tautology. To say that consumers attempt to maximize utility leads to a comparable impasse. To speak of public expenditures or business costs "behaving" in certain ways, by contrast, is pure anthropomorphism.

We shall adopt the viewpoint that behavioral assumptions are not intrinsically equal; some assumptions are better than others. Not only must they be empirically demonstrable, but it must also be shown exactly how they affect any result obtained. We shall therefore not start with assumptions of utility- or profit-maximization; the specific reason for the latter will be explained later in

this chapter. Nor shall we make all the other assumptions economic theorists consciously incorporate in their price theory, which underlies most formal work in economics and on which accounting theorists, often unconsciously, base their systems of ideas. We shall assume the fundamental institutions of private property, a degree of freedom of enterprise, and the relatively unrestricted operation of a monetary system. We shall also assume a scarcity of means relative to ends, as this lies at the base of all value theory, and take as given the distribution of capital and income and a large measure of economic stability. All of these can be readily identified as features of the modern "mixed economy" state, and, indeed, we shall attempt to show that some of the problems which arise when communist states turn to accounting methodology can be attributed to the absence of one of these features.

We shall not assume certainty, pure competition, full employment, homogeneous functions, discrete time periods or products or factors of production, or diminishing returns to factors or to scale, nor shall we require assumptions of constant prices, resources, incomes, tastes, products, capacity, technology, taxes or subsidies. In particular, we shall have to discard the assumption that everything happens instantaneously, for time, as a mental construct, enters directly into our field of observation and affects

our results. We shall make an assumption of rationality, in that we shall require actions to conform to the physical and institutional constraints perceived by us, and to any postulated objectives of the businessman, civil servant or other decision maker. It is hoped that this will not lead to the teleological assumption of rationality which Veblen criticized so severely, and which the foregoing discussion was designed to avoid.

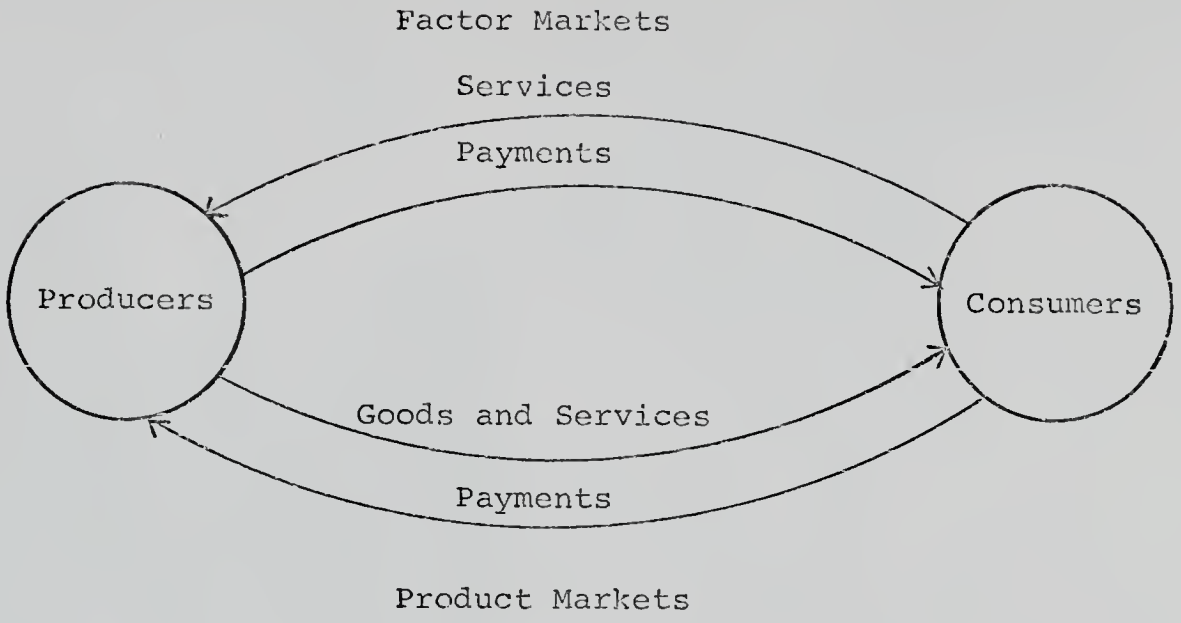
It may be argued that the failure to base our study on more rigorous lines lays us open to the charge of over-generalization. This issue has been faced before by the French economist J. Marchal:

> In attempting thus to reconstruct price theory on a more realistic basis, by taking into account all the complexities of human nature, by classifying according to the form and structure of markets, by introducing a real time element instead of an abstraction, one runs the indisputable risk of producing a less rigorous construction, on less pure lines, and one which may disappoint all those who have been seduced by the simplicity and perfection of the classical analysis. But one can hope, at the same time, to produce a theory which connects better, not only with the theory of general equilibrium and the theory of business cycles, but with all that we know of systems and of structures.[7]

Abandoning a profit-maximization assumption will be particularly distressing to American (and Australian) accounting theorists. With the possible exception of one or two works on economic accounting, all of the writings of these theorists assume that the centerpiece of their theory must be the corporate financial statements, and that

the principal aim of accountants is the measurement of business income. We do not share their view of the importance of the corporate financial statements; just as regular political journalism in England began in the Civil Wars, when King and Parliament competed with one another in writing, so the financial statement, as we know it, originated in the struggle of the nineteenth century industrialist to finance his manufacturing plants. His need for publicity in this connection was hardly less acute than that served by the political journalist in the other. But a newspaper is not literature, and a balance sheet, even with a profit and loss account attached, is not accounting, and any attempt to formulate a theory of accounting which requires such an assumption is virtually certain to fail. The manner in which this failure has so far manifested itself will be described in due course; at this point we shall restrict ourselves to identifying the underlying cause.

The logical error made by both accounting and economic theorists is to confuse the problems of production with the problems of consumption. A preliminary observation establishes these two poles of economic activity, which have noneconomic foundations and to which all actions must be traced if economic phenomena are to be analyzed for purposes of prediction and planning.[8] The typical image of an economy looks like this:



Having taken this first step, the theorist proceeds to conduct his analysis from the standpoint of one of the poles, namely, consumption, and the motivations of producers and consumers are found to manifest themselves in essentially consumption terms—maximize income for the former, satisfactions for the latter. There is no reason, however, why the motivations of these two classes of activity must be expressed in terms relevant to one of them; otherwise put, there is no social mechanism, at the present time at least, which can ensure that production and consumption are simultaneously determined. Say's law does not apply. That they may, and even must, be brought into some kind of a relationship through time and, in a long enough time period, can be brought to equality, is admissible, but the essentially distinct decisions involved must be treated separately in any formal analysis.

If we were to concern ourselves with behavioral assumptions, we should be obliged to postulate that the psychological forces underlying production decisions are different from the psychological forces underlying consumption decisions, because the producer seeks to cater for the satisfactions of others, while the consumer seeks only the satisfaction of self. This would permit the same individual to behave differently according as he was acting in his role of producer or consumer;[9] it would also help to underpin the argument which is conducted in Chapter VI in favor of a restructuring of the national income accounts. The different functions of money, which tend to confuse the monetary theorist who thinks in consumption terms, can be readily fitted into a conceptual framework which sees some of them as producers' functions and others as consumers'. We shall not pursue this line of inquiry here, as we find it unnecessary to rely on behavioral assumptions of this kind; we simply observe that some individuals undertake to produce goods and services to be consumed or otherwise utilized by others. Nevertheless, we cannot resist the temptation to draw attention to a similar statement which has recently been made by a noted behavioral scientist.

Urwick has reconsidered the basis of Douglas McGregor's contrasting theories of human behavior, known as Theory X and Theory Y. X assumes that man is resistant

to changes, and that he will only implement managerial decisions if rewarded or punished for refusal. Y assumes that man is basically goal-oriented, and that he will support changes if they can be seen by him to help him to achieve his goals. Urwick points out that man as a consumer is not allergic to changes, but as a producer he is more cautious, because of a fear of losing the source from which his consumption flows. The trend of modern life is to separate the functions, not only in production terms, but also in social situations—men and unmarried females produce, wives and children consume. The whole economic process consists in relating the behavior of the individual consumer to the behavior of *the same individual* as a producer or distributor. This he calls Theory Z, and he demonstrates by means of a diagram the points at which a lack of communication may make itself felt.[10]

It is easy to see how the income (= profit) maximization assumption, which was found necessary in order to explain production in terms of consumption, led accounting theorists to seize on income determination as the prime objective of accounting; the observation that the bulk of accounting work lay in the commercial area of production and distribution provided an additional support for this hypothesis, and the inconvenient fact that accounting had its origins in the public sector was suppressed,

or treated as an oddity. The choice of income determination as a prime objective was particularly unfortunate since business net income (in this context, profit) is a residual, the result of offsetting value movements in two opposite directions, and as such inherently incapable of analysis. In this study we shall substitute the production concept of profit for the consumption concept of income wherever the context calls for its mention, and refrain from a profit-maximization assumption, not because of the demonstrated difficulty of making such a construct operational,[11] but simply because it is unnecessary for explaining the role of accounting in economic development.[12]

The philosophy of this study has been expressed in the following words:

> An accounting system is not a failure if it does not present data in a way that will most please everyone, but it is a failure if its accounts do not enable the greater part of persons interested in them to glean facts for a variety of problems.[13]

It is one of the main objects of this study to show that it is possible to formulate a theory of accounting which is equally relevant to financial accounting, managerial accounting, tax accounting, social accounting and corporate accounting, and which is equally applicable to all types of institutions, public or private, to human individuals and to households. In this way, the complexity of modern economic life can be seen to be manageable with the help of the accountant.

NOTES

1. J. R. Hicks, *Capital and Growth* (New York and Oxford, 1965), reviews and compares these models.

2. "The Role of Accounting in Emerging Nations," *The Journal of Accountancy*, Vol. CII (January, 1969), p. 18.

3. Adolf J. H. Enthoven, "Finance and Development," *International Monetary Fund*, Vol. 6, No. 2 (June, 1969), pp. 16-23 and Vol. 6, No. 3 (September, 1969), pp. 24-29.

4. *The Open Society and Its Enemies* (Princeton, 1950).

5. *The Methodology of Positive Economics* (Chicago, 1953).

6. For a discussion on this point, see Gunnar Myrdal, *The Political Element in the Development of Economic Theory* (Harvard, 1955), pp. 200-201.

7. J. Marchal, *Le Mécanisme des Prix* (Paris: Librairie des Medicis, 1948), p. 15 (our transl.).

8. J. A. Schumpeter, *The Theory of Economic Development* (New York: Oxford University Press, 1961), pp. 4-5. (First pub. 1934.)

9. In private conversations with the author, a psychiatrist has observed that one of the common features in serious marital disputes is the presence of two fundamentally distinct attitudes to money. The wife sees in money a means of payment, the use of which is to acquire consumption goods and services; the husband sees it as a unit of measure which is useful in planning the production of goods and services for future consumption, often by the wife.

10. L. F. Urwick, "Theory Z," *Advanced Management Journal*, Vol. 35, No. 1 (January, 1970), pp. 14-21.

11. R. N. Anthony, "The Trouble with Profit Maximization," *Harvard Business Review*, Vol. 38 (Nov.-Dec., 1960), pp. 126-134.

12. It is interesting to note that Chambers, with whom we shall find ourselves in marked disagreement, identified this problem without addressing himself to its solution. He wrote, in *Accounting, Evaluation and Economic Behavior* (New Jersey: Prentice-Hall, Inc., 1966), at p. 66: "The goals of production and consumption are different in kind, and entirely different modes of behavior may be observed as a man's calculations shift from one role to the other. . . . Entities engaged in trading, manufacturing, and ancillary operations may thus be deemed to have no consumer role."

13. John P. Powelson, *Economic Accounting* (New York: McGraw-Hill, Inc., 1955), p. 10.

CHAPTER II

ACCOUNTING AND ECONOMICS

Accounting Methodology

Definition of the Field

For the purpose of this study it is not necessary to define "accounting" narrowly. In accounting, as in other fields of empirical inquiry, we analyze the relations between observable data,[1] and we shall assume that in this field we find a number of problems thrown together for convenient reference, the common feature being the use of a particular methodology to solve them. In particular, we do not assume that "double-entry" is a necessary element of accounting, since we postulate the fact that accountants make as many entries as are required by the purposes of their analysis; the popular preoccupation with double-entry bookkeeping is a mere historical survival.[2] It also leads to unfortunate metaphysical speculations, such as Mattessich's treatment of the "duality principle."[3] No one, apparently, disputes the inclusion of single-entry accounting in the field.

A method may be defined as a family of models, and a model as a construction in which selected elements of a state or process which we desire to investigate are combined

in order to study their interrelations and interactions.[4] The account is a model in this sense, being a construction in which movements of values are combined; the concept of "value" will be examined in more detail subsequently, and here it will suffice to say that we mean by this term a representation in money. The bilateral form which we are accustomed to think of as an account, since it is invariably used for illustrative purposes, is no more essential to the model than the wheel to transportation, but it is useful for didactic and expository reasons.

The characteristic features of the account are: the name of the value, the description and dimensions of a two-way flow (in and out, or from and to) and the dates of the components of this flow. By arranging these elements in a significant form we can see the result of the flow through time.

Name of the account

Date	Flow in (from)	Amount	Date	Flow out (to)	Amount

The quantitative representation of the result of the flow is called the *balance*; it may be $\gtrless 0$. There is no particular significance to the fact that inward flows are shown on the left-hand (debit) side and outward flows on the right-hand (credit) side, except that consistency calls for a rule, and the one in use appears to offer practical advantages.

The model has the virtue of ubiquity; it can be used at all levels of aggregation. Just as we can imagine an account for a particular economic value, so we can imagine an account for the totality of values of a selected kind, or even for all values moving within an identifiable economy. This feature permits both aggregation and disaggregation to be performed within a logically consistent framework.

In order to construct an account we require a written language, a model of time, a currency of account, the technique of addition and one or more valuation models. The first four present no special problem; we can use any language, the universal calendar and any currency, even an artificial measure like the Egyptian *shât* which had no circulation. The choice of valuation model is more difficult, since it brings us face to face with the problem of value. The Aristotelian concept of an equivalence of what a man gives and receives is clearly attractive in this context, and we shall see that accounting theorists and practitioners have relied on it to a great extent. It has long been realized, however, that since "both parties to an act of barter or sale must necessarily gain by it . . . there can be no equivalence between the 'subjective' or utility values of the goods exchanged or between the good and the money paid or received for it."[5] We can agree with

Schumpeter that "metaphysical speculations about objective or absolute value" can be dispensed with. A valuation model is defined here simply as a construction which permits quantitative representation in money, that is, the assignment of currency units to an object; thus, the objective value of a good or service is "the magnitude defined and nothing else."[6]

We should note at this point, however, the cost theory of value attributed to Duns Scotus and St. Thomas Aquinas, under which the "just" price of a thing is equated with its competitive common value and called its "cost." The term "cost" has at least three different meanings in accounting; it may mean depending on the context, value in exchange, value in use, or necessary sacrifice. The same situation has arisen in economic theory; the "just price" becomes variously a quantity of labor (the labor theories of value), opportunity cost (value in the next best use) and replacement cost (sacrifice involved for the possessor if he were deprived of a good or service and wished to recover it). It is easily assumed that some of these concepts are more objective than others; we reject this assumption, and postpone examination of the concept of cost as a surrogate for value to a later place.

Accounting Distinguished from Statistics

It will be seen that accounting is a branch of numerical analysis applied to economic activity, and some writers have viewed it as a branch of statistics.[7] It is clear that accounting data are available for statistical uses, and both macro- and micro-economic studies have proceeded from this observation; business statistics include accounting data together with other measurements. Scott looked forward to an integration of accounting and statistical processes, and postulated as the logical outcome of this "evolution" a "consistent hierarchy of rules and principles proceeding from the specific and detailed to the more and more general until the broadest accounting principles merged into still broader principles of social organization."[8] While it is not disputed that accounting and statistics are related methodologies, or that both can find a place within a socio-economic conceptual framework, it is important here to establish the differences between them.

In the first place, statistics (as the name implies) is essentially static, whereas accounting, as we have shown, is based on dynamic elements. A static model is one in which important variables are assumed to be unchanging, and in this sense all models have static aspects, including accounts. The key variable in this context, however,

is *time*; whereas statistics abstracts from the effects of time, accounting expressly includes time by dating all observations. Again, static models can be made dynamic by dating procedures, but the basis of the distinction remains; statistical method does not always include time as a variable.

Secondly, statistics is "State Arithmetic, a system of computation by which differences between individuals are eliminated by the taking of an average."[9] "For the most part, Statistics is a method of investigation that is used when other methods are of no avail."[10] Statistical method is required when we are faced with a large population and are forced to assume that the average (however computed) is representative of the whole. Gini has complained that modern statistics displays a growing propensity for formulae, which he looks upon as a sign of weakness in statistical method; he believes that the representative assumption is too readily made on inadequate evidence concerning the population.[11] The characteristic feature which distinguishes accounting here is that, given a definition of a value or set of values, it is possible to proceed to manipulate those values through time without any of the assumptions of consistency and comparability which are essential to the operation of the laws of chance, to correlation and the standard deviation, and to those

other mathematical models which we group under the heading of "statistics."[12] Thus, statistics begins where accounting ends, in that, given assumptions of consistency and comparability, statistical method can be applied to accounting data. We may refer to financial ratio analysis as an example of this.

Thirdly, and in contrast to statistics, accounting is holistic. We shall observe in the next chapter that this has not always been the case, and that early forms of accounting were based on a selection process similar to that which characterizes statistical method at the present time. In using statistics, we start from a hypothesis concerning the key variables to be studied; in accounting, we devise a closed system within which all identifiable economic values can be accommodated, no matter how little they may appear at first sight to affect the result. This brings us to the fourth difference; accounting methodology includes models which prescribe the manner in which observations are to be made; this is the subject-matter of bookkeeping. The rules and techniques of bookkeeping cannot be divorced from the subject of accounting, which may be the reason why they are so often confused.

The Uses of Accounting

Accounting theory is teleological, and as Schumpeter has pointed out, teleology may be a proper manner of

approaching the study of purposive human actions. "The improper use of teleology consists in exaggerating the extent to which men act, and shape the institutions under which they live, according to clearly perceived ends that they consciously wish to realize in the most rational way."[13]

If "it is not possible to draw a theoretical line between economics and politics in the manner and with the significance so much stressed by most economists in their methodological discussions,"[14] then it is perhaps advisable to adopt an express empirical hypothesis concerning this point. We shall use initially the mental construct of a policy-maker who is at the same time a planner and an executor of his plans, and concern ourselves with the conceptual framework of this hypothetical businessman.[15] At a later stage we shall see what modifications the analysis must undergo if we introduce a separation between policy-making and planning, and between planning and execution, as well as a plurality of decision-makers. This device will permit us to abstract from behavioral factors, such as motives and goals, while retaining the general idea of a purposive human being (Chambers' "actor"[16]) in the context of a given socio-political environment. The danger to be avoided is illicit psychological reasoning from the individual to society as a whole.[17]

We face here a number of philosophical alternatives. If prediction is meaningless, we have no subject for study. If prediction can be made deductively, not from experience but from some general principle or principles alleged to be logically certain, as in modern theoretical physics, we must establish the axioms which will underlie our theorems; such behavioral axioms must be derived from observation of man in society. Or, we can make generalizations from experience which, while they can be valid inferences, are not made with certainty; in this case, traditional deductive logic would appear to be inapplicable. Finally, we can subscribe to an induction-deduction process of reasoning from the present to the future, such as characterizes what has become known as "the scientific method." In all cases a description of the environment must be undertaken, and it is to this task of distinguishing the historical from the logical that we now turn.

The fact that accounting has invariably been associated with societies where business has flourished was to Hatfield "so obvious that I offend by explanation."[18] He was referring to the latter part of the 19th century, and to America, England and Germany; we wish to show that this observation can be extended back through time as far as history will take us. Scotland in the 18th century, the Low Countries in the 17th, Florence in the 14th, Genoa

in the 13th, Rome at the birth of Christianity; Greece, Egypt, Persia, Babylon and elsewhere in the pre-Christian era--all of these civilizations were characterized by a developed structure of trade and industry, and have bequeathed to us accounting records.[19] "Wherever trade flourished, the practice of double-entry could be found, lending colour to the views that trade followed double-entry, or that double-entry followed trade."[20]

Again, we can verify the fact that accounting did not develop or occupy a significant role in ages and places where trade and industry were subordinated to conquest and military adventure, where the aristocratic ethos took precedence over the bourgeois, no matter how wealthy the peoples concerned may have been. Spain and Portugal in their glorious centuries, feudal Europe in its "dark ages," the ancient empires of Ghengiz Khan and Attila the Hun, have left us no legacy of accounts.

Obviously, accounting was a result of the invention of money, and the origins of both are lost in the mists of antiquity. Discussing the need for a metallic currency in pre-capitalist times, Sombart says:

> "Now, a money economy accustoms people to look at the world in a purely quantitative way. When the habit of applying money as a canon or rule for all things has grown for years and centuries, the natural attitude of mind which regards the inherent and qualitative differences in things dies out. Arithmetical valuations--weight, mass etc.--come to be taken as a matter of course in everyday life."[21]

We need not accept Sombart's assumption that the quantitative and the qualitative are mutually exclusive to see the point of his observation. There is a well-known hypothesis that writing began in Sumer before 4000 B.C. as a symbolic accounting, to keep temple records of goods received and issued.[22] It is, therefore, not entirely fantastic to see the origin of a quantitative approach to life in a need to keep accounts. Wherein lay the basis of this need?

The customary answer to this question points to the stewardship function, a requirement to account for the stewardship of wealth. A typical view is that of Richard Brown, in his classic work on accounting history: "The development of social life and especially the formation of states or sovereignties levying any form of taxation necessitated . . . a power of holding count and reckoning. In this we find the origin of the science of accounting."[23] And later, on the subject of auditing: "Whenever the advance of civilization brought about the necessity of one man being entrusted to some extent with the property of another the advisability of some kind of check upon the fidelity of the former would become apparent."[24]

It would be tiresome to trace the recurrence of this theme, but we may note the recent statement, by a prominent accounting educator, that accounting today is "investor

oriented"; he also claims that this orientation has prevailed "throughout most of the history of accounting."[25] The similar observation of Enthoven has already been mentioned.[26] We have rejected this hypothesis, however, since several contradictory observations have rendered it unacceptable. In our view, the following alternative hypothesis accords better with the evidence.

In order to accomplish his objectives, man develops conceptual frameworks consisting basically of representations of reality—models—in a form which permits their elements to be manipulated for the purposes of prediction, planning and control. Should I wish to spend my evening at a particular cinema, I can identify a set of conceptual frameworks required: a linguistic structure, a knowledge of certain technical equipment, a monetary system. We may consider additional quantitative models of this kind: if I am to arrive at my destination, I must possess a geographical conception of the area in which both I and the cinema are situated; in short, a mental or physical map, complete with distances. If I wish to be sure to see the whole picture, I must also have a system for measuring time, which must be identical with that used by the operator of the theater. All of these are abstractions.

It is suggested that accounting is a combination of conceptual frameworks, including those of language,

money, time and arithmetic, used by businessmen in their relations with each other, for purposes of prediction, planning and control. If this is correct, then the stewardship function of accounting can be seen to occupy a secondary role, in importance and in time, to the role of accounting in economic development, for example, the creation of wealth or the achievement of such other goals as may be identified from the behavior of businessmen.

Economists' Uses of Accounting

The 20th century interest of economists in accounting can be viewed as an aspect of their continuing effort to "grasp the economic order as a unified whole and to comprehend all its manifestations in a logically coherent system."[27] If we accept Myrdal's subsequent argument, that economic theorists have a concern for the improvement of human welfare, it is not inconsistent to assert that they are interested, in the first place, in describing and explaining the world as they see it.

The work of the marginalists in the 19th century culminated in the general equilibrium models of Walras and Pareto, which demonstrated again (for the point had already been made by the Physiocrats) that all economic actions are interdependent. Influenced by this need for a holistic view, economists have relied largely upon price

theory as a conceptual framework to contain their observations in all fields. It is possible to discern, in the 20th century, a renewed interest in accounting as a complementary aid in grasping the economic order whole.

Macro-economics

A striking feature of macro-economic theory in the second half of the 20th century is the use of accounting methodology for planning and control at the level of the state: ". . . a method of obtaining an over-all picture of economic activity is essential. This is the function of the national income accounts . . ."[28]

The first four chapters of the typical macro-economic textbook from which this quotation is taken are devoted to the accounting framework and its relation to the "super-structure" of Keynesian economic theory within which it can be placed.[29] The general acceptance of this approach can be traced to the work of several economists (notably, J. R. N. Stone and J. R. Hicks) who, in the 1940's, drew attention to the possibility of presenting in this form quantitative data for macro-economic studies. At the same time, a didactic purpose can be discerned:

> . . . the chapters on definitions, which formed so indigestible a portion of the old text-books, have been kindled into life by the work of economic statisticians, and also by some of the newer developments of economic theory. They have grown into a distinct branch of economics, a branch which is being pursued with very special success at the present time, and which is,

> nevertheless, particularly suited to serve as an introduction to the science in general. If we want a name for it, it might be described as Social Accounting, for it is nothing else but the accounting of the whole community or nation, just as Private Accounting is the accounting of the individual firm.[30]

The accounting approach to macro-economics is not an entirely new departure, having also been attempted by the Physiocrats in the 18th century; Mattessich has demonstrated the *Tableau Economique* as a rudimentary system of national income accounts.[31] Studenski identified 50 national income estimates for Britain and France down to the end of the 19th century,[32] and a number of other European countries, as well as the U.S.A. and Australia, experimented in this field prior to the 1930's. Several factors combined to concentrate achievements in economic accounting, one of which is certainly the writings of Irving Fisher, which will be discussed later. Much theoretical work was done in the 1920's, notably in the U.S.S.R., which established national budgets and centralized accounting control after the 1917 Revolution. The great increase in the size and scope of government activity after 1900 led the countries mentioned to collect statistics which had not previously been available, and the extreme economic fluctuations which accompanied World War I, the boom of the 1920's and the Great Depression, focussed attention on the need for data to support economic forecasting. It is noteworthy that, in reply to criticisms raised by Kuznets, a group of

economists and statisticians who had been involved in the formulation of the U.S. scheme of national income accounting placed emphasis on the analytical, definitional, pedagogical and statistical benefits to be derived from collecting this data in the form of a system of accounts.[33] The objectives of prediction, planning and control underlie these technical considerations; at least we can assert with some confidence that the stewardship concept is not much use in this instance, since it is impossible to determine who is answerable to whom for the custody and administration of the national income.

The use of accounts for planning purposes is not a new feature of government; it is frequently forgotten that businesses took the practice of budgeting from the public sector. Accounting for public funds was known in the kingdoms of the Nile and the temples of ancient Greece; one of the fascinating byways of European history reveals the English, Norman and Flemish rulers using accounts in the process of converting their tax systems from a commodity to a money basis. Public finance theorists have long used government accounts in their empirical studies; we shall consider the limitations of this source in Chapter V. We may also note here that the mainstream of ideas in modern public finance can be traced to Sweden, whose King operated a double-entry budgeting system on the accrual basis for

the state treasury from 1623 onward.[34] Enthoven makes reference to the fact that Simon Stevin's interest in accounts was stimulated by the efforts of the Dutch princes of the 15th and 16th centuries to improve the techniques of public administration.[35]

Interest in accounting as evidence for a positive theory of public finance has grown with the availability of national income accounting models; public finance theorists are also concerned with the problems of planning and control: "As the economic functions of government expand, the technical aspects of finance, of public accounting and of the control of expenditure, assume a new importance."[36] Pryor has recently attempted to formulate a positive theory of public finance based on empirical evidence as well as intuitive ideology.[37]

Kurihara, in summarizing the economic developments leading to Keynes' *General Theory*, provides further clues for the incipient rediscovery of accounting, although we do not agree with his reasoning.[38]

Kurihara	Our Comments
1. Industrialization and urbanization in general and mass production in particular.	The growth of capital-intensive firms and credit institutions destroyed the nexus between receipts and income, payments and expenditure, thus increasing the need to develop dynamic models of the economy.

Kurihara	Our Comments
2. The increasing public sectors of the economy and the welling importance of the role of government finance for stability and welfare.	But the emergence of a large nonmarket sector argues against the development of dynamic models based on neo-classical price theory.
3. The growing complexity and multiplicity of the phenomena affecting modern economic life require more and more overall information.	This argument works against dependence on intuitive simplifications and places great emphasis on analytical observations.
4. The Great Depression of the thirties.	But this and other similar observations draw attention to the need to incorporate expectations in planning and control models.

Micro-economics

In spite of the evident interest of early economists in business practices and accounting data, classical and neo-classical economists have tended to ignore accounting methodology. This drew the strictures of Irving Fisher, and Schumpeter regretted that the consequence has been that economists have had to discover painfully phenomena they could easily have observed from business sources. Marshall was obviously familiar with these sources, so much so that Hansen referred derogatorily to his work as "cost accounting."[39] The references to Marshall relate to the calculation of cost; Erich Schneider summarizes this approach by saying: "By the costs of a particular output we understand the money

value of the quantities of means of production necessary for producing and selling this amount of goods . . . (the problems of valuation which arise belong to the field of business administration."[40] There seems to be no dispute concerning the relevance of accounting methodology to the cost aspect of price theory.

More recently, the interest of economists in accounting at the level of the firm has become marked, notably as a result of Fisher's seminal work.[41] We are of the opinion that Fisher's knowledge of accounting was not sufficiently extensive to carry the load which subsequent theorists have attempted to make it bear, but there can be no question of the importance of his contribution to capital theory, or its influence on economic and accounting theories. Indeed, Fisher's definitions and assumptions have been largely incorporated into present-day national income accounting,[42] where they wreak incalculable harm.[43] The influence on accounting theory was transmitted through Fisher's pupil, Canning, whose work is an attempt to evaluate accounting in the light of Fisherian concepts of capital and income.[44]

Two developments can be identified as flowing from this revival of interest in accounting. The first, which can also be traced to Wicksell,[45] is the attempt to base

economic decisions on accounting models, such as the "cost/benefit" approach to government taxation and public expenditure. In Wicksell's terminology, "cost" and "benefit" bear the same relationship to one another as "cost" and "revenue" in the profit and loss account of the firm. In the field of micro-economics, discontent with the marginal approach to price theory has led some economists to consider "average cost pricing," which uses the profit and loss account model of the firm for explaining price formation; most of the work in this field has been done by questionnaire, however, rather than on the basis of account information.

The second of these developments, which is also not new, is the use of account information for empirical work in other branches of economics. A good example is Krzyzaniak and Musgrave's study of corporate income tax shifting, which applies statistical techniques to accounting data.[46] The principal use of accounts in this way has been in the field of finance, where a considerable body of work has accumulated in the U. S. and the U. K. during the past thirty years.[47]

In spite of this, the usefulness of accounts for economic analysis has been challenged by several critical economists. We shall discuss Yamey's position in Chapter III; here we shall take Boulding and Flanders as representative. Boulding[48] finds economics and accounting concerned

with the same subject matter, but sees them as occupying different worlds. Scholars from the one field do not study the other in any depth, although many economic questions have been derived from accounting practices, and some accounting methods have been developed to answer economic questions. The point of contact, he says, is the theory of the firm, where the accountant concentrates on net worth changes, i.e., on the measurement of profit, or net income. The valuation process which underlies this computation must necessarily accommodate unknown future events, but the economist regards such a task as an impossible one, so that much of accounting is, to him, ritualistic, providing assurance rather than answers. Boulding looks to information theory and decision theory as possible sources from which the integration of accounting and economics may proceed.

His pessimism is reflected by Flanders in two articles which attempt to guide accountancy into the paths of economics. In the first of these,[49] Flanders was replying to a professor of accounting who had suggested that accountants were wrong to neglect social accounting as a field of study; he was prepared to place severe restrictions on the relevance of accounting to economic theory. In the context of social accounting, a knowledge of specific economic theories was required for understanding the

meaning and uses of a given system of social accounts, and a knowledge of "general economic theory" to comprehend the relationships between the different systems of social accounts. The accountant could be no more than bookkeeper; he "can tell you what accounting methods and techniques to apply" but "must rely on economics to interpret and explain the economic significance of the values discovered by the accounting process." Interdisciplinary studies could arise through the economist's reliance on accountants in complex situations which could not even be analyzed without the kind of data accountants produce. The determination of what economic values to quantify was "in the realm of economic theory."

Flanders' views echo those of the outstanding American accounting theorist, A. C. Littleton, who argued that the tasks which accountants undertake should be restricted to the area of business money flows, and Flanders quoted with approval Littleton's identification of accounting theory with accounting practice. A later article by Flanders pursues this argument to the conclusion that accountants should adopt the behavioral, equilibrium and restraint relationships used by economic theorists, or see their functions increasingly filled by operations research men who will combine accounting data and economic models.[50] Flanders' logical error is to confuse economics

with price theory, and to assume that accountants do not use economic models because they do not use price theory models, but his belief that economics is concerned with human behavior, and accounting with the given results of behavior, would find a favorable reception in many quarters. His assertion that accounting is "mechanistic," and Boulding's view of it as "ritualistic," raise questions which must be answered if the theme of this study is to be accepted.

Some accountants have also challenged the validity of accounting in similar terms. Perhaps the most fluent statement of this criticism is that of Mattessich, himself an accountant:

> Thus accounting is being criticized for many reasons: that it is based on irrelevant historical costs instead of opportunity costs; that it provides only a description of the past, but no prediction of the future; that its models consist exclusively of identities but lack behavioral functions and do not lend themselves to optimization procedures; that it ignores psychological factors and uses "arbitrary" allocation procedures . . . that the balance sheet is not comprehensive enough because its inclusion-criterion of measurability is too superficial; that the additivity assumption on which it operates is illusionary [sic]; that its measures are not accompanied by error estimates, etc.[51]

Mattessich refutes these accusations on the grounds that it would cost more than it would be worth to improve accounting methodology in the desired direction, but this is surely the weakest of arguments; if the criticisms are justified, the cost argument implies that the opportunity

cost of doing better would be very low indeed. We shall attempt to show that all these criticisms stem from a misunderstanding of the basic features of accounting, and disappear when we accept the idea of accounting as a closed system which represents certain aspects of the realities of human intercourse, and when we abandon the unnecessary assumptions of profit maximization and income (profit) determination. In short, we sympathize with those who are impatient with the shortcomings of accountants, but attribute them to human weakness and lack of application, rather than to inherent deficiencies of accounting theory.

NOTES

1. Gunnar Myrdal, *The Political Element in the Development of Economic Theory* (Harvard, 1955), p. 154.

2. Boullet and Serieys have shown that double-entry bookkeeping is simply a special case of integrated multiple-entry bookkeeping. See "Les moyens de traitement éléctroniques et l'évolution des concepts traditionels de comptabilité," Paris, *La Revue Francaise de Comptabilité* (February, 1967), p. 55. Cost accounting typically involves triple-entry; national income accounting, quadruple entry, which becomes sextuple entry at times.

3. R. Mattessich, *Accounting and Analytical Methods* (Homewood: Richard D. Irwin, 1964), pp. 26-27.

4. J. R. Hicks, *Capital and Growth* (New York and Oxford, 1965), p. 28.

5. J. A. Schumpeter, *History of Economic Analysis* (New York: Oxford University Press, 1954), p. 61.

6. *Ibid.*

7. DR Scott, "The Influence of Statistics upon Accounting Techniques and Theory," *The Accounting Review*, Vol. 24 (January, 1949), pp. 81-87.

8. *Ibid.*, pp. 84-85.

9. M. J. Moroney, *Facts from Figures* (3d ed.; London: Penguin Books, 1961), p. 1.

10. *Ibid.*, p. 2.

11. C. Gini, "On the Characteristics of Italian Statistics," *Journal of the Royal Statistical Society*, Vol. 128, Part I (1965), p. 105.

12. Examples of the use of averages can be found in accounting, e.g., the weighted average cost method of pricing materials issued from a stock.

13. Schumpeter, p. 58, n. 4.

14. Myrdal, p. 11.

15. The method is similar to that adopted by Knight in his discussions of uncertainty. See Frank H. Knight, *Risk, Uncertainty and Profit* (New York: Harper Torchbooks, 1955), Chs. XI and XII.

16. R. J. Chambers, *Towards a General Theory of Accounting* (Adelaide, 1961), p. 5, *et. seq.*

17. Myrdal, p. 13.

18. Henry R. Hatfield, "An Historical Defense of Bookkeeping," repr. in W. T. Baxter (ed.) *Studies in Accounting* (London: Sweet and Maxwell, 1950), p. 10.

19. See, for a chronological list of significant dates in the history of accounting, George Abs. *et al.*, "Historical Dates in Accounting," *The Accounting Review*, Vol. 29 (July, 1954), pp. 486-93. See also: A. C. Littleton, *Accounting Evolution to 1900*, (New York: American Institute Publishing Co., 1933); S. Paul Garner, *Evolution of Cost Accounting to 1925* (Alabama, 1954), espec. Chs. 1 and 2; Joseph H. Vlaemminck, *Histoires et Doctrines de la Comptabilité*, Brussels: Eds. de Treurenberg (1956); David Murray, *Chapters in the History of Bookkeeping, Accountancy and Commercial Arithmetic* (Glasgow: Jackson, Wylie & Co., 1930).

20. B. S. Yamey, "Scientific Bookkeeping and the Rise of Capitalism;" repr. in *Studies in Accounting, op. cit.*, p. 16.

21. Werner Sombart, *The Quintessence of Capitalism*, transl. M. Epstein (New York: E. P. Dutton & Co., 1915), p. 309.

22. William H. McNeill, *The Rise of the West* (Chicago, 1963), p. 54.

23. R. Brown, *A History of Accounting and Accountants* (Edinburgh: T. C. and E. C. Jack, 1905), p. 16.

24. *Ibid.*, p. 74.

25. Sidney Davidson, Arthur Young Professor of Accounting at the University of Chicago, in "Accounting and Financial Reporting in the Seventies," *The Arthur Young Journal* (Spring/Summer, 1969). The view echoes Knight, pp. 303-4.

26. *Supra*, p. 5.

27. Myrdal, p. 28.

28. T. F. Dernburg and D. M. McDougall, *Macro-Economics* (2d ed.; New York: McGraw-Hill, 1963), p. 2.

29. See also Gardner Ackley, *Macroeconomic Theory* (New York: The Macmillan Co., 1961), Chs. I-IV.

30. J. R. Hicks, *The Social Framework* (with A. G. Hart) (New York and Oxford, 1945), p. xii.

31. *Op. cit.*, pp. 106-18.

32. Paul Studenski, *The Income of Nations* (New York, 1958).

33. M. Gilbert, G. Jaszi, E. F. Denison and C. F. Schwartz, "Objectives of National Income Measurement: A Reply to Professor Kuznets," *Revue of Economics and Statistics*, Vol. 30 (August, 1948), pp. 179-95.

34. Per V. A. Hanner, *General Ledger of the Kingdom of Sweden, 1623* (Stockholm, 1952).

35. Adolf J. H. Enthoven, "Finance and Development," *International Monetary Fund*, Vol. 6, No. 2 (June, 1969), pp. 16-23.

36. Ursula K. Hicks, *Public Finance* (Cambridge, England, 1955), Preface, p. ix.

37. Frederic L. Pryor, *Public Expenditures in Communist and Capitalist Nations* (Homewood: Richard D. Irwin, Inc., 1968).

38. Kenneth K. Kurihara, *Introduction to Keynesian Dynamics* (London: Geo. Allen & Unwin, Ltd., 1964), p. 17.

39. Alfred Marshall, *Principles of Economics* (8th ed.; New York: The Macmillan Co., 1948), espec. pp. 360, 394 and Book V, Ch. VII, Book VI, Ch. VII; also p. 406.

40. *Pricing and Equilibrium*, transl. Esra Bennathan (New York: The Macmillan Co., 1962), p. 79.

41. Irving Fisher, *The Nature of Capital and Income* (New York: The Macmillan Co., 1906).

42. Ingvar Ohlsson, *On National Accounting* (Stockholm: Konjunkturinstitutet, 1953), p. 48.

43. See *infra*, Ch. VI.

44. John B. Canning, *The Economics of Accountancy* (New York: The Ronald Press Co., 1929).

45. Knut Wicksell, "A New Principle of Just Taxation," transl. J. W. Buchanan, in R. A. Musgrave and A. T. Peacock, eds., *Classics in the Theory of Public Finance* (New York: The Macmillan Co., 1958), pp. 72-118.

46. M. Krzyzaniak and R. A. Musgrave, *The Shifting of the Corporation Income Tax* (Baltimore, 1963).

47. In the U. S., see the National Bureau of Economic Research Series, particularly the compilation on "Research in the Capital Markets," a supplement to *The Journal of Finance*, Vol. XIX (May, 1964). In the U. K., see the publications of the National Institute of Economic and Social Research, Cambridge University Press, notably *Studies in Company Finance*, eds. Brian Tew and R. F. Henderson (1959), and Tibor Barna, *Investment and Growth Policies in British Industrial Firms* (1962).

48. K. E. Boulding, "Economics and Accounting: The Uncongenial Twins," repr. in *Studies in Accounting Theory*, eds. W. T. Baxter and Sidney Davidson (Homewood: Richard D. Irwin, Inc., 1962).

49. Dwight P. Flanders, "Accounting and Economics: A Note with Special Reference to the Teaching of Social Accounting," *The Accounting Review*, Vol. 34 (January, 1959), pp. 68-73.

50. Dwight P. Flanders, "Accountancy, Systematized Learning and Economics," *The Accounting Review*, Vol. 36 (October, 1961), pp. 564-76, espec. p. 576.

51. Mattessich, p. 414.

CHAPTER III

THE SOMBART PROPOSITIONS REVISITED

We have stated that accounting is in the first place a conceptual framework useful for planning economic activities, and that its control function is derived from its planning function. A similar proposition, or set of propositions, was formulated by Sombart, whose erudition in this field has not been challenged.[1] We shall outline Sombart's position, and Yamey's criticisms of it, and show how we differ from both Sombart and Yamey in our interpretation of the evidence which they adduce, and on which we also rely in great measure.

The Epstein translation was originally published in German in 1913, under the title *Der Bourgeois*, and the brief comments on accounting contained in that early work were subsequently expanded and more fully documented by Sombart, in a work which does not appear to have received translation into English.[2] Because of the significance of the relevant passages of the later work for the ideas developed in this chapter, we have prepared a fairly complete translation of Sombart's comments on accounting and the growth of scientific business management, which will be found at the end of this study.

Sombart and the Rise of Capitalism

The Origins of Capitalism

Sombart attempts to trace several causal factors which led eventually to the emergence of a capitalist civilization. He defines capitalism thus:

> By "capitalism" we mean a particular economic system, recognizable as an organization of trade, consisting invariably of two collaborating sections of population, the owners of the means of production, who also manage them, and propertyless workers, bound to the markets which they serve; which displays the two dominant principles of wealth creation and economic rationalism.[3]

The essential features are the profit motive and rationality; an exchange economy, in which the material requirements of several trades are satisfied by free exchanges of equivalent goods or money, may be either artisanal or capitalistic.[4]

Sombart takes as his point of departure a precapitalistic feudal society in early medieval Europe, when a sufficiency for existence was the goal of everyman. He then poses the question: by what means was society transformed into a different one, in which the profit motive replaced the satisfaction of basic wants as man's main driving force?

The spirit of enterprise manifests itself in personalities like the "freebooter," the "speculator" and the "projector," who rely on robbery of economic surpluses

created by others to form the capital necessary for their undertakings. Such men can be found throughout history, but the qualities of the bourgeois capitalist are not so common; they include an organizing ability, a facility for rapid calculation, and the art of planning outlays.[5] What turns the craftsman into a manufacturer? In two words, he must be able to calculate and to save.[6] Sombart sees the transition as a function of mental or spiritual changes which resulted in man ceasing to see himself as the center of his universe, and replacing himself with the institutions and material objects of a capitalistic society. This change in attitudes was dependent upon, if not actually caused by, the mensuration process.

> Thought in economic activities, then becomes more definite and conscious, in other words, more rational, and modern technical science has tended to make it so. But it has also helped to make it more exact and punctual, by providing the necessary machinery for measuring time.
>
> Clocks have played a very important part in the mental history of the business man. Pendulum clocks are said to have been invented in the 10th century, while the first clock worked by wheels was that made by Heinrich von Wick, in Paris in 1364, for King Charles V. . . . Now, the exact measurement of time became possible only when the necessary instruments were available, just as the exact calculations in terms of money became possible only when technical progress was able to provide a reliable currency.[7]

The two elements are combined succinctly in Benjamin Franklin's dictum: Time is money.

The ability to calculate can create wealth when combined with the requisite institution: The capitalistic

enterprise. In *Der Moderne Kapitalismus* Sombart describes the special features of this institution: ". . . the complete independence of the business, raising an independent economic organization above the individual economic men involved in it; the combination of all concurrent and successive business operations into a conceptual entity which then appears as the performer of the individual economic actions, and leads a life of its own extending beyond the lives of the persons concerned."[8]

Such entities had existed previously, but always tied to a named group of partners, family, villagers. The new concept of "the business" effectively separated the economic relations from the persons; property rights were depersonalized, permitting "it" to pursue profit without regard to any other goals.

Three causal factors contributed to the independence of the capitalistic enterprise:

1.	The law		"Firma" (the firm)
2.	Business management techniques	leading to	"Ratio" (the account)
3.	The market		"Ditta" (credit)

That is to say, the business could be viewed as a legal entity, an accounting entity and a credit entity. We are concerned here with the business as accounting entity.

The Business as Accounting Entity[9]

The invention of accounting was vital to the development of the capitalistic enterprise. In particular, double-entry bookkeeping permitted the full representation of the flow of capital through a business: ". . . from the capital account to the transaction accounts through the profit and loss account and back into the capital account."

This facilitated concentration on the idea of creating wealth; the "wealth producing sum" or amount invested for the purpose of obtaining profits was separated from all want-satisfaction objectives of the persons involved. In double-entry bookkeeping there was only one objective: the increase of a sum of money.

The concept of "capital" could only be formulated under these conditions; prior to double-entry bookkeeping there was no "capital"; thus, capital could be defined as the property of wealth represented in a double-entry system of accounts. Double-entry bookkeeping also led directly to the principle of economic rationality. Since the bookkeeper recognized no economic processes outside the books of account, and nothing could be recorded in these unless it was capable of expression in monetary terms, production and consumption could be reduced tc calculation.

Economic rationality went hand in hand with planning and control; the accounting system permitted the

analysis of business operations and the establishment of plans for their progressive and systematic improvement. In this way did the invention of double-entry bookkeeping create the necessary conditions for the essential principles of capitalism to develop. Further, it created the conceptual framework which was required in order to grasp the nature of a capitalistic economy, by means of concepts such as the classification of assets into fixed and circulating, the ascertainment of costs of production, and so on. The scientific equipment of economic theory, insofar as it related to captialist economies, was taken from double-entry bookkeeping.[10]

Finally, since the separation of the business from its owners was a necessary feature of the capitalistic enterprise, systematic bookkeeping gave material aid to the creation of the capitalistic enterprise. The business replaced the entrepreneur; the firm, represented by its capital, appeared as an accounting entity and the person of the entrepreneur was clearly shown to be a separate entity, more like a creditor than an owner.

Sombart does not claim to produce evidence that this theoretical argument can be empirically verified; indeed, he complains on several occasions of the paucity of historical materials available to him. He does claim to be able to see the slow development of double-entry

bookkeeping taking place side by side with the growth of juridical concepts of the firm as a separate entity, and that these changes coincided with what he terms "the period of early capitalism"; he also refers to parallel developments in a number of European countries as evidence of a tendency. Further, the rise of capitalism took place unevenly, so that artisanal and other precapitalistic features can be discerned in the business enterprises of the period. The organized and systematized business management which accounting made possible is perhaps an ideal type, represented by only a few outstanding examples, while the majority of businesses remained rooted in traditional inefficiencies; nevertheless, he concludes with conviction that, starting in Italy in the 14th century, new principles of business management were adopted, and their application depended upon accounting systems based on double-entry bookkeeping.

Yamey and the Sombart Propositions

Sombart's work has been assimilated into the mainstream of economic history and his view of the nature and origins of double-entry bookkeeping into accounting theory.[11] However, in two papers published at an interval of fourteen years, Yamey has expressed criticism of what he calls "the Sombart propositions" relating to the connection between double-entry bookkeeping and the rise of capitalism.[12]

In the first of these papers, Yamey denies that the management objectives identified by Sombart--clarity of contractual relationships, economy of expenditures--can be pursued only through double-entry bookkeeping; he suggests that single-entry will do as well. As to the origins of the former, while he harbors some confidence in the assertion that double-entry bookkeeping had its origins in medieval Italy, he says: "But in the nature of things we are on less sure ground when trying to explain the process whereby earlier collections of incomplete and unorganized commercial accounting records become transformed into a systematized and simple yet elegant arrangement of interlocking accounts."

He puts forward four possible hypotheses, viz.,

1. The single inventor
2. The spirit of the Renaissance
3. The result of chance or accidental influence
4. The necessary outcome of a purposive evolution

Yamey is unwilling to subscribe to any of these; while he is prepared to see some utility in accounts, he finds that evidence of *how* they were used is missing. In his view, "narrow" bookkeeping purposes predominated, involving comprehensive and orderly records of past transactions, and checks on accuracy and completeness. Financial statements of profit and loss or of capital, assets and liabilities were relatively unimportant.

In the second paper Yamey addresses himself again to the refutation of the Sombart propositions that bookkeeping aided the rise of capitalism and that double-entry bookkeeping made possible the separation of the business from its owners. He examines ". . . the simple question provoked by the thesis, namely, the contribution of double-entry accounting to the solution of problems in business organization and administration." He would show that the contribution was small, and "not made by those features of the system or in solving those business problems particularly emphasized by Sombart . . . I also suggest, incidentally, that in the context of the solution of business problems, double-entry bookkeeping was not greatly superior to less elaborate methods of accounting."

Yamey expresses the strange view (strange, that is, for an economist) that abstraction may lead to less successful decision-making, since the decision-maker ". . . would have had to view the complexities and detail of reality through the drastically simplifying and possibly distorting screen of his accounts." He finds little or no evidence that accounts were used in the decision processes of 17th and 18th century entrepreneurs whose books of account he has examined, and, indeed, would be surprised to find any, since "steps in the dark" lie at the heart of

capitalistic entrepreneurship. "Thus, when the businessman expresses himself most emphatically as entrepreneur he is necessarily without benefit of accounting records pertaining to past events and experiences." "Insofar as the early centuries of capitalism can be described as a period of dynamic change from a static base—itself a dangerous simplification—one would have to discount heavily the contribution made by systematic accounting or accounting calculation."

He also draws upon the evidence provided by the accounts of partnerships and joint stock companies to show that the business could be, and was, treated as distinct from its proprietors even in the absence of a double-entry bookkeeping system complete with capital and profit and loss accounts.

Yamey commences his paper with the statement that "Sombart's work gave prominence and prestige to the humble art of accounting by ascribing to it wide economic significance." He concludes that "In the achievement of other aspects of successful enterprise . . . accounting records and accounting systems have only a humble, but nevertheless interesting, contribution to make."

In taking a position on these arguments we shall concentrate on the later paper. It will be apparent from Chapter II that we agree generally with Yamey's criticism

of the Sombart propositions, particularly insofar as we see no special significance in double-entry bookkeeping other than that it permits accounting functions to be performed efficiently.

It is undoubtedly true that the mechanics of double-entry bookkeeping cannot be observed before the 14th century, but we may remark that, when observed, the system is so well formed that it is unlikely to have been a new invention. The accounts of Pope Nicholas for the year 1279-80 and the expenditure book of Florence for the year 1303 are fairly complex examples of simple bookkeeping, but the books of the City of Genoa for 1340 display a double-entry structure which must have been long in the making. In this respect we tend to agree with Sombart that the method must have been ". . . well established for a long time."[13]

Nevertheless, Yamey's claim that single-entry will do as much reveals that he has overlooked Sombart's remark, admittedly expressed in a bibliographical note, that Pacioli's double-entry did not grow out of single-entry bookkeeping, the latter being a "crippled" version of the former, and of later date.[14] Business accounts of the early Middle Ages were quite different in form; Sombart calls them "sparse and confused" collections of notes.

This point acquires some significance in relation to the arguments of the second paper.

They begin with this statement:

> knowledge of the *total* profit of an enterprise for a period, either absolutely or in relation to the amount of capital in the enterprise, is rarely necessary or useful for business decision-making within that enterprise. In a continuing enterprise, knowledge of the total or aggregated profitability or rate of return on capital is not relevant to current decisions which are concerned with changes in the use of part of the resources at the firm's disposal, and these, in turn, are related to the expected profitability of the various separable activities constituting the firm's total activity and of other activities under consideration.[15]

There is obviously a valuation problem here; if the immediate past use of capital is a continuing alternative, the past rate of return constitutes the opportunity cost of capital and is a necessary element of a decision model. Generally speaking, one cannot change direction rationally without knowing where one happens to be, and the relevance for the future of the profit of past periods is a question of fact in each case. Perhaps the view of the entrepreneur as Janus is obscured by a tendency to read "year" for "period," a natural result of the preoccupation with financial journalism to which we have drawn attention; a declining trend of weekly profits would certainly not be irrelevant to a baker or brewer.

We must agree with Yamey's statement (p. 120) that calculations of profit or of total capital can be made

independently of a system of double-entry bookkeeping, since "profit" and "capital" may be defined in such a way that it must be true. The proprietor of a "small business" (such as Marshall's locksmith employing thirty hands, or a motel with twenty rooms) may be able to accumulate data under his hat, but the emergence of a hierarchical structure in a business automatically separates the entrepreneur from the source of his data, and renders formal record-keeping obligatory. Double-entry bookkeeping, in our view, is simply an efficient and widely-accepted method of doing this, in both simple and complex business situations.

We must also consider the possibility that the single-entry bookkeeping systems referred to by Yamey were in fact truncated double-entry systems like the one popularized in the 18th century by the indefatigable Jones of Bristol. The use of aggregates is common to both single- and double-entry bookkeeping, and it is not essential in the latter system for each individual entry to be made twice, once on each side of an account. The basic equation of double-entry bookkeeping

Assets = Liabilities + Proprietors' Capital

leaves to the individual accountant the task of determining how these aggregates are to be derived; the number of possible solutions to this problem is infinite. As long as a

balance sheet and profit and loss account dovetail into one another through the profit (or loss) figure, the equation can be established. It is fairly common to find double-entry accounts which have not been formally completed by writing up a balance sheet and profit and loss account in the ledger, although the continental European tradition would see such a deficiency as more grave than it appears in the U. S. A. or in Britain. In such systems, these accounts can be seen as loose-leaf parts and are no different in kind from the loose-leaf sales account (composed of copies of the sales invoices) or the somewhat bizarre bits and pieces of an electronic data processing accounting routine. Yamey himself refers to the possibility that these incomplete, or single-entry, systems were completed in an informal manner, one less likely to leave traces than the bound books which contained the transaction accounts.

Further, Yamey admits that ". . . it is generally impossible to deduce from the records (or textbook discussions) precisely what was intended or achieved by the procedures in question."[16] We may therefore conclude that the way is still open to the acceptance of the Sombart hypothesis, that double-entry bookkeeping assisted the rise of capitalism by providing the capitalist with a powerful instrument for the management of a business.[17]

The assertion that double-entry bookkeeping was not a necessary condition for the separation of finance from production, which occurred during this period of early capitalism, is also debatable. It will be appreciated that the only accounts affected by the ownership of a firm are those relating to capital and profit. The only way in which accounting could have aided the creation of independent enterprises, therefore, is by techniques of accounting for capital and profit. If such accounts were not made up, as Yamey suggests, then his assertion is obviously true. Again, where the enterprise was not separate from its proprietor, as in the cases he mentions, these accounts would not have been called upon to perform any special function.

Early forms of corporate enterprise were of a temporary or "joint venture" kind. Trading operations, consisting very often of voyages by land or on sea, were treated as separate cycles, and on their conclusion the assets of the venture were divided among the participants in proportion to their investments. The dividend liquidated the firm. Maintenance of capital and measurement of profit were of little significance to plural owners of this kind, although highly important to owners of banks and factories, as the accounts of the Medici, Datini, Fuggers and others demonstrate clearly.

With the growth of continuing businesses, however, such as the chartered companies in Britain, the problem of

separate personae of owners and managers manifested itself. The maintenance of the firm's capital could no longer be the direct responsibility of the individual proprietor, and he came to rely more and more upon a balance sheet presentation to satisfy him on the condition of his investment. More important than this, however, and resulting from the fact of a changing body of shareholders, the profit and loss account begins to take on a different function from the one mentioned by Yamey, of reviewing overall business results (p. 119). It becomes necessary to ascertain "a" profit figure in order to treat equitably successive groups of shareholders. The profit of the firm is a jointly owned residue and must be apportioned between periods, a feature which underlies all problems of profit measurement.

The point Yamey makes is that some 17th and 18th century companies whose records have survived did not keep capital and profit and loss accounts, and therefore that these accounts cannot have been necessary for the separation of the business from its owners. We find the evidence inconclusive, for reasons already given; on the other hand, we cannot envisage the continuance of such a separation for any length of time without a necessity to render account making itself felt. The spectacle of a succession of British companies acts in the 19th century, each of which placed great importance on financial reporting and auditing, and

the fact that this was done in order to protect financial investors in companies, is highly suggestive, to say the least.

It is only fair to point out that in his "Introduction" to *Studies in the History of Accounting*[18] Yamey took some pains to emphasize that he was concerned only with criticizing the tendency to exaggerate the economic significance of double-entry bookkeeping, rather than accounting generally.

The Sombart Hypothesis Brought Up-to-date

Sombart's Assumptions Criticized

Although we have failed to find much substance in Yamey's detailed criticisms of "the Sombart propositions," we do not accept Sombart's views as they stand, and some distance separates our thesis from his. It will be found, however, that this separation does not lead to conclusions which are diametrically opposed.

Sombart was undistinguished as a forecaster. Writing shortly before World War I he predicted an end to large-scale wars, a declining world population and the impending disappearance of capitalism. Besides a defective telescopic vision, however, he also displayed attenuated historical perspective, attributable in some measure to the paucity of source material then at his disposal. Another

reason for his failure was methodological; in the preface to the second edition of his work on the rise of capitalism, he confessed to a tendency not always to distinguish clearly between the empirical and the theoretical, a trait which had been brought to his attention, in the friendliest manner, by Max Weber.

On the other hand, we cannot ignore his great contribution to the subject which is the field covered by this study. In the first place, Sombart was one of the first modern socio-economic theorists, attempting to weave together threads from several disciplines in order to create his tapestry of the origins of modern capitalism. Secondly, and with one exception which will be noted later, he carefully examined all the source materials then available to him, and did not hesitate to draw conclusions from them even if these contradicted the conventional wisdom of his time. Thirdly, the manner in which he integrated his knowledge of accounting into his socio-economic framework is far more sophisticated than any other attempt which has been made to combine accounting with economics for purposes of evaluation, and eventually, prediction. One can only speculate on the progress of social accounting if Fisher, Hicks or Stone had possessed a comparable grasp of accounting theory. Finally, as we have mentioned several times, his propositions lie

close to the central postulate of the present study and have probably contributed to its formulation.

It is significant, however, that Sombart made no mention of Niebuhr's claim to have discovered, in the Vatican fragments of the oration *Pro Fonteio*, evidence that the Roman *quaestors* used double-entry bookkeeping, invention of which could not, therefore, be attributed to the Lombards.[19] This claim has been denied by other historians[20] but refutation had not been made when Sombart wrote; on the other hand, it is hard to believe that he, with his great erudition, was unaware of the contents of Niebuhr's German language masterpiece, particularly since it was over one hundred years old at the time he wrote *Der Moderne Kapitalismus*. The evidence would, of course, have been fatal to his thesis that double-entry bookkeeping was a creation of the period of early capitalism, although it might not have destroyed the validity of his wider propositions. Interestingly enough, de Ste. Croix in his lengthy treatise arguing against the view that double-entry bookkeeping was known to the Greeks or Romans, makes only one brief reference to *Pro Fonteio*, in another connection altogether.

How, then, do we differ from Sombart? Like him we have chosen a tribological[21] approach to our subject matter, but during the intervening sixty years his appeals for

additional historical materials have been answered in large measure. Not only have accounting historians such as Melis, de Roover, Yamey and Mommen contributed to our knowledge of this field, but also archaeologists (Woolley), antiquaries (de Ste. Croix, Elizabeth Grier), students of the administration of medieval manors (Hudson) and of Roman Law (Jolowicz, de Zulueta). We may also refer here to Schumpeter's important contribution of a theory of economic development [22] and to the many investigators of the history of scientific thought, who have taught us to be wary of the very idea of "invention." As a result of these researchers' efforts we can no longer see the rise of capitalism in the same historical light.

Mandeville, in his *Fable of the Bees, or Private Vices, Publick Benefits*, pointed out that the prosperity of a nation depends upon the acquisitive efforts of its citizens, and ultimately on such immoral qualities as ambition and a desire for power and luxury. The social problem is, and always has been, to reconcile this with justice, charity and equality. The Roman triumvirate of Pompey, Crassus and Caesar, taking for themselves the spoils of the Mithridatic War, may be classed as speculators, or even as robbers, but the Roman colonists who settled Africa were as strongly motivated to create wealth and by economic rationality as any

late medieval capitalist. The history of Carthage shows that, prior to its destruction, large-scale manufacture of furniture, beds, mattresses and pillows was undertaken for the Roman market, and problems of organization and management no doubt arose. Although we can never be certain, from the evidence now available to us it would appear that the capitalist-entrepreneur has been known at all periods of human history. Those socio-economic studies (Huberman's *Man's Worldly Goods* is another example) which start with the concept of a medieval precapitalistic society, ignore the fact that there were earlier periods when a "sufficiency for existence" was not the goal of everyman, ages when the dominant sectors of society pursued the aim of increased wealth through production and distribution by means of trade, rather than through robbery and speculation.

Nor can we accept Sombart's psychological assumption that man occupied the central place in human thought in precapitalist times, but was ousted by institutions and material things in the period of early capitalism. It was in this latter period, after all, that Pope wrote: "An honest man's the noblest work of God"[23] and echoed Charron's dictum: "The proper Science and Subject for Man's Contemplation is *Man* himself."[24] Although Maine's view of history as a movement from status to contract no longer seems irreversible,

the statement still rings true of the period under consideration, and it was not until the 20th century that Sweeney replaced Samson *agonistes*.

The humanitarian social initiatives of the 19th century would have been unthinkable in the 11th or 12th, but we are not on that account entitled to conclude that people then were somehow different, emotionally or psychologically. We must assume from the great mass of historical evidence that, in respect of all relevant characteristics, human beings have not changed during the past thousand years.

The spirit of undertaking, Sombart points out, combines the qualities of the conqueror, the organizer and the trader: ". . . he must by peaceful means influence masses of people whom he does not know so to shape their conduct that he will derive benefits from it."[25] Sombart connects the freebooter with the birth of capitalism, but the freebooter was primarily a species of robber, not one who operates by peaceful means. Consider also Sombart's view of speculation as the noncalculatory approach to business, the attempt to participate in an "inherent and qualitative" manner in processes which are essentially quantitative and rational.[26] We rather see speculation at one extreme in the spectrum of calculatory activities, lying immediately beside games of chance, which are easily accommodated in the calculus of probabilities.

He quotes with approval Heine's words in *English Fragments* (1828), Chapter iv: "Were it possible for the Irish by a sudden *coup de main* to attain to the enjoyment of wealth they would seize upon it with alacrity. But ask them to get rich slowly by cultivating double-entry, sitting over miserable accounts until they are round-shouldered, and they cannot do it." When the time came for the Irish to choose, they in fact chose the Sweepstake, an activity almost entirely carried out by "sitting over miserable accounts."

Finally, we reject Sombart's assumption that the concept of capital resulted solely from the abstraction of a process of wealth creation (profit), since it is clear that "capital" was ascertainable separately from market transactions involving the purchase or sale of a business, or a share in one. As we have already attempted to make clear, this rationalization of Sombart's hangs together with his assumption that systematic accounting and double-entry bookkeeping are the same, and we do not subscribe to this viewpoint.

An Alternative Hypothesis

We shall pose two historical questions:

1. How does a Lebanese money-changer become an international banker, or an Iowa farm boy construct an enterprise big enough to put the world on wheels?

2. Why are occurences of this phenomenon increasingly apparent in Europe, starting with Italy in the

14th century and culminating in the great entrepreneurial explosion of the 20th century?

Only by keeping these two questions separate are we likely to throw light on the subject of our debate.

In Sombart's view, "projectors" such as Tonti, Caratto and Cagliostro turn into "promoters" of the order of a Law, de Lesseps, Rockefeller or Mond, through the invention of a conceptual framework which permits them to discriminate between ideas for wealth of the order of fantasies, and profitable plans which are capable of execution. This conceptual framework is a combination of double-entry bookkeeping and commercial arithmetic. We subscribe to a similar hypothesis except that we attribute its origins to multiple causes and a much earlier period in time; we do not regard the assumption that the plans must be profitable to be a necessary one; and we view accounting as a self-contained conceptual framework different from, although clearly related to, the models of commercial arithmetic.

We assume that the human mind seeks certainty and creates rationalizations in order to displace the unbearable idea of a purely stochastic environment.[27] All conceptual frameworks are designed to this end; prediction, planning and control are the essence of rationalism and by their means we liberate ourselves from the tyranny of birth, copulation and death. This desire for a certainty of the mind is often

aggravated by religious, political and social upheavals, so that the individual, robbed of one haven, seeks refuge in another. Sombart relates the observation that the U. S. A. represents the apogee of economic rationality to the uprooting of its immigrants, and the strangeness of their environment.

We would replace the Sombartian hypothesis of profit motivation with the Keynesian view that: ". . . it is probable that the actual average results of investments, even during periods of progress and prosperity, have disappointed the hopes which prompted them. . . . If human nature felt no temptation to take a chance, no satisfaction (profit apart) in constructing a factory, a railway, a mine or a farm, there might not be much investment merely as a result of cold calculation."[28]

The desire to create a capitalistic enterprise arises out of a desire to bring goods and services to those who do not now enjoy them, and the basic problem faced by the entrepreneur is how to finance his enterprise, that is, how to acquire capital in order to bridge the time gap between investment, or the allocation of scarce resources for production, and realization, or the receipt of payment in some form from the market to be served. The creation of wealth and the recognition of profit are separate phenomena,

although related; Böhm-Bawerk first pointed out that lapse of time in the production process was one of the factors permitting profit to arise, and Knight confirmed this observation: "Profit arises out of the inherent, absolute unpredictability of things, out of the sheer brute fact that the results of human activity cannot be anticipated and then only in so far as even a probability calculation in regard to them is impossible and meaningless."[29]

If the entrepreneur does not face this critical financing problem, he may select whatever conceptual framework seems to him appropriate; not having any necessity to communicate his plans to others he may formulate them in any way he chooses. Business history is full of examples of achievers who failed at the moment when it was necessary for them to exteriorize their systems. The historical novelist, Zoë Oldenburg, describes a feudal lord planning to build a road through his estate, presumably to bring its economic surplus to a market; he would not have needed accounts to convince a banker of the soundness of his project.

It seems to us, as indeed to Sombart, that the use of mathematics in the scientific preparation of decisions is a quite separate phenomenon from the development of a conceptual framework which will enable financial plans to be communicated to financiers and others. The techniques of "commercial arithmetic" were all known to, and used by,

the Romans, and to even earlier civilizations. The use of accounts for planning and control is likewise of great antiquity, but accounting is not built out of compound interest, ratios and percentages. That the two subjects were treated together by Luca Pacioli and others may have led to some confusion on this question.

It is suggested here that accounting was not the product of "the period of early capitalism" but was, in fact, introduced into the public sector much earlier in time, for planning and control purposes. The customs of the ancient Greek temples and Roman patricians are perhaps open to historical misinterpretation, but not so the practices of the Norman *curiae* in the 11th and 12th centuries or of the medieval manors of the same period. Lyon and Verhulst have described in detail how accounts were used by the Flemish, Norman and French royal courts in the task of mobilizing the countries of Northwest Europe and converting them from a subsistence to a money economy.[30] The records of the monastic manor of Norwich in England have informed us about the use of accounts in the management of the medieval religious manors.[31]

It is easy to understand, therefore, why, although double-entry bookkeeping is not observable before the beginning of the 14th century, when observed it displays the

principal features recognizable in modern accounting practice. Music is another example of a conceptual framework which took several hundred years to develop, from a simple octave recorded by an 8th century monk to the polyphonic forms with which we are today familiar. It is important for our thesis, however, to see that the slow process of constructing complex systems of interlocking accounts began long before "the period of early capitalism," and is attributable to economic growth situations of many different kinds.

The march of events as we see it can be shortly stated: the decline of the Roman Empire was followed by several centuries of anarchy, from which Europe emerged only when feudal systems established a measure of political stability. This political stability permitted the exploitation of economic surpluses, which the Normans and others sought to mobilize, and it is perhaps not without significance here that the revival of commerce and industry which preceded and accompanied the Renaissance was restricted to those lands which had once known the benefits of Roman administration. The Roman trading laws and customs appear to have been revived, for example, in the *Jugements ou Rôles d'Oléron*, which are one of the principal sources of mercantile law, and these included the use of accounts, which were first

applied to public administration and then taken up by private bankers, manufacturers and merchants.

Unlike Sombart, who attributes the primitive business records of the early Middle Ages to man's preoccupation with value in use rather than value in exchange,[32] we simply see in this evidence of the lack of educational facilities at that time, and point to other, earlier, periods when exact calculation and meticulous record-keeping were fairly common. As educational facilities expanded, through the efforts of the investment-minded rulers of the time, so the number of persons able to use accounts increased, and with them, the number of potential entrepreneurs. Combining this with a money economy, the important technical innovations of the time (arabic numerals; the clock; the printing press; the gun) and capital, however acquired, we arrive at a picture of conditions which were extremely favorable for the growth of capitalistic enterprises, to an extent previously unknown in human history.

Accounting, Planning and Control

The idea of accounting as a conceptual framework is clearly brought out in this statement by a German businessman:

> The object of the businessman's work, of his worries, his pride and his aspirations, is just his undertaking, be it a commercial company, factory, bank, shipping concern, theatre or railway. The undertaking seems

> to take on form and substance, and to be ever with him, having, as it were, by virtue of his bookkeeping, his organization and his branches, an independent economic existence.[33]

Clearly, Rathenau could not have believed that his business was a real entity; he was describing a system which he had constructed. The use of accounts for this purpose is also hinted at in the following confession, from Rockefeller's *Memoirs*:

> From my earliest childhood I had a little book in which I entered what I got and what I spent. I called it my account book, and have preserved it to this day.[34]

The modern entrepreneur may phrase it differently, but the idea has not changed:

> What, then, do we chief executives expect nowadays from our information systems? First, continual and sensitive checks on our present progress. We need to know at once when we are off target. We need to identify where we have gone astray, so that we can take the necessary action quickly. . . . Isolating the relevant information and pruning away the irrelevant is an all-important accountancy function.
>
> Second, we look for a really professional financial evaluation of the alternatives facing us in the major policy decisions we have to take. Decisions on such matters as capital expenditure projects, pricing policy and so on.[35]

Or this forthright statement:

> You may take deferred cash flow, or any other method of comparing a business, but if those figures do not balance with the annual statement of accounts they are, in my view, folly and extremely dangercus. . . . I personally never use any figures that do not balance with the annual statement of accounts. . . .[36]

The separation between accounting and mathematics is very marked in these quotations.

When interpreting statements of businessmen, it is important to remember that they are primarily engaged in creating values, not in transacting. As Knight pointed out, productive arrangements are made on the basis of anticipations, and in an uncertain world these anticipations may vary from subsequently experienced reality.[37] The essential fact is that men are acting and competing on the basis of what they *think* of the future:

> The whole calculation is in the future; past and even present conditions operate only as grounds of prediction as to what may be anticipated.[38]

Decision involves comparing a subjective judgment of the significance of a commodity to the decision-maker with an estimated future price, and it is in the elaboration of the subjective evaluation that accounting serves the planning function. Its use as a control mechanism follows from its planning function, since we define control as the systematic measurement of performance against predetermined standards, with the objects of evaluation and prediction linking it up again with planning.

The context within which this process takes place has been described by Mey, using the Limpergean formulation characteristic of the Amsterdam school of business economics.[39] We assume a flow of values—Quesnay's *produit social* seen in terms of Schumpeter's *Kreislauf*—which starts

from gifts of nature and ends with final consumption. This flow requires the intervention of business firms, or producing entities, which are organized into branches, trades, industries and sectors; in the last we include organs of national and local government, without the cooperation of which production could not take place. These subdivisions are connected by markets.

The entrepreneur contemplating participation in this process by contributing a product or service to a market must distinguish between the functions of:

1. The acquisition of means of production, resulting from investment.
2. The human tasks of utilizing these means of production.
3. The marketing of the product, or its distribution.

Each of these functions has financial implications, and where means of payment are involved in both acquisition and distribution, money measures can be imputed to investment and the work involved in production. The entrepreneur elaborates his business decisions using data derived from such an imputation, and represents them to himself and to his financiers in the form of accounts and financial statements. This is the planning function. Subsequently, he collects data, or measures performance, in the same way, and it is this control operation which we recognize as accounting. The planning operation, or "accounting for the future," is not different in kind. Our argument is that

the control function of accounting presupposes a prior planning function, which is implicit in all accounting systems but only made explicit, in the form of business budgets, in a minority of cases.

We shall consider in Chapter IV the different models of this imputation process which have been used by accounting theorists.

NOTES

1. Werner Sombart, *Der Bourgeois* (Munich and Leipzig: Duncker & Humblot, 1913), transl. by M. Epstein as *The Quintessence of Capitalism* (New York: E. P. Dutton & Co., 1915).

2. Werner Sombart, *Der Moderne Kapitalismus* (3d ed.; Munich and Leipzig: Duncker & Humblot, 1919).

3. *Ibid.*, (Vol. I, 1, p. 319 (our transl.).

4. *Ibid.*, pp. 92-3.

5. Sombart, *Quintessence*, p. 102.

6. *Ibid.*, pp. 201-2.

7. *Ibid.*, p. 326.

8. Vol. II, 1, Chapter X, p. 101 (our transl.).

9. The following is a summary of the contents of the Appendix.

10. Echoing Proud'hon: "La comptabilité est toute l'économie politique et le comptable le véritable économiste à qui une coterie de faux litterateurs a volé son nom."

11. See W. W. Cooper, "Social Accounting: An Invitation to the Accounting Profession," *The Accounting Review*, Vol. 24 (July, 1949), p. 233.

12. B. S. Yamey, "Scientific Bookkeeping and the Rise of Capitalism," *Economic History Review*, second series, Vol. I (1949), pp. 99-113, repr. W. T. Baxter, ed., *Studies in Accounting* (London, 1950), pp. 13-30; and "Accounting and the Rise of Capitalism: Further Notes on a Theme by Sombart," *Journal of Accounting Research*, Vol. 2, No. 2 (1963), pp. 117-36.

13. *Quintessence*, p. 128.

14. *Der Moderne Kapitalismus*, II, 1, p. 115.

15. Yamey, "Further Notes," etc., p. 119.

16. *Ibid.*, p. 126, n. 17.

17. Quoting Sombart, and also H. M. Robertson, *Aspects of the Rise of Economic Individualism* (Cambridge, England, 1933) (which appears to be a bowdlerized version of Sombart). Yamey's n. 25, p. 128 appears to confuse Sombart's planning hypothesis with the conceptually distinct hypothesis that accounting assisted businessmen to prepare decisions scientifically. See *Der Moderne Kapitalismus*, Vol. II, 1, p. 121.

18. Ed. A. C. Littleton and B. S. Yamey (Homewood: Richard D. Irwin, Inc., 1956), pp. 1-13.

19. B. G. Niebuhr, *Roemische Geschichte* (2d ed.; Berlin, 1830), Vol. II, p. 673, n. 1319. This note is omitted from the English translation (London, 1844).

20. The principal reference is G. E. M. de Ste. Croix, "Greek and Roman Accounting," in *Studies in the History of Accounting*, pp. 14-74.

21. Tribology = the technology of interacting surfaces. The term "interface" in cybernetics has a related meaning.

22. J. A. Schumpeter, *The Theory of Economic Development* (New York: Oxford University Press, 1961) (first German ed. 1911).

23. A. Pope, *Essay on Man*, Ep. IV, l. 248.

24. P. Charron, *Of Wisdom*, Bk. I, Ch. I (1601), Stanhope's translation. See Pope, *Essay on Man*, Ep. I. l. 57.

25. *Quintessence*, pp. 52-4.

26. *Ibid.*, p. 312.

27. For a similar statement, see Schumpeter, *Theory of Economic Development*, p. 85.

28. J. M. Keynes, *The General Theory of Employment, Interest and Money* (New York: Harcourt, Brace & World, Inc., 1965), p. 150 (first pub. 1936).

29. Frank H. Knight, *Risk, Uncertainty and Profit* (New York: Harper Torchbooks, 1955), p. 311.

30. Bryce Lyon and A. E. Verhulst, *Mediaeval Finance* (Brown University Press, 1967).

31. Kenneth S. Most, "New Light on Mediaeval Manorial Accounts," London, *The Accountant*, Vol. 160, No. 4910 (January 25, 1969), pp. 119-21.

32. *Quintessence*, p. 18.

33. *Ibid.*, p. 173.

34. *Ibid.*, p. 237.

35. Sir Kenneth Keith, U. K. investment banker, reported in *The Accountant*, Vol. 161, No. 4952 (November 15, 1969), pp. 642-3.

36. A. Chester Beattie, Chairman, Selection Trust, Ltd., reported in *The Accountant*, Vol. 158, No. 4874 (May 18, 1968), p. 668.

37. Frank H. Knight, p. 272.

38. *Ibid.*, p. 273-4.

39. Abram Mey, "Le circuit économique et sa relation avec la théorie de la valeur et du calcul rationnel de l'économie industrielle," Paris, *Revue de l'Economie Politique*, Eds. Sirey (1960), espec. pp. 8 and 12.

CHAPTER IV

THE FOUNDATIONS OF ACCOUNTING THEORY

In putting forward the proposition that accounting antedates the rise of modern capitalism, and that its objective was primarily to aid planning and control rather than the stewardship of wealth, we place ourselves in direct opposition to some notable historians of accounting. Littleton argues that accounting is a recent invention, and although Garner disagrees with him in this, he nevertheless sees *cost* accounting as a 19th century phenomenon.[1] It is, of course, difficult to avoid the temptation to misread records of the past, and the modern meanings of the words "account" and "accounting" may well be fundamentally different from the meanings of similar words used by Zenon and Cicero. On the other hand, we have suggested that the views of accounting theorists have been formed as a result of a technical preoccupation with the features of double-entry bookkeeping, and we shall now examine the thesis that a more fundamental obstacle in the path of understanding is the fixation with techniques of imputation characteristic of accounting literature of the last hundred years. This would explain the fact that Garner's conclusion is so patently at odds with the cumulative effect of the historical

evidence adduced by him in the first two chapters of his work. In our examination of the imputation process we shall attempt to show that recent formulations in accounting theory are fully consistent with our planning and control hypothesis, and indeed, fit badly into a conceptual framework which sees accounting as record-keeping having, as its main object, the discharge of stewardship obligations, together with a set of reports to investors. It will be seen that the imputation problems which have preoccupied accounting theorists are a special case of the general problem of valuation, which acquires its particular importance through managerial needs in relation to the planning and control functions.

The greater part of accounting theories deals with business or corporation accounting, and we shall, therefore, concentrate on imputation in the context of the business firm. We shall then examine to what extent the models of the firm can be modified to embrace other fields in which accounting is found. The models of the firm can be classified into the *economic*, the *financial*, and the *cybernetic*.[2]

The Economic Theory Model of the Firm[3]

One proximate source of an economic model of the firm is Irving Fisher, whose ideas recur in the literature of accounting theory, and who has been expressly cited for this purpose by Canning and Mattessich, among others.[4]

Fisher defines wealth as "material objects owned by human beings," and the significance of "material" is that the objects in question can be physically measured. Valuation is a species of physical measurement "involving the principle of exchange," and appraisement is a method of pricing which supplements actual exchanges in markets. Although an appraisement must proceed from a knowledge of the purpose for which it is carried out, "price or prices do actually exist without ambiguity." The physical unit of measurement can be multiplied by a price, and the resulting price data aggregated to produce values, this last process being wholly unexplained.

The significance of the phrase "owned by human beings" is that it incorporates the idea of property rights, which are rights "to obtain and enjoy the uses of wealth," i.e., to future services. It is clear that Fisher is thinking in terms of consumption as the object of owning property; property rights are "desirable changes effected by means of wealth," and desirability is equated with satisfaction and utility. This construct is not confined to consumption, however, but extended to investment. "We may speak of the desirability of a fruit orchard to a particular person on January 1, 1905, but the pleasure derivable from that orchard is only to be experienced during future years, as it bears fruit and the fruit gives enjoyment to those who eat it."[5]

Wealth may be a stock or a flow, but income is a flow of services, i.e., those future services described by "property rights." Fisher disregards distinctions between "income," "gain," "profit" and "benefit," and in his later work this restriction is made explicit, indicating that he is working with a static model throughout.[6] "Income is a series of events," but they are events of a particular kind; they are the rights to services enjoyed by an individual; these services produce satisfaction, so that income is essentially a psychic phenomenon. The services can be taken to represent psychic income, and money payments for the services are a surrogate which can be used in economic analysis.

If we were to try to structure Fisher's time theory of production, it would probably resemble the constructs used by Jevons and Böhm-Bawerk.[7] The problem is to describe in a way suitable for mathematical analysis the process whereby the product of a given quantity of labor increases with every increase in the "dose" of capital applied, capital being defined as the intermediate products which are used in final production. The state of technology is given. Jevons adds successive units of time to a given amount of resources, e.g., one month's labor. The amount of investment capital, which has a time dimension, is divided by the amount of capital invested, which has no time dimension, to give the Böhm-Bawerkian "period of production."

Let m's represent n quantities of physical resources that are being applied at n points in time $t_1 \ . \ . \ . \ t_n$ to the production of a consumer's good that is sold and consumed. This involves either identifying these physical resources with a single homogeneous agent--Jevons and Böhm-Bawerk chose homogeneous units of labor (subsistence equivalents)--or the assumption that these resources consist of doses of invariant composition. For axis we choose time, and the zero point is the time at which the consumer's good is sold. The t's are all to the left of this zero point, hence negative (the expression is made positive by prefixing a minus sign) and decrease numerically as we proceed from the first act of investment in t_1 to the right, toward the zero point. The expression

$$T = \frac{m_1 t_1 + m_2 t_2 \ . \ . \ . + m_n t_n}{m_1 + m_2 \ . \ . \ . + m_n}$$

has only a time dimension, since the m's cancel out. This is the "period of production," the average of the time distances from the (negative) investment to the sale of the product.[8]

This device permits Fisher to construct a theory of capital in which capital is simply the present value of income, and the valuation model which results is called by Canning "direct valuation." Canning contrasts this with the "indirect valuations" used by accountants, which he

regards as second-best figures, to be used where direct valuation is impossible or inconvenient. Canning does not make explicit the assumptions which are necessary in order to arrive at Fisher's result, and which restrict the applicability of his model to situations in which the process of production is not of the essence, nor does he discuss the particular point that, in order for the Böhm-Bawerkian structure of capital to be made analytical, this structure must be comparable physically. It is instructive to trace the implied model of the firm to its Ricardian origin, in order to demonstrate the significance of this observation for accounting theory which seeks to explain business or corporation accounting.

The Ricardian model, Hicks has suggested, is a model of the farm. Hicks depicts it as follows:

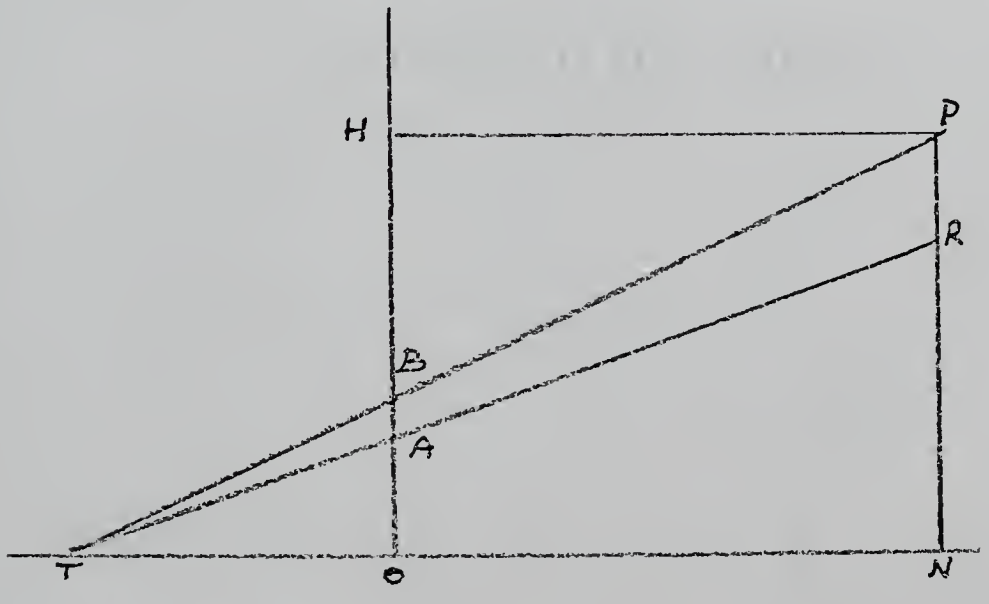


Figure 1. Ricardian Model of the Firm

Source: J. R. Hicks, *Capital and Growth* (Oxford, 1965), p. 44

The horizontal axis measures output of corn, the vertical axis, the capital/gross output ratio, both terms in corn. The length OH is unity, so that the rectangle OHPN represents the same quantity of corn as input (of capital) as the output OH. At output ON, RN is the marginal capital/gross output ratio; given diminishing returns RN is an increasing function of ON, suggesting a marginal "curve" AR. At the margin one unit of output (PN = OH = 1) requires RN of capital to produce it, leaving PR as profit. The rate of profit PR/RN is a constant, which is shown by producing RA backward to meet the horizontal axis at T and then joining TP, cutting the vertical axis at B; now BA/AO = PR/RN. If we take the rectangle OHPN to represent total output, the three parts are: (1) OARN, the replacement of capital, (2) BARP, the profit, and (3) HBP, the rent. If output must be expanded, N moves the right, the AR curve is unaffected and therefore T remains the same; TP must swing downwards, showing that the rate of profit falls while rent rises.

The theory of the firm in price theory was substantially modified in the 1930's, but it is probably correct to state that the earlier Ricardian model remained a formative influence throughout the first half of the 20th century.[9] We shall not attempt to trace the use of this model in economics, but we shall offer a suggestion as to how it has been used by accounting theorists.

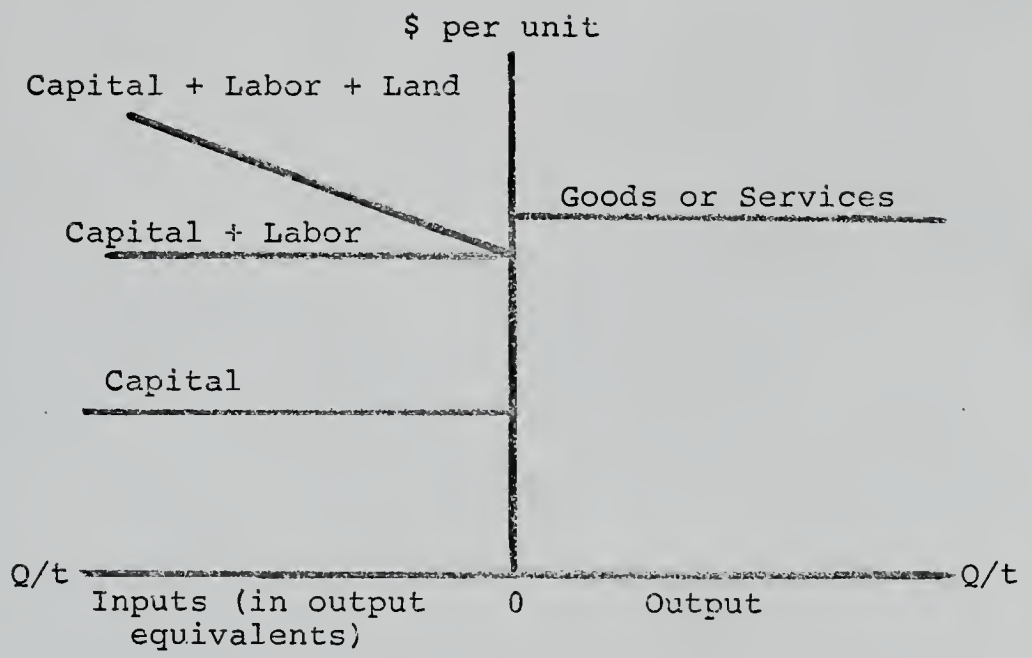


Figure 2. Static Price Theory Model of the Firm

Figure 2 shows a different presentation of the firm of micro-economic theory. It is assumed to be small enough to contemplate an unlimited supply of homogeneous inputs of capital and labor at prices unaffected by the volume of its output. Land, however, is a set of fixed quantities of varying qualities, displaying the characteristic of diminishing returns, and expansion raises the price of land relative to the unit of output until the margin, where the cost of production equals selling price, and beyond which output will not be taken. The model is conceived in stock terms; in flow terms it might be viewed as in Figure 3, where we use accounting terminology to describe the factors of production. In this new model, materials

inputs are included which are abstracted in the previous model on the grounds that they cancel out in aggregating all firms in order to demonstrate the workings of the economy as a whole. "Expense" is a residual category embracing interest on capital, rent and other factor incomes, as well as depreciation.

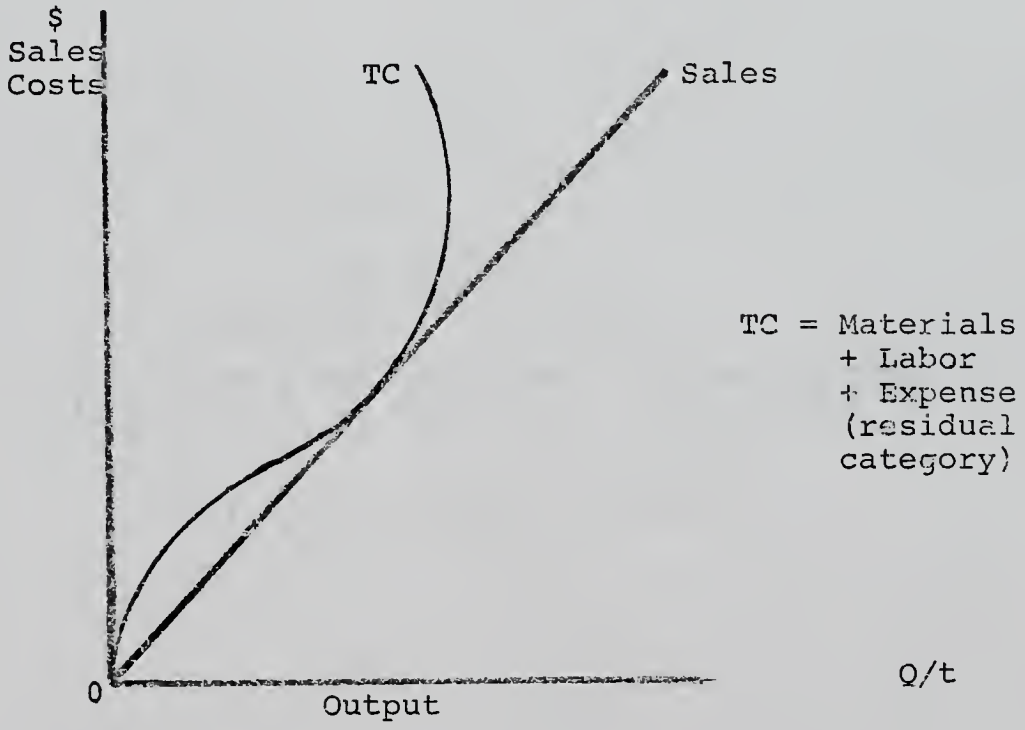


Figure 3. Managerial Decision Model of the Firm

A landmark in this process of utilizing the "see-through" model of the firm was Henry Hess's invention of the break-even chart in virtually the same form as

Figure 3, but classifying costs into "fixed" and "variable" in relation to specific production decisions, rather than according to their factor income descriptions.[10] This model patently underlies much of the literature on managerial accounting which has appeared in the last two decades.[11]

Thus, as shown in Figure 3, quantification in money terms of the Ricardian comparison between input and output quantities permits "income" (profit or loss) to be ascertained as a difference; this is Paton's "matching" concept, which corresponds with the idea of profit in economic theory as a residual income.[12] The measurement process relies upon the output market to quantify outputs and the input markets to quantify inputs, although Paton was prepared to depart from the latter rule in certain cases.

> The accountant makes certain important assumptions in connection with costing and valuation. In the first place, he assumes that *cost gives actual value for purposes of initial statement*. . . . Cost is the only definite fact available when a property is purchased, constructed or otherwise acquired. . . . He assumes that every exchange is fair . . . in the absence of definite evidence to the contrary the accountant has every right to treat initial value as equivalent to cost. . . . Later, if substantial evidence of depreciation or original loss is adduced, it will be time enough to revise the original figures. . . . An initial record of total cost would, of course, be necessary even if cost and original value were not identical. . . . However, if it immediately became evident in any case that the real value were greater or less than cost, the profit or loss would be recognized at once.[13]

We see from this the assumed equivalence of value in exchange and value in use which underlies the assimilation

of "cost" with "payment" and is one of the several meanings of "cost" to which we alluded in Chapter II. We also see how the introduction of time into the model as an express variable establishes a necessity to distinguish between these two value concepts.[14] Since time is abstracted from the micro-economic model of the firm, in equilibrium the proceeds of sales (revenue) can be imputed directly to the factors of production (costs) in order to determine their values, and the only way in which time can affect the result is by a delay in the transmission of receipts from the output market to the firm; this is handled by means of a discounting algorithm. A disequilibrium situation postulates the inequality of revenue and costs, the consequent difference between which is classified as a "quasi-rent" or a "profit," depending upon whether it is imputed to a factor of production or accrues to the entrepreneur as a residual. Time does not enter into this process of imputation. In the accounting analysis of the firm, however, there is an additional delay recognized between the acquisition of the factors of production and the output of goods and services, and the problem of valuing factors in relation to their uses becomes critical. When we recall the many assumptions of price theory which are incorporated into the micro-economic model of the firm, it will be seen that the imputation problem now assumes a complexity which calls for a quite different approach.

In order to accommodate this problem in the framework of his profit (or income) determination process of matching costs with revenue, Paton introduced the concepts of cost "expiry" and "attaching." Since cost first and foremost designates an acquisition, all costs can be viewed as *assets*, defined as valuable objects or property rights owned by the firm; value is measured by market price. During the time the asset is held by the firm, which is a consequence of the superiority of "round-about" methods of production, its value may change through exogenous or endogenous causes, the latter of transformation or waste (loss to the "entity"). This process of (negative) value changes is designated "cost expiry," and describes the basis for accounting operations converting an asset into an expense (cost). A positive value change characterizes the exteriorization of the product on sale.

We can thus identify three classes of value change to be recognized by accountants:

1. Valuation adjustments (appreciation or depreciation of land, equipment, supplies or securities).
2. Losses through waste, and windfall profits and losses.
3. Transformations.

Valuation adjustments and windfalls, arising primarily from changes in expectations, are to be dealt with on an *ad hoc* basis; only depreciation is formally

included in the scope of the theory, and although Paton lists several examples of other adjustments, he purposely avoids the general problem of revaluation.[15] Losses and transformations are brought under the doctrine "costs attach"; by making a metaphysical assumption, Paton sees the value represented by costs as flowing in some unspecified way into the objects for which the costs were incurred: processes, products, and ultimately, the act of sale.[16] Accounting operations relating to this internal flow of values are rationalized as a recognition of this "fact" of attachment, so that the valuation of work in process, inventories of products and cost of sales is linked directly with "costs" as the acquisition prices of factors of production.

The metaphysical aspects of this doctrine, with its overtones of hypostatization and reification, are most clearly brought out in Paton and Littleton's influential monograph on the theory of corporate accounting.[17] Accounting "roots," "traces," "keeps step," "exists"; costs "adhere," "trace," "express," "become," "await their destiny," "have a natural affinity for each other," "cling." The model to which we are to refer these statements is nowhere described, and it is quite impossible to follow the train of thought which leads from them to the principles or "standards" of accounting to which they purport to lead. We conclude that

the necessary step of articulating the model of the firm has not been undertaken.

Paton's theoretical constructs were used by Littleton as the basis for his considerable contribution to accounting thought. Littleton adopted an evolutionary approach to his subject, giving accounting theory overtones of adaptation to the environment which echo Sombart, and possibly suggesting thereby a biological analogy which has been taken up by Chambers, among others. Deinzer has called this organic view a "coherence point of view for establishing the verity of accounting doctrines."[18] It may be noted that Paton shows evidence of a similar organic viewpoint, for example when he states that double-entry bookkeeping is the only system which can accommodate all the economic aspects of a transaction.[19]

Nevertheless, Littleton was acutely conscious of a need to construct a theory of accounting which would demonstrate and support the usefulness of financial statements as a record of stewardship. On the one hand, he took as his point of departure the same economic concepts as did Paton; on the other hand, he wanted to relate them to a concept of the firm which went beyond the abstract construct of price theory. He, therefore, adopted the empirical approach of observing accounting practices and attempting to make generalizations concerning them.[20] He saw the meaning

of accounting theory in the critical examination of beliefs and customs in order to direct attention to the "genesis and outcome" of accounting work. Practices were facts and theory consisted of explanations and reasons, and one objective of theory was to furnish explanations of seeming inconsistencies in practice.[21] The tools of accounting theory were definitions, reasons, principles and concepts, and a principle was a "concisely worded generalization of considerable usefulness."[22]

The most important of these principles was the "principle of invested cost" which was a requirement to value accounting observations at prices measured at the time of a transaction. This idea was merged with Paton's "matching" concept to form a "realization principle" which states that income determination results from a comparison of invested cost, or input market price, with sales revenue, or output market price, so that there can be no income (profit) without a sale.[23] This was a slightly different use of the word "realization," which had previously designated the rule that revenue from sales was recognized on the basis of invoiced deliveries, which then became the definition of sales. It has been suggested that one of the factors leading Littleton to this result was the series of Federal tax law cases, culminating in the *Eisner v. Macomber* decision, requiring a "severance of income from capital" for income to be taxable.[24]

This model, which is fully compatible with the micro-economic model of the firm, permitting sales proceeds to be imputed directly to factors of production, led Littleton to the use of input market prices for valuations; we shall see that the same model led Chambers in precisely the opposite direction. However, it did not provide an approach to valuation in situations to which the underlying assumptions of the Ricardian model do not apply.[25] This appears from May's reply to Littleton's advocacy of "invested cost," which, again, does not advance our search for a more useful model.[26]

Chambers' contribution to accounting theory is notable in several respects; in particular, he has tried to substitute the human "actor" for the metaphysical "entity" as the centerpiece of the field of study (without, however, being able to maintain this viewpoint beyond the first assumption stage), and he has demonstrably accepted the need for a theoretical structure which embraces charitable, government, social and international accounting as well as corporate accounting.[27] But he, more than any other accounting writer, demonstrates a naïve acceptance of the characteristics of the micro-economic model of the firm.

The evidence is fairly substantial, particularly in the more extensive treatment of his ideas in a book-length work. A consumption model of the firm is suggested by the

fact that the individual's "satisfactions" provide both a point of departure and a point of arrival,[28] persons are represented as homeostatic systems, although this construct does not appear essential to his thesis. The use of a static equilibrium model of the firm is also implied by the following passage:

> . . . in any limited situation, and most action situations are limited, the wider reference systems in which we act and the valuations we attach to them may be taken as given. They may be regarded as implicit in the system; as being held in common, at least by those members of the society with whom one interacts; and as having a considerable degree of stability through time.[29]

A discussion of "utility" in relation to means is remarkable in that it attaches directly to inputs those properties which are discussed in economic theory in relation to outputs.[30] The latent imputation problem is not made patent, but the Marshallian and Hicksian models are given as sources (in a footnote) without any recognition of the conceptual problems inherent in this approach.[31] These conceptual problems are raised in the next section, on "Employment of Means," which distinguishes technical from value considerations, but they are assumed to be soluble by the marginal approach, which is only correct on the assumptions of price theory.

Chambers' macro-economic model also abstracts from time[32] and thus fails to distinguish between saving and investment; the Keynesian distinction between *ex ante* and *ex post* is not respected. Chambers' description of the

legal framework is also highly simplistic, so that ownership is seen as "unrestricted and exclusive control" over means, recalling Fisher's view of property rights. He does distinguish the consumer-role from the producer-role[33] but does not pursue the implications of this duality of viewpoint, and he goes on to state the conclusions of price theory without any reference to the assumptions from which they are drawn.[34] The Fisherian model is apparent from this quotation:

> Wealth may be considered to be the general capacity for satisfaction represented by the things owned by a person; so regarded, wealth is a subjective notion related to individual appraisals of utility.[35]

What of the transformation process?

> A decision to convert . . . is predicated on the expectation that the product of conversion will yield a greater price than the means to be converted would yield if sold.

Remote yields, of course, are to be discounted to present values. But all this is a *belief*; production processes frequently cause saleable commodities to be converted into unsaleable forms, so that this argument applies to the whole *process*, not to any part of it.[36]

The money calculation is used only in order to resolve the "questions of when and whether to buy or sell."[37] "For a person or association acting in a specific role we will use the general term entity. It will be necessary when dealing with particular entities or classes of entity

to stipulate the rights, powers and obligations which attach to it. . . ."[38] The absence of a reference to organization or process will be noted. Now the entity is personified: "A person has only one position in relation to his environment at a point in time" and to know this position is a necessary condition of success in acting. Thus, an actor's position is uniquely determined, and is essentially a position found with reference to markets; Chambers calls this "financial position," defined as "the capacity of an entity at a point in time for engaging in exchanges."[39] The financial position of an entity may not include any anticipatory calculations, since future prices are not susceptible to independent corroboration, and all results and inferences from them are "individual and subjective."

The key to understanding Chambers' approach to valuation lies in his assumption that objects and events can have "monetary properties," which they acquire by exchanges in markets.[40] Numbers of monetary units assigned to events and nonmonetary things are *prices*, and prices are determined in the market (although revaluation is permissible for durable goods, as with Fisher); they are, therefore, objective measurements. In these circumstances, the accountant could use either buying price or selling price, but the former does not indicate financial capacity; he should, therefore, use "market selling price," called

current cash equivalent. Where no resale market quotations can be found, however, input market prices can be used as a matter of expediency, and this point of view, which echoes Canning, raises anew the question: by what means can we move from the idealized market situation of the Fisherian model to the real world in which accountants live and work?

Chambers, like Paton and, to a lesser extent, Littleton, is not concerned with this real world in his theoretical investigations; indeed, the object of his inquiry is the practice of accounting and not the process of production, distribution and consumption.[41] His inquiry results in a definition of accounting which will sit easily with his image of economic reality: "Accounting is a method of retrospective and contemporary monetary calculation the purpose of which is to provide a continuous source of financial information as a guide to future actions in markets.[42] This functional definition indicates a concern with pricing rather than planning and evaluation of a process of production, which is again evidenced by his repeated (and incorrect) assertion that accounting abstracts from all properties of things except correspondence to money value.

A number of works on accounting theory proceed from the same "utility in consumption" behavioral assumptions and the price theory model of the firm; in particular, Gilman,[43] Edwards and Bell,[44] Mattessich,[45] and Ijiri.[46] They also

demonstrably fail to articulate the model in such a way as to provide a basis for explaining the methodology of accounting and the accounting concept of value, and the main thrust of the later works is toward an algebraic expression of double-entry bookkeeping rather than research into valuation models.[47]

The Financial Model of the Firm

The "see-through" model of the firm is clearly inadequate as a representation of the realities of production, which becomes quickly apparent when the writers discussed proceed to attempt to explain particular aspects of accounting methodology; it is obviously insufficient to support the precepts and examples of accounting textbooks or the detailed practices of public and private accounting. As Machlup points out in the paper cited, if we study the growth of the firm, the organization and some of its properties and processes are the very objects of the investigation. His comment that the firm in accounting theory is a collection of assets and liabilities is not acceptable here, since these terms are themselves concepts which require certain beliefs about reality, and if we define them as property rights and claims we are back in the Fisherian framework.[48] Even if we postulate a circular flow we shall require a more detailed image of reality than

these juridical concepts can provide. One such image is the financial model depicted in Figure 4; that the model is used by business corporations is indicated by Figure 5, which was developed by General Electric (GE), a corporation which has a long history of research and experimentation with the form and content of published financial statements.

The image of the firm as a receptacle containing a "liquid" substance representing purchasing power recurs in the literature on corporation finance and conceivably informs the comments of writers on accounting, particularly those who define "costs" as "payments."[49] The reference is to a narrow concept of finance as "means of payment," linking up with legal and social uses of the term "liquid capital" to denote undifferentiated purchasing power. Such an image, while of undoubted utility as a pedagogic device, leads subtly to the metaphysical assumption that there exists some physical substance, having properties akin to those of liquids, which circulates through a business firm and which can be "measured" in the scientific sense of the word. Such an assumption is patently false, since whatever liquidity characteristics money as such may possess are of little or no significance to the processes of the business firm. Furthermore, the assimilation of acquisitions to uses, which is a commonplace simplification in economic theory, is untenable when we consider the organization and processes

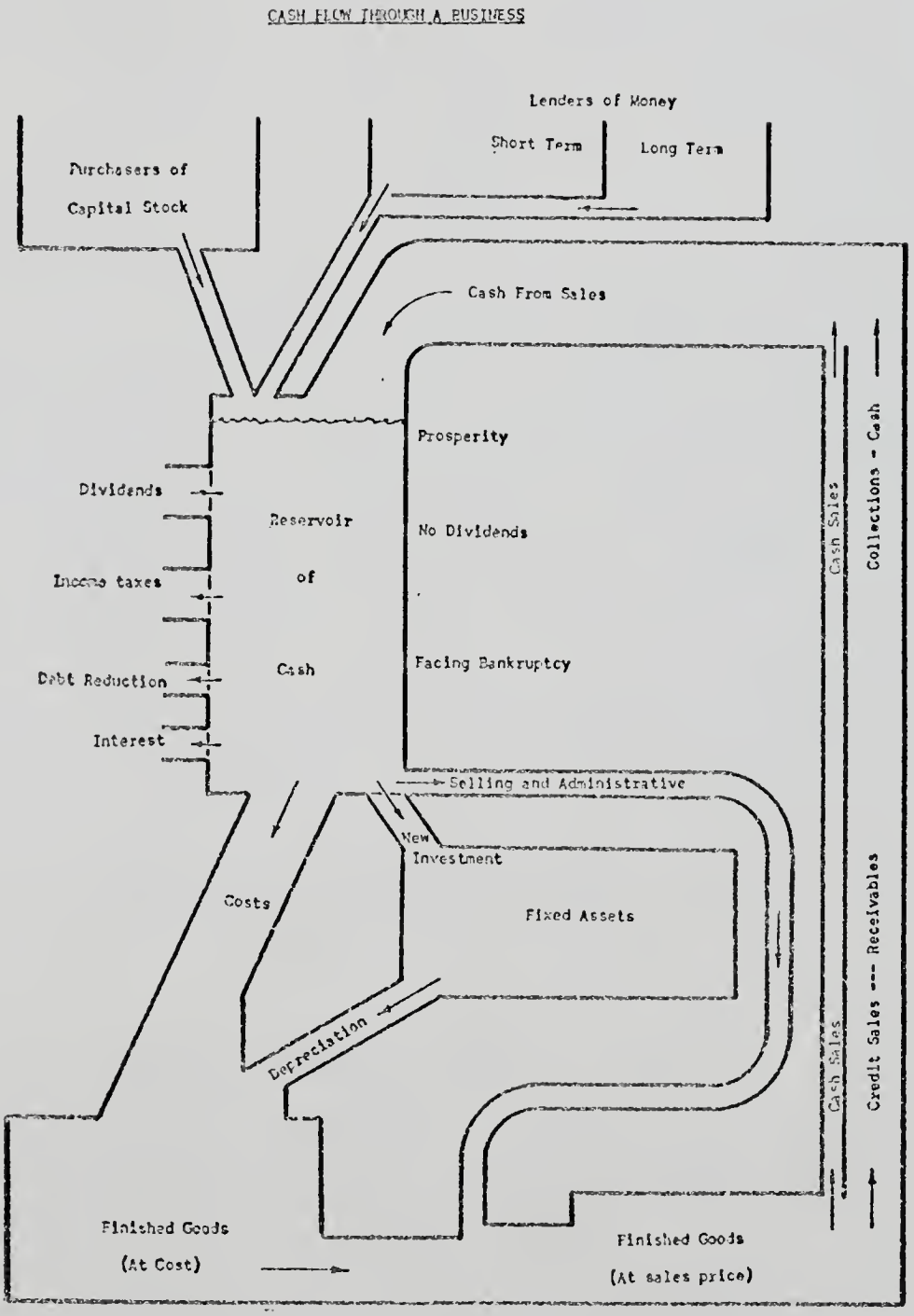


Figure 4. Model of the Firm

Source: John A. Griswold, *Cash Flow Through a Business* (Dartmouth: The Amos Tuck School of Business Administration, 1955), p. 2.

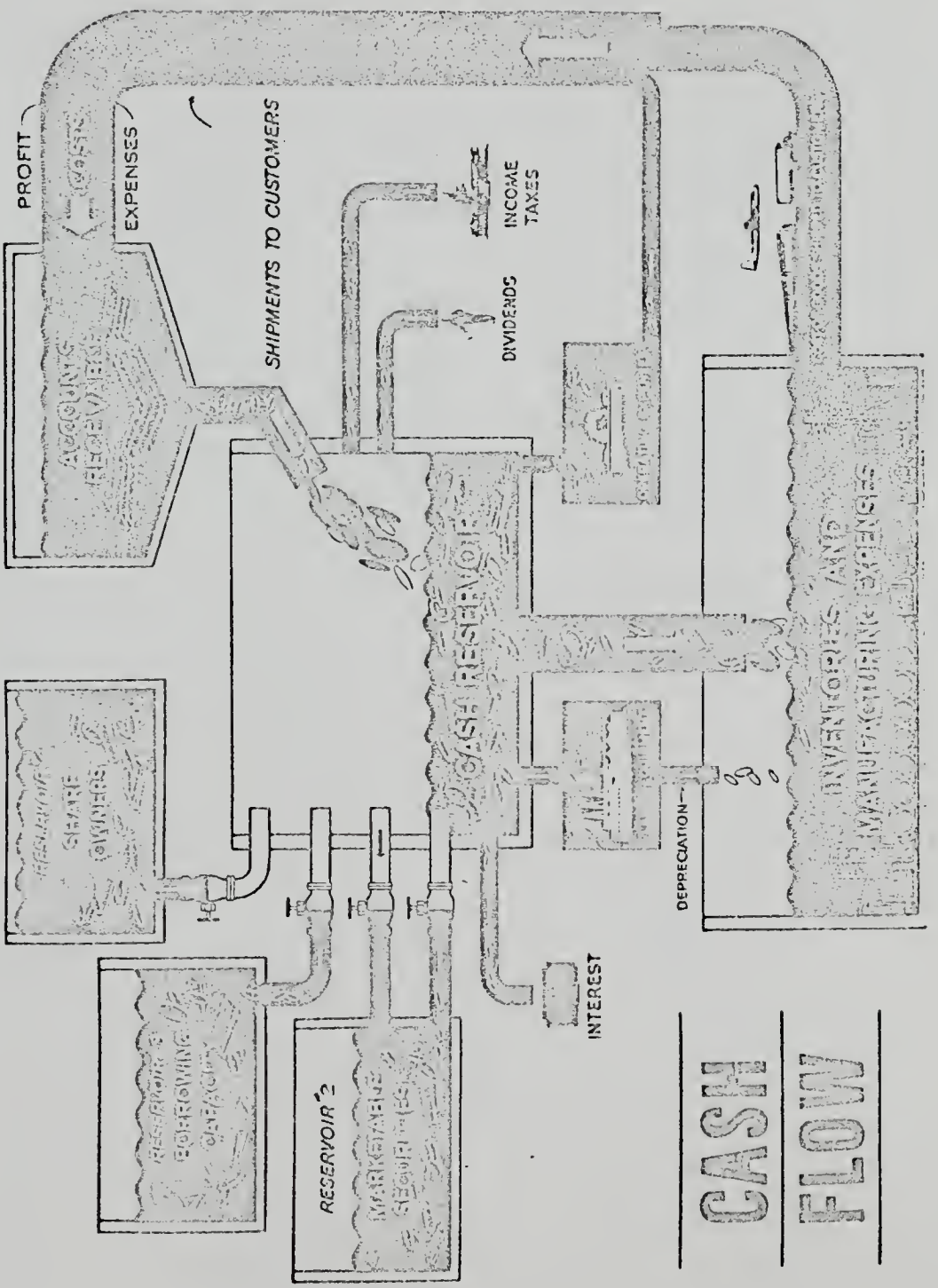


Figure 5. Model of the Firm

Source: General Electric, Inc.

of the firm, where the phenomenon of durable goods must be accommodated, and the GE diagram demonstrates graphically the ensuing dilemma where it shows depreciation "flowing" into inventories.[50]

The problem arises out of the observation that there are three separate financial "flows" through the business, using the word "financial" to mean "capable of expression as values." There is the long-term, or *capital*, flow, the rate of which determines the capacity of the business to fulfill its economic objectives; the periodic or *revenue* flow, the rate of which determines the level of activity; and the *cash* flow, the rate of which determines the day-to-day viability of the business. This last is a "flow" of means of payment, and is certainly a critical factor; if the cash flow is inadequate, the business will die. But the cash flow is not the determinant of either capacity or activity; if the capital and revenue flows are strong, and if a money market is available to the firm, then cash flow can be maintained at a rate adequate for survival. The causal relation is inverse: the capital structure and the revenue flow are the determinants of the cash flow, given the existence of a money market.

The necessity to observe cash flow as a separate and subsidiary financing problem arises from the nonsynchronization of the three value flows, the rates of which can

and do differ in all but a minority of business firms. The sources of the divergencies between them can be summarized as follows:

1. Payments in advance
   - A. Acquisitions which will become expenses (eventually, costs) as the goods and services acquired are used.
     - a. Depreciable fixed asset, or equipment, purchases.
     - b. Research and development expenditures, and construction of own equipment.
     - c. Supplies of materials, parts, fuel, etc.
     - d. Advance payments for future deliveries of goods and services.
   - B. Payments which will produce corresponding receipts at some future date.
     - a. Nondepreciable fixed asset purchases.
     - b. Loans advanced.
     - c. Investment securities purchased.
2. Payments which correspond with previous receipts, e.g., loan repayments.
3. Revenues which have not produced corresponding receipts, e.g., sales on credit.
4. Expenses which have not produced corresponding payments.
   - A. Purchases on credit.
   - B. Expense accruals.
   - C. Tax accruals.
   - D. Imputed costs.
5. Receipts which will produce corresponding payments at some future date, e.g., loans received.

6. Receipts which will become revenues as the goods and services to which they relate are delivered by the firm.

7. Noncash capital or revenue transactions.

   A. Goods or services transferred to the firm as contributions of capital by proprietors, or as loans by lenders, or in payment for goods and services delivered.

   B. Government and other subsidies in kind, of a capital nature.

   C. Government and other revenue (operating) subsidies in kind.

The three forms of accounting statement which attempt to summarize these three flows of values are, respectively: the balance sheet (capital flow), the income statement (revenue flow) and the funds statement (cash flow). Concentrating on the last of these, their interrelationship can be seen from the cash flow statement illustrated in Figure 6.

The financial model of the firm, although it can be fitted to the underlying reality of business operations only with great difficulty, represents an advance upon the price theory model in this context, because it is conceived in flow terms. The Fisherian model fits the relation expressed by the accounting "basic equation":

$$\text{Assets} = \text{Equities} \qquad (1)$$

whereas the cash flow model fits the expanded equation:

$$\text{Assets} + \text{Costs (expenses)} = \text{Liabilities} + \text{Revenue} + \text{Proprietors' Capital} \qquad (2)$$

CASH FLOW STATEMENT

FOR THE YEAR ENDED . . .

Cash was received from:	
Net income after taxes	See Income Statement
Add: Noncash expenses, e.g.,	
Depreciation	
Bad debts written off	Included in Income
Amortization of goodwill, formation expenses, discount on issue of loan, etc.	Statement
Add: Decrease in noncash assets, e.g.,	
Accounts receivable	
Inventories of raw materials, work in process and finished goods	Available from
Investments	comparison of
Loans to others	opening and closing
Fixed assets sold	balance sheets
Increase in liabilities, e.g.,	
Loans received	
Accounts payable	
Taxes and dividends payable	
Proceeds of capital issues	
Total cash inflow	
Cash was used for:	
Increase in noncash assets, e.g.,	
Accounts receivable	
Inventories of raw materials, work in process and finished goods	Available from
Investments in securities	comparison of
Loans to others	opening and closing
Purchase of fixed assets	balance sheets
Decrease in liabilities, e.g.,	
Loans repaid	
Accounts payable	
Taxes and dividends payable	
Repayment of capital	
Total cash outflow	
Net cash (in) (out) flow	Difference between opening and closing balance sheets—cash funds only

Figure 6. Cash Flow Statement

from which we return to the basic equation by cancellation (matching costs against revenue), to produce:

$$\text{Assets} = \text{Liabilities} + \text{Proprietors' Capital} \quad (3)$$

and

$$\Delta\ (\text{Assets} - \text{Liabilities}) = \Delta\ \text{Proprietors' Capital} \quad (4)$$

Equation (4) is a definition of net income on the assumption that no contributions or withdrawals of proprietors' capital have taken place.

It would appear from the priority given to liquidity aspects of the balance sheet that this model presupposes an emphasis on the stewardship objective of accounting, which would be understandable in the light of the new importance which published financial statements had acquired for reporting to investors. This model also suggests that the balance sheet is being made to serve a dual purpose, by drawing attention to features which would be more clearly disclosed in a funds statement. It is noteworthy that references to this model first appear at a time when the income statement was beginning to acquire an importance equal to that of the balance sheet, and also when the first funds statements were being published.[51] The preoccupation with liquidity in balance sheets is still acute; not only does the typical U. S. corporation begin its balance sheet with this item (than which no piece of information could

be less significant), but a recent study which draws repeated attention to the inadequacy of a concept of liquidity as a basis for balance sheet classification ends by concluding that working capital should be classified into monetary assets and unexpired costs.[52] Yu has shown that this classification is relevant to the funds statement, not the balance sheet.[53]

We can also observe the implied use of the financial model in the accounting profession's approach to the problems posed by fluctuating price levels. The prevailing view, not only in the United States but in other countries as well, is that input market prices have continuous relevance to objects of valuation at all points in the production and distribution process prior to "realization," or exteriorization through an act of sale. The "money costs" or acquisition prices are transcendental forms of purchasing power, "in suspense" while the operations of the firm are being undertaken; by a speleological analogy this purchasing power appears to go underground, to return in the form of receipts from sales only at the conclusion of the operating cycle. The effects of price-level changes are, therefore, seen to have purchasing power significance, and restatement of the so-called "historical costs" by application of an index of general purchasing power will thus permit financial statements to be expressed "in terms of current dollars."[54]

This approach has recently been adopted by a leading firm of Certified Public Accountants.[55]

In this connection, we may quote a specialist in the field of corporation finance:

> It is useful, I think, to speak metaphorically of the invested funds of a firm as a pool of some liquid, say a cup of coffee. As it enters, it has sharp boundaries and can be distinguished, just as a lump of sugar can be identified in the cup of coffee--but not for long. The dissolving of the sugar can be compared to the sinking fund aspect of a project--the funds thrown off become an identifiable part of the pool. Of course, the coffee will become just as much sweeter as the sugar added, as those who prefer marginal analysis are correct in pointing out. Nevertheless, confirmation of the idea that the funds of a project are soon part of a pool can be furnished by any cost accountant who has tried to design a system to follow the results of projects once they have become a part of a firm's operations. The almost unsurmountable difficulties of this task reflect the merging of the project with other activities in the firm; they are not simply difficulties caused by technical matters of accounting procedure.[56]

The accountant's difficulty, according to us, arises from the use of a narrow financial model of the firm which depicts only one aspect of reality, and a secondary one at that. There is no possibility of deducing from this model any rules which will permit assets to be distinguished from costs, or revenues from equities, other than by referring to metaphysical ideas of physical "flow" or "attachment." The central problem of valuation is uneasily handled by the "historical cost" rule, which implies (a) that money payments are the only relevant value phenomena to be considered by the accountant, and (b) that these payments can be uniquely

associated with the objects of the firm's organization and processes throughout its capacity and operating cycles. Neither of these assumptions is tenable in the light of empirical observations to the contrary. The model, therefore, has nothing to say on the critical accounting questions of depreciation, inventory valuation and tax allocation, and has failed to provide a conceptual framework in the fields of cost and management accounting, where financial accounting theory is said to be inapplicable. The consequence of using this model is seen from financial accounting textbooks to be a catalog of valuation methods and bookkeeping procedures which fail to display any connection with the conceptual framework from which they purport to be derived. It is this lack of any logical nexus which drove Paton and Littleton backward into the arms of Fisher; other accounting theorists have found more contemporary embraces alluring.

The Cybernetics Model of the Firm

The term "cybernetics" is used here to designate all those accounting theories which proceed from the concept of an information system of which an accounting system forms part. The model has two aspects, a behavioral and a mechanical; the behavioral aspect is that the firm is conceived as a formal association of human individuals, and depicted in the form of the organization charts so

beloved of accounting textbook writers; the mechanical aspect is the representation of the firm as a decision-unit, the formal structure of which resembles a computer program. An increasing number of books and periodical articles adopt this approach to accounting theory.[57]

The various behavioral models of the firm used by organization theorists such as Barnard, and Cyert and March, would appear to have little interest to an accounting theorist who abstracts from behavioral factors; we regard the human problems of organization as separable from the processes of production. It is true that budgets can be conceived as tools for delegating authority, and that a firm can then be structured as a set of "responsibility centers," leading to a concept of responsibility accounting which has received substantial support from practitioners as well as theorists. The difficulties, however, are real: each individual presumably displays different behavioral characteristics, which are not necessarily those presupposed by the organization chart—Barnard and others have drawn attention to the distinction between formal and informal organization. Changes in organization are inclined to take place frequently, and to be less than permanent in nature, leaving the organization chart limping slowly in their wake. The responsibility centers may not be truly independent, and the valuation problem lies at the roots

of all transfer prices. Some individuals have multiple responsibilities; some centers have more than one responsible; and so on. We are inclined to agree with Machlup that little analytical utility attaches to behavioral presuppositions in this context, and we believe that the usefulness of responsibility accounting systems must be a function of the extent to which the responsibility centers (and the related "profit centers") are selected to correspond with the *de facto* organization and processes of the firm, rather than with *de jure* titular responsibilities.

The decision-unit model of the firm, in fact, abstracts from behavioral properties other than those embraced by communications theory, and depicts the firm as a computer program representing its information flow, as in Figure 7. The organization and processes of the firm are again abstracted, on the grounds that the accounting system must conform with the requirements of a hypothetical decision-maker who functions in the same way regardless of his situation. The conceptual framework underlying this model was described by a Committee of the American Accounting Association in 1966[58] and has been called an "events" approach to basic accounting theory.[59]

In this model, accounting is not limited to cash flows, or transaction data, or profit-making entities; indeed, it is not even limited to observations which can

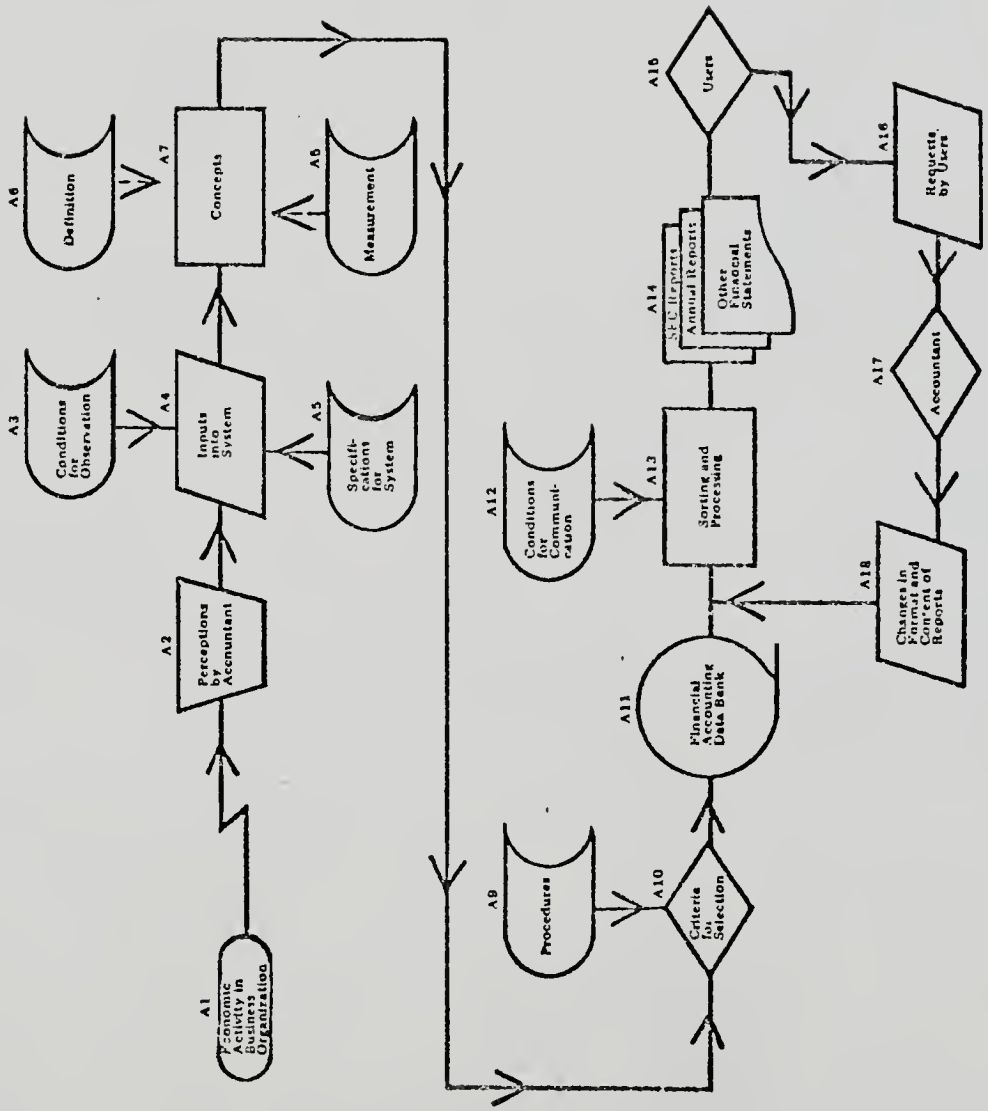


Figure 7. Information System

Source: T. R. Prince, "An Overview of Conceptual Measurement Issues in Financial Accounting Theory" in *Theory Formulations*, Accounting Series No. 6, Florida (1970), p. 49.

be quantified in money terms. The object is to produce information which is useful in economizing, i.e., in using scarce resources, and the all-inclusive criterion of any standard or rule is the usefulness of the information to which it leads. Basic standards would permit accountants to accept or reject particular accounting methods, and the Committee found them to be four in number, viz.: relevance, verifiability, freedom from bias, and quantifiability. These guidelines are consistent with basic communication theory, which would also accommodate the possibility of "trade-offs" between the standards in problem situations.

It is no doubt salutary to be reminded that the publication of financial statements or managerial accounting reports is an exercise in communication and not an end in itself. The concealed weakness of the "events" approach, however, lies in its implication of the information system as a *Ding an sich*. "Undoubtedly, the unsophisticated person thinks in terms of 'systems' and 'principles.' . . . Popular ideas tend to be formalistic and to mistake the form for the reality. . . . In reality there is no such thing as a system. . . . It is at best an analytical tool for analysing social phenomena. . . . Economists are on safe ground as long as they describe actual events and their causal connections, and as long as they examine the effects of certain clearly defined 'interventions' under specified conditions."[60]

The concept of a financial information system as a part of a total information system, and the application of communication theory to these concepts, must be structured by reference to some underlying reality observable in firms and other economic units, and not by analogies with the natural and other social sciences.

The problem would be otherwise if we were able to identify some conceptual framework—call it "General Systems Theory"—which had been seen, through appropriate scientific inquiry, to apply to all fields of human knowledge; a science like logic or mathematics. On close examination, however, the possibility of such a construct is transformed into an "interdisciplinary approach" similar to the one to which we are ourselves committed.[61] True, the homeostatic model used by Chambers and others could conceivably represent a universal "system" possessing the characteristics of a computer; it is unlikely, however, that this model represents any economic reality, or if it does, empirical evidence to that end has not yet been produced.[62] It is more likely that the computer is simply a machine which is capable of performing certain routine operations than that it is a microcosm of the universe.

When we read that "There is a growing tendency to define organizations as information entities or systems, and information processing as their major function,"[63]

we know that we are again in the realm of concept rather than belief; just as Littleton and Chambers are studying "accounting," so the information theorists are studying "cybernetics." The problem involved in using the information system concept is its open-endedness, as Moonitz has pointed out;[64] the idea of providing the decision-maker with the information necessary for his decision is not operational. Computer technologists are becoming increasingly skeptical about the value of systems designed for information production, if only because managers cannot specify what information they require. Updating the data-base and other human aspects of the problem are insignificant in comparison with the major obstacle provided by the absence of an image of a reality to which the phrase "management information system" can be referred. IBM, for example, recently experimented with a highly sophisticated "management information system" at its Armonk, New York, headquarters, but it was soon discovered that managers did not bother to use it, apparently because it did not provide the information they needed in a form they could use.[65] Since information is defined as "purpose-oriented organized data,"[66] and, since we require both a defined purpose and certain beliefs about the realities to be planned if we are to utilize the idea of a "system," the computer has to be programmed accordingly. If we understand

a production process, we can program a computer to control it; if we understand the organization and processes of the firm, we can likewise express them, in the form of flow charts and block diagrams, so that a computer can be programmed to plan and control them. So far, the accounting theorists who make use of the information systems or cybernetics model have not attempted to describe the firm to which their programs will apply, although Bedford has come very close to stating the problem as explicitly as we are doing here.[67]

Conclusion

We have attempted to show, not only that the price theory model of the firm in its Fisherian formulation lies at the base of the structures erected by a number of recognized accounting theorists, particularly those whose influence we regard as paramount, but also the reasons why it is out of place in this context. The model is, of course, an economic decision model, and, therefore, would conform with the initial assumption made by us. The cybernetics model is likewise a part of decision theory, and is being used increasingly by accounting theorists whose orientation is "managerial" rather than "financial." The financial, or "cash flow," model of the firm appears at first sight to be better suited to a stewardship view

of the function of accounting; on closer examination, however, it reveals itself equally compatible with a planning or a pure control hypothesis.[68] In the next chapter, we shall attempt to construct a planning model which is free from the deficiencies of those already examined.

NOTES

1. See A. C. Littleton, *Accounting Evolution to 1900* (New York: American Institute Publishing Co., 1933), p. 320; S. Paul Garner, *Evolution of Cost Accounting to 1925* (Alabama, 1954), Ch. I. Littleton's "Accounting Rediscovered," *The Accounting Review*, Vol. 33 (April, 1958), pp. 246-55 emphasizes the recording function although seeing it as a managerial requirement.

2. We do not overlook the legal sources of accounting theory, but we regard it as improper to confuse juridical and economic concepts in a work on accounting theory. Juridical concepts must be taken as given, and are incapable of analysis outside a work on jurisprudence. For explorations in this field, see A. C. Littleton, *Accounting Evolution to 1900*, and *Essays in Accounting* (Urbana, Illinois, 1961); also Arthur H. Dean, "The Relation of Law and Economics to the Measurement of Income," *The Accounting Review*, Vol. 28 (July, 1953), pp. 328-42. See also a series of articles by Sidney I. Simon in the same journal, 1953-56.

3. The reliance of accounting theorists on a methodology devised by 19th century economic theorists for a totally different purpose has been demonstrated by James T. Robey in *The Economic Standard for Contemporary Accounting Theory Formulations: Some Implications of Changes in the Methodology of Economics*, Doctoral Dissertation, Florida (1969). The first section of this Chapter pursues Robey's argument in a different direction from the one selected by him.

4. Irving Fisher, *The Nature of Capital and Income* (New York: The Macmillan Co., 1906) and *The Theory of Interest* (New York: The Macmillan Co., 1930).

5. Fisher, *The Nature of Capital and Income*, p. 43.

6. Fisher, *The Theory of Interest*, p. 28.

7. See J. A. Schumpeter, *History of Economic Analysis* (New York: Oxford University Press, 1954), pp. 905-9.

8. For an illustration of Fisher's use of this construct, see *The Theory of Interest*, pp. 64-5.

9. See Fritz Machlup, "Theories of the Firm: Marginalist, Behavioral, Managerial," *American Economic Review*, Vol. LVII, No. 1 (March, 1967), pp. 1-33, espec. p. 3.

10. Henry Hess, "Manufacturing: Capital, Costs, Profits and Dividends," *Engineering Magazine*, Vol. 26, No. 3 (December, 1903), p. 367 *et seq.*

11. E.g., Harold Bierman and Allan R. Drebin, *Managerial Accounting: An Introduction* (New York: The Macmillan Co., 1968); Nicholas Dopuch and Jacob G. Birnberg, *Cost Accounting* (New York: Harcourt, Brace & World, Inc., 1969).

12. Frank H. Knight, *Risk, Uncertainty and Profit* (New York: Harper Torchbooks, 1955).

13. W. A. Paton, *Accounting Theory* (A.S.P., 1962) (original publication, The Ronald Press Co., 1922), pp. 489-90.

14. Paton distinguishes the concepts "expenses," "cost" and "loss," but his terminology is imprecise and he consistently equates cost with acquisition price.

15. Paton, p. 424.

16. *Ibid.*, p. 491.

17. W. A. Paton and A. C. Littleton, *An Introduction to Corporate Accounting Standards* (American Accounting Association, 1940), Ch. II, "Concepts." This monograph attempts to establish the "basic concepts" or "postulates" underlying previous formulations of accounting theory sponsored by the American Accounting Association, in which Littleton, in particular, took an active part.

18. Harvey T. Deinzer, *Development of Accounting Thought* (New York: Holt, Rinehart and Winston, 1965), p. 41.

19. W. A. Paton, "Theory of the Double-Entry System," repr. in *Paton on Accounting*, ed. H. F. Taggart (Michigan: Bureau of Business Research, 1964) pp. 3-18.

20. Deinzer, p. 56.

21. A. C. Littleton, *Structure of Accounting Theory* (American Accounting Association, 1953), Ch. 8.

22. *Ibid.*, Ch. 10.

23. See Floyd W. Windal, "The Accounting Concept of Realization," *Accounting Review*, Vol. 36 (April, 1961), pp. 249-58.

24. See Clifford D. Brown, *The Balance Sheet to the Income Statement*, Doctoral Dissertation, Michigan (1968).

25. See Deinzer, p. 87: "Did Paton and Littleton chart their passage from the simple *concept* of business entity to a *proposition* about costs and assets?"

26. G. O. May, "Limitations on the Significance of Invested Cost," *The Accounting Review*, Vol. 27 (October, 1952), pp. 436-40.

27. R. J. Chambers, "Blueprint for a Theory of Accounting," *Accounting Research*, Vol. 6 (January, 1955), pp. 17-25; *Towards a General Theory of Accounting* (Adelaide, 1961); *Accounting, Evaluation and Economic Behavior* (New Jersey: Prentice-Hall, Inc., 1966).

28. Chambers, *Accounting, Evaluation and Economic Behavior*, p. 50, p. 53.

29. *Ibid.*, p. 43.

30. *Ibid.*, pp. 48-9.

31. There is no imaginable reason why the *firm* should experience decreasing satisfaction expectations as its stock of a commodity is increased, although this may be undesirable if it can be expected to reduce profits.

32. Chambers, *Accounting, Evaluation and Economic Behavior*, p. 52.

33. *Ibid.*, pp. 49, 66.

34. *Ibid.*, pp. 67-8.

35. *Ibid.*, p. 70.

36. *Ibid.*, p. 73.

37. *Ibid.*, p. 79.

38. *Ibid.*, p. 80.

39. *Ibid.*, p. 81.

40. *Ibid.*, p. 85.

41. *Ibid.*, pp. 8-9 and pp. 46-7.

42. *Ibid.*, p. 99.

43. Stephen Gilman, *Accounting Concepts of Profit* (New York: The Ronald Press Co., 1939).

44. Edgar O. Edwards and Philip W. Bell, *The Theory and Measurement of Business Income* (California, 1961).

45. Richard Mattessich, *Accounting and Analytical Methods* (Homewood: Richard D. Irwin, Inc., 1964).

46. Yuji Ijiri, *The Foundations of Accounting Measurement: A Mathematical, Economic and Behavioral Inquiry* (New Jersey: Prentice-Hall, Inc., 1967).

47. We may mention two important publications of the American Institute of Certified Public Accountants: Accounting Research Study No. 1, *The Basic Postulates of Accounting*, by Maurice Moonitz (1961); and No. 3, *A Tentative Set of Broad Accounting Principles for Business Enterprises*, by Robert T. Sprouse and Maurice Moonitz (1962). These works, which have been subjected to a substantial volume of critical comment, appear to have been based on the same type of model. In this context, see Maurice Moonitz and Charles C. Staehling, *Accounting: An Analysis of Its Problems*, Vol. I (Brooklyn: Foundation Press, 1950).

48. Machlup, p. 8.

49. E.g., "at cost, that is, at the actual number of dollars spent or promised . . ." in Lawrence L. Vance and Russell Taussig, *Accounting Principles and Control* (New York: Holt, Rinehart and Winston, 1966), p. 10.

50. The financial model has also proved attractive because of its applicability to nonprofit organizations. We simply remove the flow from sales which replenishes the reservoir of cash, and substitute for "Proprietors' Capital" the relevant source of funds, e.g., taxes, or donations. The model becomes a one-way "flow-through" representation of the organization.

51. L. S. Rosen and Don T. DeCoster, "Funds Statements: A Historical Perspective," *The Accounting Review*, Vol. 44 (January, 1969), pp. 124-36.

52. William Huizingh, *Working Capital Classification* (Michigan: Bureau of Business Research, 1967).

53. S. C. Yu, "A Flow-of-Resources Statement for Business Enterprises," *The Accounting Review*, Vol. 44 (July, 1969), pp. 571-82.

54. This result has been arrived at through a number of persuasive studies, starting with H. W. Sweeney, *Stabilized Accounting* (New York: Harper & Row, 1936) and culminating in the Accounting Research Study No. 6, *Reporting the Financial Effects of Price-Level Changes* (New York: A.I.C.P.A., 1963) and Statement No. 3 of the Accounting Principles Board, *Financial Statements Re-Stated for General Price-Level Changes* (A.I.C.P.A., 1969).

55. See *Accounting and Reporting Problems of the Accounting Profession* (3d ed.; Chicago: Arthur Andersen & Co., 1969), p. 6.

56. Pearson Hunt, *Financial Analysis in Capital Budgeting* Harvard: Graduate School of Business, 1964), pp. 18-19.

57. See Thomas R. Prince, *Extension of the Boundaries of Accounting Theory* (Cincinnati, Ohio: South-Western Publishing Co., 1963); Hector R. Anton, "Some Aspects of Measurement and Accounting," *Journal of Accounting Research*, Vol. 11 (Spring, 1964), pp. 1-9; Norton M. Bedford and Vahe Baladouni, "A Communication Theory Approach to Accountancy," *The Accounting Review*, Vol. 37 (October, 1962), pp. 650-9.

58. *A Statement of Basic Accounting Theory*, American Accounting Association (1966).

59. George H. Sorter, "An 'Events' Approach to Basic Accounting Theory," *The Accounting Review*, Vol. 44 (January, 1969), pp. 12-19.

60. G. Myrdal, *The Political Element in the Development of Economic Theory* (Harvard, 1955), pp. 197-8.

61. See Kenneth E. Boulding, "General Systems Theory—The Skeleton of Science," *Management Science*, Vol. II (April, 1956, pp. 197-208.

62. For example, which feature of an association of persons can be designated a servo-mechanism?

63. John W. Buckley (ed.), in *Contemporary Accounting and Its Environment* (Belmont, California: Dickenson Publishing Co., Inc., 1969), p. 339.

64. Moonitz, p. 4.

65. See report by Timothy Johnson in the Business Section of the London *Sunday Times* dated October 5, 1969.

66. Peter A. Firmin and James J. Linn, "Information Systems and Managerial Accounting," *The Accounting Review*, Vol. 43 (January, 1968), pp. 75-82.

67. Norton M. Bedford, *Income Determination Theory: An Accounting Framework* (Reading: Addison-Wesley, 1965).

68. The duality is apparent in W. J. Vatter, *The Fund Theory and Its Implications for Financial Reports* (Chicago, 1947), where management requirements are given as "the most direct demands" on accounting, but the exposition is clearly directed toward financial reporting requirements.

CHAPTER V

AN ACCOUNTING THEORY OF THE FIRM

The psychological processes involved in communications are not understood even by neurologists; for this reason, if for no other, a communications theory of accounting is inconceivable at the present time. The attempt to consider man in fundamentally biological terms such as homeostasis, a form of logical error which involves the presupposition that man is continuous with all other animals except for the modifications forced by civilization, underlies the behavioral approach to accounting theory, which we have likewise rejected. "Philosophical anthropology today looks away from essences of man in order to grasp man in his particularity and his complexity."[1]

Just as philosophers and psychologists are attempting to move from *concepts* about man to the *image* of man, so must we also endeavor to identify the beliefs held by accountants concerning some reality of human intercourse in order to be able to depict a model of the firm. In this chapter we shall describe the organization and processes of production which we believe to characterize the contemporary business firm, in order to postulate a

model of the firm to which accounting methodology can be seen to apply. We shall then attempt to relate this model to other human activities in which accounting is done. The cyclical movements described will be dealt with sequentially, although it is clear that many of them occur simultaneously.

The Organization and Processes of Production

Investment and Capital

We define investment as the allocation of scarce resources to production; it is therefore an alternative to consumption, which is the centerpiece of economic theory. "The one term that straddles both self and other, 'productive,' is the most ambiguous of all; it is so far from being self-evident as to what is 'productive' that everything . . . may be labelled such."[2] Nevertheless, we are forced by the logic of our assumptions to take a position on this question; by combining the concept "scarce resources" with the function of choosing between present satisfactions (including the *production* of present satisfactions) for oneself and the future satisfactions of others, we hope to have formulated a belief that "production" constitutes an acceptable image of reality.

The investment decision per se does not involve either the acquisition or the use of resources; these follow

as part of the processes of production. It consists essentially of identifying and quantifying the resources required, together with the intention to produce goods or services for a known or unknown market, which intention leads to action.

Knight thought that "Whether any particular individual becomes an entrepreneur or not depends upon his believing (strongly enough to act on the conviction) that he can make productive services yield more than the price fixed upon them by what other persons think they can make them yield (with the same provision that the belief must lead to action)."[3] We do not find this assumption necessary, even though the social sanction constituted by a profit motive or goal is clearly a factor to be considered as part of the decision process of the entrepreneur. We find more congenial Knight's later observation on this subject:

> It is common to think of the economic process as the production of goods for the satisfaction of wants. This view is deficient in two vital respects. In the first place, the economic process produces wants as well as goods to satisfy existing wants. . . . The second point is that the production of the indirect means of want satisfaction is by no means altogether directed to the ultimate satisfaction of wants in any direct sense of the terms. . . . It is a great error to assume that in a modern industrial nation production takes place only in order to consumption [sic].[4]

Thus, we are at one with Knight when he asserts that the object of the entrepreneur is to create wealth,

but we see the wealth in the goods and services produced, not in the profit thereby attained, or desired.

The investment decision involves finding answers to three fundamental questions susceptible to quantitative analysis:

1. What quantity of scarce resources is required for the fulfilment of the postulated economic objective?

2. From what sources are these to be obtained, and on what terms?

3. Is the fulfillment of the economic objective (including where relevant the probability factor) valued higher than the sacrifices (costs) which these terms represent?

It is perhaps paradoxical that only in the marginal situation, where costs and benefits are equal, are the non-quantifiable value elements likely to prove the main determinants.

The quantification of resources proceeds in money terms, since the value characteristics of money as a means of exchange can be transferred to the use of a money scale for a variety of goods and services required as inputs. The summation of these quantities produces a set called *capital*, defined as a representation in money of the scarce resources identified by an investment decision. Since the more common usage is to apply this word *capital* to the sources from which the resources are to be acquired, including the terms which must be agreed with the persons

involved, we shall use *assets* to denote what the economist means by *capital*; thus capital and investment are not mere identities, the capital of the firm being the investments of those who provide it, nor are capital and assets identities, since they are determined by some common and some separate factors. The confusion which ensues when these concepts are used interchangeably has been noted by several distinguished economists, without, however, having been thereby diminished. Everyday usage likewise substitutes *capital* for *assets*, and we must be aware of this in our observation of reality.

Business firms acquire capital from proprietors, lenders and the state, which latter generally fails to make its position clear in this matter. Presumably these sources will require certain incentives in order to cause them to refrain from both consumption and alternative investment; these incentives are known collectively as the "cost of capital." The incentive required by any investor should be at least equal to the benefit lost through foregoing the next best alternative; this would be as true of state subsidies as of any other form of capital, except for the fact that civil servants are under no social obligation to count costs. A lender will require interest, based upon conditions in the capital market at the time he makes his decision. A proprietor may have no "expectations" as such,

other than that he will be able to share in any residual income, or profit; if he requires an additional incentive it will be in the nature of an "opportunity cost" and be capable of expression as a rate (of return) similar to interest.

The confusion between capital and assets leads to the further logical error of failing to distinguish between "cost of capital" and "interest on capital (= assets)," a common feature of both economics and accounting. That these two phenomena are separable can be seen from the income distribution account of a socialist enterprise, reproduced by Marczewski.[5]

Sales	423
Purchases	176
Depreciation	39
Interest on fixed assets	13
Interest on current assets	4
Wages	61
Social Security	27
Profit	103
Total	423

Distribution of Profit	
40% to Federal Government	41
20% to Republic	21
Reserves	2
Supplement to special category of workers	9
Supplement to Social Security	4
Balance of wage supplement	18
Local government	4
Freely disposable by firm	4
Total	103

The statement shows that the two problems are handled quite separately. The *amount* of capital required is determined by the resources to be allocated to production, and insofar as production has a time element, involves a necessity to calculate interest. The *cost* of capital required is determined by the opportunities foregone by investors, as perceived by them at the time they decide their investment. Evaluation is a process of comparing the costs of the firm with its revenue, and the costs of capital are not the costs of the firm, but of other investors.

Equipment, or Investment in Capacity

The first class of resources identified by the investment decision is composed of those goods and services which are required in order to create a capacity to produce. Like "production," "capacity" presents a problem, and in order to define it operationally we shall distinguish between three possible conditions of the firm, the last two of which are usually merged under the concept "liquidation." The three conditions are: going-concern, shut down and abandonment. As a going concern, the firm requires certain resources to fulfil its economic objective; it can, however, operate at varying levels of activity between zero output (shut down) and some practical maximum. The variable elements of the total resources required, which may be zero

in a shut-down condition, constitute the "circulating" or "working" capital (=assets) of the firm; the fixed elements, which are changed only in order to expand or contract the practical maximum level of activity, is the equipment component. Thus, capacity to produce is defined as the factor or factors which limit the practical maximum level of activity at a given moment in time, and in the abandonment situation, capacity is zero.

All firms require equipment, although the proportion of its total resources which a given firm will invest in equipment varies from "very little" to "nearly all," depending upon the technology of the industry and the structure of its markets; the author needs only a room of his own and a typewriter, but an oil refiner needs an oil refinery not too far from a population center. We must include the technology of finance in this class of determinants, since the ability of a society to fractionate investment situations by institutional devices permits some industries to reduce investment in equipment, while creating new industries with equipment needs to take their place. The author can rent both room and typewriter, whereas oil refiners must still own their refineries; doubtless, not for long.

Besides the state of technology in the particular industry, the size and other characteristics of the market determine capacity. The economic size of a cement works,

that is to say, the size which permits the production of each ton of cement at the lowest cost, may be known to lie at 300,000 tons annually, but whether a cement works will be built or not, and, if so, with what size, depends upon the population being considered, its building needs and techniques, the organization of the building industry, its financial possibilities and distance from the nearest competitive producer, the location of raw material sources and many other factors. Further, investment in equipment is determined not only by the current states of technology and markets, but by expectations concerning future developments. A brewery may be constructed with a greater capacity than the consumption requirements of the area which it is to serve, and which will produce relatively uneconomically at levels of activity substantially below capacity, if the population of the area and its age distribution are expected to change within a few years in a direction favorable to the consumption of beer. Again, the possibility of constructing a rail transportation system which will be economically efficient and serve a large and mobile population will not result in a corresponding investment if rail use is expected to decline; a smaller capacity may be selected, the optimal factors of which will become apparent only with time. Market features are particularly dominant in

this area, and the relevance of subjective considerations concerning what is, and what is not, "the market" are clear and unmistakeable.

However difficult the preparation of the decision, and there are some who maintain that only in the determination of capacity does the entrepreneurial skill come into play,[6] the number, type and nature of the resources which constitute capacity must be found, quantified in money and somehow aggregated, in order to find the first component of the money amount we have called "capital."

Finance and Working Capital

The second class of resources identified by the investment decision is the variable quantity which will be required to support given levels of activity. It follows that this part of the decision involves the separate act of determining the level of activity for a specific period of time, called the "operating cycle" time, and this level of activity need not correspond with practical maximum activity for the reasons given above. The separation of "working capital" from "fixed capital" is a principal feature of the financial model balance sheet; this is understandable, since the avowed purpose of this form of balance sheet was to disclose liquidity as a support for obtaining credit.[7] The decision to clarify the liquidity position

by means of a balance sheet classification arose through observation of the essentially distinct financing operations called for by the "fixed" and "variable" aspects of the firm's investment. Again, the economic distinction between partial adaptation and total adaptation, which underlies the separate theoretical treatment of the short-run and the long-run, can be traced to the same observation.[8] The assertion that, because balance sheets are used for purposes other than the granting of credit, therefore the working-fixed capital classification has little utility for these other situations, is a typical *non sequitur*.[9]

The working capital classification was given new life some twenty years ago by its reformulation in terms of the operating cycle. Dissatisfaction with the time-period rule which liquidity considerations had introduced led Herrick to distinguish between "fixed capital," or "facilities *with which* to conduct . . . business" and "circulating capital" or "properties *in which* [the business] deals."[10] Unfortunately, Herrick's distinction was likewise based upon the concept of rates of flow of *cash*, so that the underlying reality with which we are concerned was not brought out either by him or by the official accountancy bodies which sponsored this viewpoint. The many criticisms of the operating cycle approach to working capital classification which were subsequently voiced are attributable to this defect.

Since we are contemplating a variable quantity of resources, however, it is useful to think of them in the first place in the form of purchasing power, that is, in the form of bank deposits and negotiable instruments to be used for the day-to-day acquisition of the factor inputs which are required for production *and* can be varied from one operating cycle to another. This store of purchasing power will rise and fall with the receipt of the proceeds of sales and with payments to suppliers of inputs. Certain factors add to the working capital requirements of the firm, in particular the supply position, or necessity to store factor inputs for varying lengths of time, and outputs between the time when they are produced and the time the market is ready to take them. There are invariably good reasons for both of these conditions; a striking modern example of the latter case is provided by the hairdressing industry, which has found it possible to store haircuts (in the form of wigs) in order to improve the productivity of labor. Credit relations, on the other hand, may subtract from or add to the purchasing power requirements of the firm, depending mainly upon whether they arise out of the acquisition of inputs or the disposal of outputs.

Working capital, then, can be defined as the quantity of resources required by a firm to support a given

level of activity, over and above the quantity of resources which constitutes capacity. It is determined by the planned level of activity, which is, itself, in part determined by capacity, and thus ultimately a function of the product market and its technology. In addition, working capital is determined by such factors as: location, which affects supply at both ends; general economic conditions, which affect credit relations; and special conditions applicable to particular firms, such as credit-worthiness, from which we abstract here.

Operations, or Costs and Production

So far we have discussed the acquisitions which characterize preparation for production, but these are a function of the planned level of activity and of capacity, so that they are themselves determined by the operations of the firm. The objective of the firm has been stated as the production of goods and services, and its operations transform factor inputs, each measured in its appropriate unit, into a finished output, measured in its appropriate unit. The valuation of these required quantities of inputs we call "costs." If the costs of a firm are related to periods of time, rather than operations, we call them "expenses"; in the limiting case, where there is no loss through waste or windfall gain, and where all inputs used

during a period can be associated with outputs of that period, costs and expenses are equal. The costs of the firm are composed of equipment use as well as the use of input factors acquired with working capital; the valuation problem is common to both types of input.

The typical firm will recognize costs in a wide variety of forms. The traditional classification into materials, labor and expense (the last a residual class) is understandable in the light of its 19th century origins; the firm of that period used proportionally large quantities of materials and labor, and small quantities of other factors. A more appropriate classification of factor inputs is given below; it distinguishes between goods and services used because of the storage possibilities of the former, and between current income distribution and interperiod transfers, because of the social implications of income distribution.

1. Goods and services
    a. Goods produced by other firms.
    b. Services produced by other firms (transportation, insurance, rent, etc.).
    c. Services produced by government (taxes, fees, licenses).
2. Current factor incomes
    a. Wages and salaries.

b. Social security charges.

c. Interest on capital (= assets).

3. Interperiod transfers

a. Depreciation.

b. Research and development.

c. Pensions.

It will be recalled that we are here considering the *use* of goods and services, and not their acquisition, so that those features of the classification which relate to acquisition are not essential to the categorization of the subject matter as costs; this warning is particularly necessary because of the temptation for the reader to presuppose that all wages and salaries paid should appear in 2a. From the point of view of the user, i.e., the investment planner, the only significance of this classification is its relevance to the valuation problem, where it will prove of great utility.

We must again be careful to avoid the fallacy of misplaced concreteness. The "liquid flow" image was extended to the cost valuation problem in a famous and influential study of the early 1950s, in which the phrase "pools of cost" was first used.[11] There are, of course, no such "pools" in reality, and the introduction of this image, while it may have served to rationalize a procedure

and provide advocacy for its adoption, has thrown no light on the nature of the underlying reality. Accountants sub-classify processing costs into two principal categories: "direct" and "indirect" costs, the latter often referred to as "overheads." Direct costs are those valuations of factor inputs where the acquisition price of the required physical unit of input is attributable to the physical unit of output through the presence of a one-for-one correspondence or isomorphism in a physical sense. The payment of a royalty to an author, amounting to so much per book sold, is attributable to the book sold in the form of a direct cost, as is a pure piece-rate payment for printing labor, or a specially purchased piece of wood used for making a print for the book. The purchase of paper for the pages of the book, if it is one of several thousand copies, is a less simple case, because of the assumptions which are necessary to relate the physical quantity of paper purchased to the physical quantity represented by one copy of the book, and by this means to take a proportion of the purchase price. The physical correspondence, or isomorphism, involved is only one of the variables which may be accommodated by a valuation model, however, so that it cannot be said even in the most direct case that the payment *is* the cost. Further, many input factors must be classified as overheads in the

absence of any such isomorphism, but are no less input factors on that account, and they have invariably to be valued as costs by means of a different model, known as the calculation of an overhead rate.

The object of the production process is to bring goods and services into the hands of either consumers or those who will use them as intermediate products in the production of consumer goods and services. Seen in this light, there is no fundamental distinction between "manufacturing" and "selling" costs, nor is there a separable noncost area to be designated "administration" or "financing"; if the organization of the firm calls for these areas to be grouped under such headings, they are no different from the other overheads which we have discussed. The differences between these categories of cost are purely differences of timing; manufacturing costs represent uses of goods and services in bringing products to a saleable condition; selling costs represent uses of goods and services necessary to bring saleable goods to their consumers. In many cases no clear distinction can be made between them, since to be saleable to a given consumer the product must be made in a specified way; this observation lies at the base of marketing management theory. The timing problem affects valuation, since manufacturing and selling expenses are rarely synchronous. The financial expense problem is of a similar nature.

The relationship between the operations of the firm and its costs of production is shown in Figure 8. The equipment of the firm constitutes its infrastructure, its organization, a superstructure. Acquisition of inputs via markets proceeds at all levels, as does use, but only the latter is attributable to actual operations. The problem of valuation lies in the need to distinguish between goods and services at various stages in the production process according to the value they represent to the producer; even where a physical flow can be determined, the relation of acquisition prices to physical units at points in the flow is rarely isomorphic; the same observation holds for selling prices, so that Chambers' and other direct valuation models are equally inapplicable. The idea of a "flow of values" is an image of an accounting process; if we abstract from the valuation problem, it is also an image of a real process of transformation and eventually exchange. The valuation problem can only be approached by first identifying the real process of transformation and exchange, and its stages, for each of these stages presents the accountant with a separate valuation requirement.

Sales Revenue, or Distribution

The final act of the entrepreneur in the operating cycle is the exteriorization of the good or service produced, which we usually represent as a sale. This

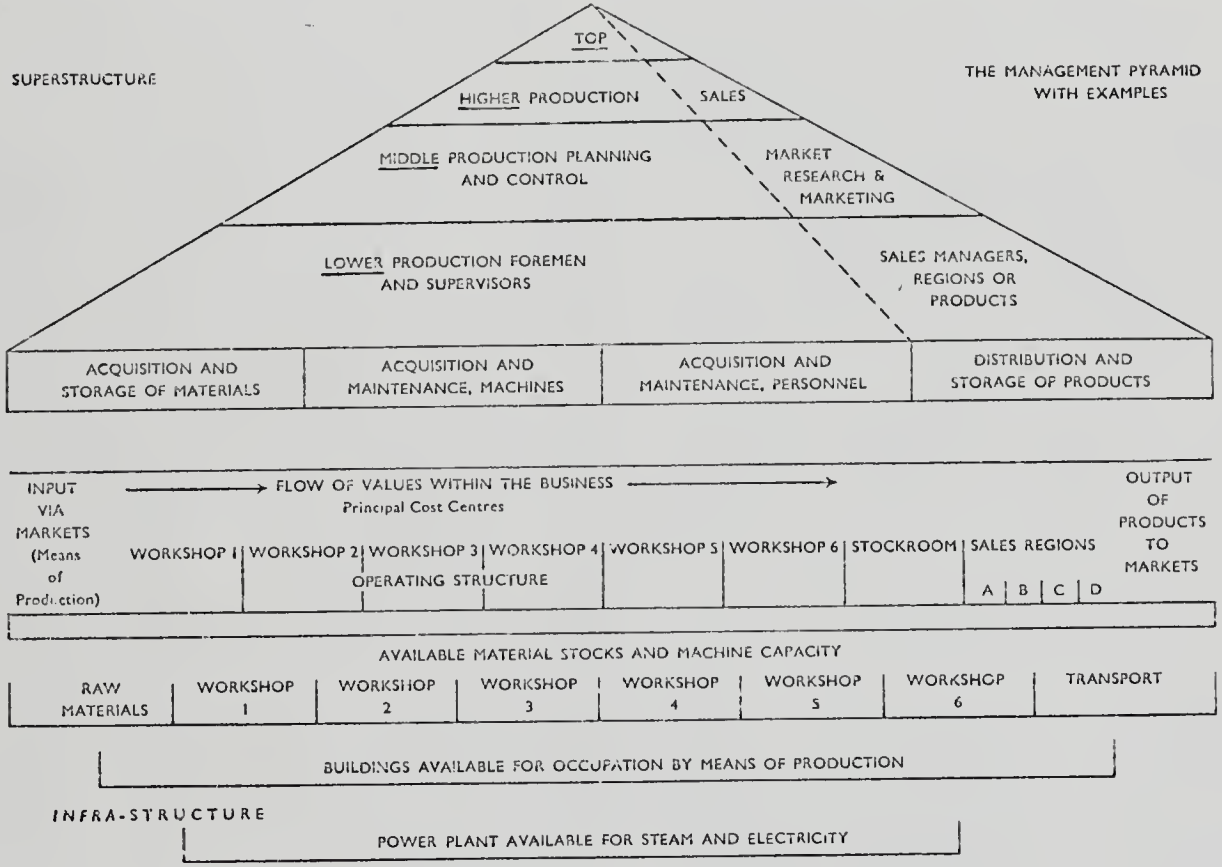


Figure 8. Organization of a Business in Relation to Its Operating Requirements

Source: Abram Mey and Kenneth S. Most, "Replacement Value Accounting," London, *The Accountant*, Vol. 164 (September 7, 1963), p. 278.

fulfillment of the objective of the firm creates the conditions under which the investment can be liquidated, i.e., converted into purchasing power; in the majority of cases, however, reinvestment is automatic, so that production becomes a continuum of investment. A sale is an invoiced delivery; two features must be present, the delivery of a good or service to a customer (consumer or other producer) and the intention to recover the value of the good or service from the customer, manifested by the submission of an invoice. Liquidation of the sale by receipt of the purchasing power represented by the amount invoiced is only one possible consequence of a sale; if it follows, then this aspect belongs to the financing of operations, or the "cash flow" which, as we have pointed out, is a separate problem affecting the working capital of the firm and the manner of its composition.

As expenses are costs related to time periods, so revenues are sales related to time periods. The "matching" process is predicated on an underlying reality which relates both to the same period of time. But the reality underlying the act of sale is the transformation of the objects of the production process into either consumption goods in the hands of consumers or intermediate goods in the hands of the producers who are responsible for the next stage in

the production process. These are the goods and services for which the costs of production were incurred, but we must distinguish between the various possible outcomes, as follows:

1. All goods produced are saleable in the current period.
2. Some goods produced are not saleable.
   a. Because there is no market for them (waste).
   b. Because they are to be used by the firm itself (own machines constructed; samples to be given away, etc.).
3. Some goods produced are saleable in a subsequent period (inventories of work in process and finished goods).
4. Some goods sold in the current period were produced in a prior period (reduction of inventories).

	Production	Increased inventory	Own use	Lost
Reduced inventory	Revenue			

Where the object of the firm is given as the maximization of profit, or "net income," the model assumes that the value of what is exteriorized will be greater than the costs, or values of what is used for that purpose. This is clearly an unnecessary assumption, since the underlying relation of inputs to outputs is independent of their valuation. It is conceivable that all production is unsaleable,

or destined to be given away, in which case there will be expenses without revenue; even though the "matching" concept is unserviceable here, we can still calculate a negative profit, or loss. The identification of stages in the production process extends the possibilities of analysis beyond the primitive ascertainment of profit, suggesting as it does the functional areas in which profits and losses may occur.

It goes without saying that the capital of the firm is increased by the full value of the sale, and not by the profit element included in this value, and that the cost element restores that part of the capital which was consumed or "used up" in the production process. Conventional financial models of the firm ignore this observation, and this is particularly noticeable in the theory of corporation finance, where revenue as a source of capital is wholly disregarded.

The Production Process Accounting Model of the Firm

The production process model of the firm is shown in Figure 9, where the manner in which it underlies the two most frequently used accounting statements is revealed. The contents of the first five columns compose the balance sheet; of the last three, the income statement. The third accounting statement, the funds flow, is a composite picture

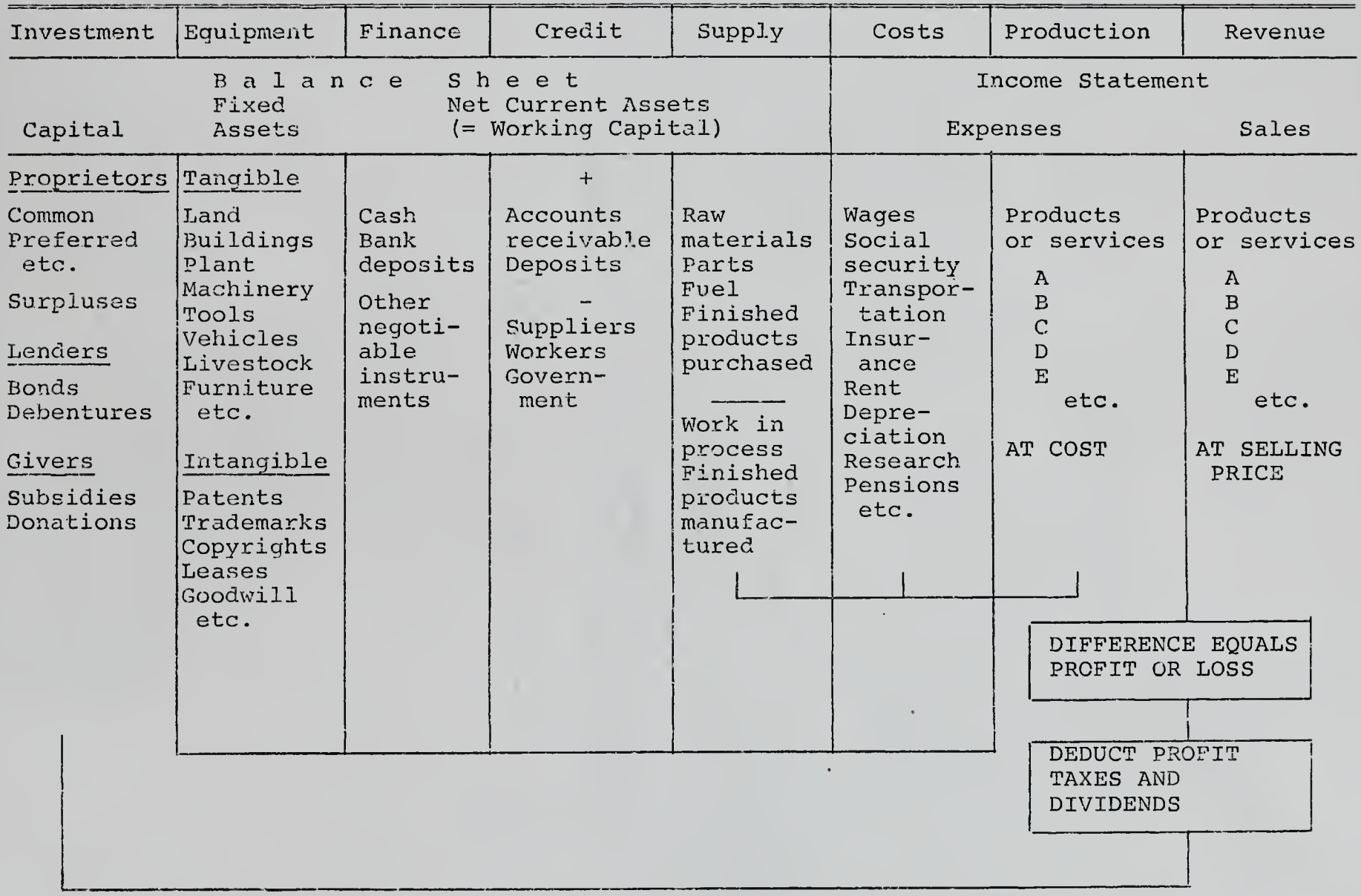


Figure 9. The Accounting Model of the Firm

of the entire cycle; a cash flow statement would be a summary of the third column, "Finance," and so on. The full model applicable to a particular firm would need to be supplemented by an image of the actual production cycle, as shown in Figure 8.

The history of the development of this model has been explained in detail elsewhere[12] and it is suggested that the use of accounting methodology for planning and control must necessarily rely upon some complex view of reality such as this one; we shall therefore call Figure 9 the *accounting model* of the firm, and assume that it can be used to explain accounting and to predict the form which accounting methodology will give to new phenomena not before experienced. It is also a potential decision model, using the techniques of simulation, although marginal models can be used in some situations where it is permissible to proceed by abstracting to a great extent from the complexity of reality; such abstractions are the essence of operations research models using linear programming methods. The degree of abstraction permissible must depend upon the nature of the planning decision which is at issue. In the simplest case, where only one or two variables are affected, the "see-through" model of decision theory may be efficient; in a more complicated planning situation, it may well be deceptive.

The accounting model is particularly eloquent on the subject of valuation. It will be recalled that the "see-through" model of the firm presented a straightforward choice between entry and exit prices, and accounting theorists have argued the acceptance of both of these; the cash flow and other models provided no assistance in solving the valuation problem, either because they were presented in a nonexistent physical form or because it was assumed that value considerations were part of the behavioral pattern of each individual decision-maker. The accounting model shows that there is not one valuation problem but a succession of these, since each stage of the production process presents one; we must therefore contemplate the simultaneous use of a variety of valuation models, rather than the general acceptance of one ubiquitous method of calculation. Although this observation is implicit in the conventions of accountants, it is rarely made explicit, and of the accounting theorists, only Mattessich has admitted more than one valuation model into his conceptual framework, albeit in a less extensive form than the one adopted here.[13] The reason why theorists find it so hard to accept the coexistence within a set of accounts of a wide variety of valuation models is the implication of this view for the mathematical decision models in which they are primarily

interested; the application of statistical method to accounting data must remain at a fairly elementary level until the data themselves can be demonstrated to have a high order of homogeneity. This is, however, the least of the problems involved, as we shall attempt to show in the next section, where the essentially subjective nature of all valuations will be discussed.[14]

What else can we say about the organization and processes of the firm from a study of the accounting model? The firm is linked with the outside world through markets: the real estate market, the labor market, the raw materials market, and so on. It is clear that there must be both a capital market *and* a money market, and that any attempt to analyze these markets as if they were one is doomed to failure. Profits and losses can arise from dealings in any of these markets, and although profit itself is a residual, and as such not susceptible to analysis, the forces from which it is derived can be identified and quantified for purposes of prediction, planning and control. This adds a necessary dimension to the concepts of "responsibility accounting" and the "profit center," and constitutes a firm bridge between organization theory and economics which supplements the somewhat less secure behavioral assumption upon which they both tend to rely.

Since markets actually exist between the organization and the outside world, information systems may be devised to represent the relationships between them and, given the present state of communications theory, it may be useful to construct such systems in the form of computer programs, or block diagrams. It would be more useful, perhaps, to attempt to verify the assumption that the electronic processes of the computer are not only representative of certain types of communication processes, but also necessary elements in these processes; given the variety of stimuli which affect human behavior, and its high degree of unpredictability, this is not immediately apparent. We can create a relatively unstructured image of a "total information system" as a set of information systems linking actors with markets; we are unable to say, however, what forms these systems take, or specify their contents. It is the absence of this knowledge which underlies the failure of the "management information system" concept to produce a workable model of the firm; accounting systems, on the other hand, if they are structured to conform with known operating systems within the firm, are relatively easy to program and have been successfully transferred to computers over the past fifteen years.[15]

The division of the processes of the firm into stages in this way facilitates the measurement of any

physical flows between markets and the firm and within the firm, but as we have repeatedly pointed out, there is no value flow in a physical sense, so that this feature does not help us on our way toward the development of appropriate accounting valuation models by, for example, measuring flows and calculating rates of flow. Where such a physical flow is measurable we still are faced with a valuation problem in much the same form as where it is not, except in those relatively rare cases where there is a one-to-one correspondence between the acquisition price and the physical unit of flow.

The Accounting Model Applied to the Nonprofit Firm

Valuation and Government Revenue

If we define a firm as an organization of resources for the purpose of production, and if we assume that the objective of government is to produce goods and services which individuals cannot or will not provide in any other way, then government (and other nonprofit production units, such as charities) can be analyzed by using the accounting model of the firm. It is with a "formalized and abstract description of the history of the firm" that Boulding claims accounting to be conventionally associated,[16] and while we would take issue with the emphasis on "history," we agree with him that the concept of the firm should be extended

to include nonprofit units. We also agree that the accountant is concerned only with those aspects of the organization and those processes of production which can be valued; the underlying realities, which he calls "physical quantities" but which we can conceive in more intangible forms, are replaced by a quantity expressed in money as the unit of account. The problem of valuation is common to all forms of organization, and we must therefore ask: in what way must the accounting model of the firm be adapted for use in the analysis of nonprofit firms? We shall assume that the government agency is representative of the problems involved.

Government receipts from taxation are obviously not revenue, since they are clearly attributable to the "cash flow" or liquidity of the organization; we speak of government revenue loosely to denote government receipts from all sources, but it would appear that this term is being used as a surrogate for the services which government is being paid to provide. The final act of distribution, the rendering of a service which completes the operating cycle, cannot be defined in terms of *sales* revenue, but there is clearly an exteriorization of services produced which takes place when the government agency performs its economic purpose; the question is whether the purpose can be defined in

such a way that the service rendered can be valued. If we were to pose this question to a consumer, such as an individual or a household, the answer would be that, in the absence of an agreed scale of interpersonal utility comparisons, such a valuation would remain purely subjective and have no relevance to any problems extending beyond the persona of the individual or individuals concerned. In this case, the only possible area of interpersonal agreement is the valuation of cash transactions, since all interested persons can satisfy themselves concerning quantities of money received and paid; for this reason, governments rely largely on cash accounting in the field of personal income taxation, and attempts to extend the observations of the income tax official to uses instead of acquisitions invariably prove counter-productive. Cash accounts are all the accounting the consumer normally requires, although the appearance of investment expenditures changes the picture. Again, the extent to which the consumer can plan his consumption depends upon his ability to value, in money terms, a diversity of satisfactions to be received at different times, together with the related sacrifices; failing this, he can still plan his acquisitions and disposals of goods and services, but not their uses. The cash budget is the appropriate mechanism for this limited objective, and cash accounting the related control situation.

Government accounting has traditionally been performed on the cash basis, modified to include purchases and sales on credit, and attempts to adapt it to the accounting model of the firm have been strenuously opposed. The Taft Commission's report of 1921 led to the introduction of federal budgets, but its recommendations that budgeting and accounting should reflect economy and efficiency (i.e., should be concerned with use and not only with acquisition) were not implemented by the legislature; the Treasury also placed a narrow construction upon the Budget and Accounting Act of 1921.[17] The Hoover Commission of 1949 made similar recommendations, leading to the introduction into government of the concept of a "Planning-Program-Budgeting System" (PPB), and the Budget and Accounting Act of 1950 directed improvements in government accounting for planning purposes. Starting in 1961 in the Defense Department, and with the official backing of the President of the United States, by 1969 only 26 of nearly two hundred agencies of the federal government had initiated inquiries into the system, and many of these were held back by procedural problems of valuation and bookkeeping, known generally as the "crosswalk" problem of reconciling the full accounting model with the rigid rules for recognizing government expenditures heretofore applied. A few had identified formal parts of the system

and incorporated them into the budget process by January, 1969.[18] A study of the work done by these agencies reveals that it is largely an extention of the "cost/benefit analysis" technique, which is statistical in nature and predicated upon the assumptions of price theory which flow from the concept of the individual consumer.

In national income accounting the government is classified as a consumer, on the grounds that its expenditure is a "final product," that is, represents acquisitions of goods and services which are not resold. Preoccupation with the phenomena of exchange is understandable in a pure market economy, but the growth of the public sector in the modern state renders market criteria inadequate. A large part of the economic activity of the United States consists of the production of services by the public sector, which in 1969 accounted for some 35% of the gross national product; in Western Europe the proportion is higher, having reached 50% in the United Kingdom in 1968, and the communist countries display a similar characteristic. In the light of this evidence, we find the assumption that the government is a consumer to be in conflict with the facts, quite apart from the moral and political overtones of such a concept, which leads inexorably to the corporate state. Kuznets has pointed out that many government services can

best be thought of as intermediate goods, in that they contribute to output in the business sector, but this does not go far enough, nor does his proposal to divide government expenditure into two parts, consumption and investment, answer our criticism.[19] We agree that government investment should be separated from government production of current services, which is a normal by-product of applying the accounting model of the firm to the processes of planning and control.

We accept the proposition that the specific objectives of government agencies are identifiable, which is the form our assumption of rationality takes in this context, even though we recognize the unwillingness of public servants to commit themselves in this way; an unwillingness that no doubt finds its origins in their experience of the ingratitude of the people they serve. If the objectives of a government service can be isolated, then their valuation presents no greater problem than the theater owner faces in pricing admissions, or, more appropriately perhaps, than the manager faces in deciding how much a corporation can afford to pay for subsidizing the meals it serves in the works cafeteria.

The intellectual problem encountered is the Aristotelean distinction between value in exchange and

value in use, and the attempt to resolve it by means of the assumption that acquisition prices are objective evidence of value. That the word "value" has two meanings was illustrated by Adam Smith with his celebrated "water and diamonds" paradox; the obvious solution lies in finding a common feature in these two meanings, which Wicksell undertook to do.[20] Noting that value in exchange involved the concepts of *usefulness* and *scarcity*, some economists had deduced that utility governed demand and scarcity, supply; price was a function of both, an observation which Wicksell found too trite to warrant a place in economic science. The cost of production theory of value depended upon exchange values, and therefore could not be offered as an explanation for them. Wicksell based his explanation on degrees of utility, that is, he explained the phenomenon of exchange by reference to the fact that, for one party value in use was less than the price, and for the other party more. But this did not establish a meaning for "value in use"; merely a reason for the profitability of exchange. Under the assumptions of perfect competition it is legitimate to deduce that value in exchange is evidence of value in use for the parties to the exchange, and given the further assumptions of the stationary state, that value in exchange is a constant throughout the market and through time. In the absence of

perfect competition, however, economists are agreed that actual prices are mere *faits divers* without normative significance, and that the value in use which underlies value in exchange is not thereby revealed. Whether value in use will lead to a corresponding value in exchange is a secondary problem to us, although a primary problem to the price theorist.

If it is accepted that the valuations which the entrepreneur makes as a means of planning and controlling the organization and processes of his firm are subjective quantifications in money, including the planning estimates of selling prices which must, given roundabout production methods, take place in advance of the exchanges from which alone objective price data could be derived, then it cannot be held that the expression of government services in money quantities is any different in kind. All that is required is a validation procedure so that the subjective estimates of civil servants can be rendered as objective as the subjective estimates of corporate officials; this is what PPB and cost/benefit analysis attempt to achieve. We are aiming at Coleridge's "willing suspension of disbelief" rather than Disney's "plausible impossible."

The resistance which is encountered to the valuation of revenue in the absence of market sales arises from

certain fundamental logical errors in the theory of money, which are so important in this context that we shall treat them in a separate section.

The Nature of "Money" and "Valuation"

The function of money as a unit of account and of a monetary scale as a measuring device are derived from the same source as the functions of money as a means of payment and as an asset. To assume that these functions can only be found together is the first of the logical errors referred to above.

We first observe that a good or service has exchange value, and define a price as a quantitative representation in money of exchange value. If the price expressed in money is the desired measure of exchange value, in what way can this property be separated from the good or service and transferred from one person to another (as a book debt) or stored (as an asset)? In order for this operation to be possible, money must have some abstract quality which is distinct from the properties it possesses when considered in relation to any one of its four functions. This abstract quality must be distinguished from the "real" characteristics of money as coins, bills, and so on, just as the numismatist must distinguish between coins which are legal tender and coins which are collectors' pieces. It is this abstract

quality, whether derived from custom or statute, which gives money its power to mediate exchanges and serve as an asset, and which also gives it a separate but related power to measure values and serve as a unit of account.

The second logical error is to regard valuation in money as a measurement of the same kind as, for example, measurement in weight. In other words, we may not assume that the propositions "X weighs 20 lbs." and "Y costs $20" are structurally comparable.[21] In the first case, we have four elements: (1) X, the object being measured (2) lbs., the unit of measure (3) 20, the quantity and (4) weight, the quality being measured. In the second case we have only three of these elements: (1) the object, Y (2) the unit, $ and (3) the quantity, 20. Where is the quality being measured? The phrase "objective value in exchange" reveals its emptiness, as does Chambers' invention "numerosity."

The proposition "Y costs $20" can never tell us anything about properties of Y which can be perceived in the absence of the price, as the weight of an object can tell us about a quality we could perceive, albeit less precisely, in the absence of such a measure. The proposition means either "pay me $20 for Y" or else: "if I pay $20 I will receive Y." The only meaning of such a proposition,

in other words, is to be found in its usefulness to human actors; of valuation in general we can say no more.

It is noteworthy that the papers given at a recent seminar on research in accounting measurement made no mention of this aspect of valuation;[22] although Sprouse raised the question of specifying the attribute to be measured,[23] for some reason this thought was not pursued, and all contributors directed their attention to the object being measured. Only Devine presented a treatment of measurement which is compatible with the idea of valuation as a subjective quantification; in his view, all measurement is *fiat* measurement, and the desire to assign numbers to meaningful relationships need not be arbitrarily limited.[24] The writers who have discussed the theory of measurement in relation to accounting theory[25] have all taken as their point of departure the interesting and influential views of Stevens and Torgerson;[26] it must be remembered, however, that these scientists were concerned with the application of statistical method to observations of social behavior, which is a problem of a lower order than the problem of quantification which we approach through the concept of value.

Conclusion

We have thus arrived at a conclusion which will no doubt fail to satisfy those whose incipient ideal it is to hand over the management of production to the computer, but which the humanist will find reassuring. In order to identify a conceptual framework which will embrace all aspects of accounting we have reconstructed the reality which underlies the organization and processes of investment and production, and found that it discloses a continuing need to value if these processes are to be quantified in a form suitable for planning and control. We have also found that only in a minority of cases, where acquisition and use are simultaneous, can the acquisition prices of the factors of production be assumed to be the costs of production, and that the planning function necessarily involves forecasting future selling prices, the relevance to which of present market prices is a question of fact in each case. Many of the phenomena of use are divorced from acquisition of the object being used in such a way that a subjective evaluation is all that can be hoped for in this context, e.g., depreciation of plant and equipment; provisions to make good at some future date the current damage being perpetrated by the elements; research and development. It is clear to us that the element of expectations incorporated in even

the most conventionally prepared set of accounts is greater than has been recognized by accounting theorists, and that human cooperation has been a more substantial factor in progress using accounting statements than has technical achievement. We find this conclusion pointing to a greater role for accounting in the economic management of society, since it liberates the theory of accounting from unnecessary restrictions which have led many writers away from the broad view of accounting as a planning and control methodology and toward a narrow view of accounting as business history.

NOTES

1. Maurice Friedman, "The Changing Image of Human Nature: The Philosophical Aspect," *American Journal of Psychoanalysis*, Vol. XXVI, No. 2 (1966), p. 141.

2. *Ibid.*, p. 143.

3. Knight, *Risk, Uncertainty and Profit* (Harper Torchbooks, 1955), p. 280.

4. *Ibid.*, pp. 317-18.

5. J. Marczewski, *Planification et Croissance Economique des Démocraties Populaires* (Paris: Presses Universitaires de France, 1956), Vol. 1, p. 303. (Our transl.)

6. E.g., J. A. Schumpeter, *The Theory of Economic Development* (New York: Oxford University Press, 1961), pp. 62-3. (First pub. 1934.)

7. See Paul-Joseph Esquerré, *Accounting* (New York: The Ronald Press Co., 1927), p. 106 and Maurice E. Peloubet, "Current Assets and the Going Concern," *Journal of Accountancy*, Vol. XLVI (July, 1928), p. 19.

8. The modern three-period division of time corresponds with our three situations of the firm. See p. 135.

9. Stephen Gilman, *Accounting Concepts of Profit* (New York: The Ronald Press Co., 1939), pp. 110, 113, and National Association of Accountants, *Cash Flow Analysis for Managerial Control*, Research Report No. 38 (New York: N.A.A., 1961), p. 4.

10. Anson Herrick, "Current Assets and Liabilities," *Journal of Accountancy*, Vol. LXXVII (January, 1944), pp. 48-55, and American Institute of Accountants, *Accounting Research Bulletin No. 30* (New York, 1947) (Final edition, 1961.) The quotation is from Herrick, p. 50, and the semantic problem recalls the German struggle to distinguish between *Gebrauchsgut* and *Verbrauchsgut*.

11. John A. Higgins, "Responsibility Accounting," *The Arthur Andersen Chronicle*, Vol. XII, No. 2 (April, 1952), pp. 1-17.

12. Marcel Mommen, *Le Plan Comptable International*, Brussels, Eds. Cambel (1958) and Kenneth S. Most, *Uniform Cost Accounting* (London: Gee and Co. (Publishers), Ltd., 1961), Chs. 6 and 7.

13. R. Mattessich, *Accounting and Analytical Methods* (Homewood: Richard D. Irwin, Inc., 1964), pp. 217-20.

14. Myrdal and Hägerström both argue that there are no values in the objective sense, but only subjective valuations which must be distinguished from perceptions of reality. See Gunnar Myrdal, *The Political Element in the Development of Economic Theory* (Harvard, 1955), p. 13.

15. In a recent publication by the public accounting firm, Haskins and Sells, the partner-in-charge of management services for the firm, Mr. Gordon L. Murray, describes the stages of evolution of the management information systems for which he has been responsible since 1950. It is clear from the illustrations reproduced that the vital separation of the organization from the processes has not been undertaken in constructing these systems, although a subconscious striving to effect such a separation is evident in the changes which took place between 1950 and 1970.

16. Kenneth E. Boulding, "Economics and Accounting: The Uncongenial Twins," in W. T. Baxter and Sidney Davidson (eds.), *Studies in Accounting Theory* (Homewood: Richard D. Irwin, Inc., 1962), pp. 44-55.

17. Arthur Smithies, *The Budgetary Process in the United States* (New York: McGraw-Hill, 1955), pp. 68-71.

18. Joint Economic Committee of the United States House of Congress, *The Analysis and Evaluation of Public Expenditures: The PPB System*, Vol. 2, Part IV, U. S. Government Printing Office, 1969), p. 617.

19. S. Kuznets, *National Income: A Summary of Findings* (New York: National Bureau of Economic Research, 1946), pp. 131-33.

20. K. Wicksell, *Lectures on Political Economy*, Vol. I, Part I, "The Theory of Value" (New York: The Macmillan Co., 1934), p. 18.

21. Gustav Adolf Gross, *Die wirtschaftstheoretischen Grundlagen des "Modernen Kapitalismus" von Sombart* (Jena, Verlag von Gusta Fischer, 1931), p. 142.

22. *Research in Accounting Measurement*, eds. Robert K. Jaedicke, Yuji Ijiri and Oswald Nielson, American Accounting Association (1966).

23. Robert T. Sprouse, "The Measurement of Financial Position and Income: Purpose and Procedure," *ibid.*, pp. 101-14.

24. Carl Thomas Devine, "Some Conceptual Problems in Accounting Measurements," *ibid.*, pp. 13-26.

25. Mattessich; Chambers, *Accounting, Evaluation and Economic Behavior* (New Jersey: Prentice Hall, Inc., 1966); Thomas R. Prince, "An Overview of Conceptual Measurement Issues in Financial Accounting Theory," in *Theory Formulations*, Accounting Series No. 6, Florida (1970).

26. S. S. Stevens, "On the Theory of Scales of Measurement," *Science*, Vol. CIII (1946), pp. 677-80 and Warren S. Torgerson, *Theory and Methods of Scaling* (New York: John Wiley and Sons, 1958).

CHAPTER VI

SOCIAL ACCOUNTING

If our hypothesis is correct, then the appearance of an accounting system which embraces the activities of a society as a whole will depend upon two factors:

1. The extent to which the society purposely sets out to plan its economic future.
2. The extent to which the planners can agree on a fairly detailed image of the realities of the planned society.

The usefulness of such an accounting system will depend upon the extent to which the planners' image conforms with the reality which it purports to represent.

Social accounting is such an accounting system; Yu would prefer to call it macro-accounting, since he sees important similarities between this and other forms of accounting which suggest to him that the distinction between social and private accounting lies primarily in the size of the economic unit studied.[1] "We use the term social accounting . . . to mean the whole system of accounts and balance sheets of a nation or region, their price and quantity components and the various consolidations that can be derived from them."[2] Although the term can be criticized it appears to have acquired wide currency, and we shall follow this current usage.

In this chapter we shall first examine the history of social accounting in the context of national planning, and the Soviet Russian and U. S. systems which represent the two principal branches found in practice; this will permit us to identify the image of economic reality which underlies them and to show how they may be modified to conform with a more complex picture of a modern industrial society.

History of Social Accounting

Early work in the measurement of national income and wealth was predominantly statistical.[3] First attempts at "national income accounting," or providing estimates of national economic aggregates through the medium of an accounting model, were made in the 1920s in Soviet Russia; a similar path was followed by the U. K., the U. S. A. and Canada after World War II, aided by a 1944 conference on procedures which clarified the terminology and methods to be used.[4] Many other countries have introduced social accounting since those pioneering efforts established the feasibility of this method.

Planning is a complex of actions which involves determining the goal to be attained, identifying the necessary means and choosing among those means the ones which appear to permit attaining the goal at the lowest

subjective evaluation of sacrifice. The plan itself must arrange the employment of those means selected through time and space in such a way that their complementarity is fully exploited. Soviet planners first attempted to formalize their plans purely in terms of physical quantities, but the great failures of their early efforts directed attention to the need for a financial plan, or national economic budget. Only by translating the various operations contemplated by the plan into monetary terms, and expressing the result in the form of accounts, could the hierarchies of preferences and scarcities and the possibilities of substitution between goods and manufacturing processes be brought together in order to evaluate them and produce an economic plan.[5] In Marczewski's view, the fact that important economic decisions were made without such national accounts does not vitiate this observation, since they consisted of choices between a limited number of variables and variations, the full effects of which were impossible to measure and compare.

Like the Soviet social accounts, the U. K. system was first developed for planning purposes. The watershed can be found in the period 1940-42; in 1940, Hicks published an important paper distinguishing between the concepts of national income at market prices and at factor costs, but which was clearly statistical in outlook,[6] and in 1942 he published the equally influential textbook *The Social Framework*[7] which he had to be dissuaded from calling

"The Social Accounts."[8] In the intervening two-year period, a collection of national income *statistics* such as the ones provided by Colin Clark[9] were transformed into a putative accounting *system*; Harrod, in his biography of Keynes, indicated exactly how this took place.[10] Keynes' book, *How to pay for the War*, created some interest in the possibilities of planning the national economy more effectively and led indirectly to the appointment of two economist-statisticians, James Meade and Richard Stone, to the staff of the U. K. Treasury, where Keynes was already installed in a semiofficial capacity. These economists produced a statement in account form which analyzed the U. K. national income and expenditure in the winter of 1940-41, and the following passage from the Harrod biography is particularly interesting in the light of our comments on the valuation problem in Chapter V of this study:

> The Treasury had hitherto confined itself to figures for actual, known transactions. This account included estimates, and certain figures had to be obtained by the method of difference from other estimates—all of which was very dangerous. Yet this kind of national income accounting has come to be regarded as the essential tool of any economic planning, whether of an individualist or socialist variety.[11]

There appear to have been two principal causes leading to the adoption by non-Communist nations of an accounting framework for their national income statistics. The first of these was a series of persuasive books and papers, starting with Fisher's *The Nature of Capital and*

Income, asserting the relevance of accounting methodology to the measurement of national income; these works created an intellectual climate favorable to the task. The second and proximate cause was the wartime condition under which Meade and Stone worked; the government had requisitioned a large part of the U. K. economy, and the government budget, in the form of an income and expenditure account, became a major part of the total picture which national income statisticians were attempting to portray. The construction of a similar two-sided income and expenditure account for the entire national economy was thus facilitated.[12] The initiative was followed almost immediately by economists in the U. S. A., where the annual publication of social accounts was started in 1947, the same year as the U. K.[13]

Although the transition from statistics to accounting can be demonstrated fairly clearly, the subsequent development of systems of social accounts in the non-Communist world cannot be attributed to national economic planning. True, the stated objects of national income statisticians include the formulation of economic *policy*, but few of the countries concerned possess the legal and institutional framework which would permit policies to be translated into plans, and those which do, such as France, aim principally at the planning of money flows rather than the production of goods and services; the state influences the

choices of its subjects by increasing and decreasing their command over the means of payment, and not by directives allocating land, labor and capital to specific output objectives.

It has been suggested that the testing and development of economic theory is an important objective of national income statisticians, who are interested in the production of quantitative data to be fitted into macro-economic models, in particular.[14] This motive is clearly apparent in the Hicks paper cited,[15] where the money valuation of the national income is considered. The particular money values to be used, says Hicks, depend upon the purpose for which the calculation of national income is to be used; if social income is to serve as an index of welfare then it should be valued at market prices "because prices give us some indication of marginal utilities," but if social income is to serve as an index of production, then it should be valued at factor costs. This distinction is only tenable on the assumption, firmly made by public finance theorists at that time, but less acceptable today, that indirect taxes are passed on to consumers in the form of prices (and that corporation and other direct taxes are not).

It can be seen from the Hicks paper that he had in mind the empirical testing of propositions in welfare theory as a reason for obtaining a figure for social income at

market prices, thus extending the scope of Pigou's contribution to this field.[16] The empirical testing of propositions in macro-economic theory, by providing quantitative data on aggregate demand, the consumption function, the multiplier and the marginal propensity to invest, and by demonstrating the *ex post* equality of saving and investment, would also stimulate efforts to calculate national income at market prices. National income at factor costs would provide data for the development of a social production function and for verifying theories of the effects of changes in labor productivity on wage rates. As evidence for the proposition that Richard Stone was also thinking on these lines, we may note that he has said:

> In attempting to give quantitative expression to empirical constructs, such as the national income, it is now generally recognized that a theoretical basis is necessary and that this basis should be the conscious concern of economists and not left in its practical aspects exclusively to business men, accountants and the Commissioners of Inland Revenue. Equally is it clear that economic theory cannot be left at the theoretical stage but requires to be tested and given quantitative expression by being brought into relation with observations. These lines of attack have resulted in very considerable efforts to bring into being both observations which are relevant to economic theories, and also economic theories, or formulations of theories, which are capable of being brought into relation with observations.[17]

The history of social accounting since World War II, and particularly its development in the U. S. A. and the U. K., tends to support this hypothesis, albeit tenuously. A great deal of work has been done to improve the quality

of the individual statistics collected, but the accounting framework remains inchoate, as it was left by Stone and the other pioneers.[18] The disappearance of the business sector from the U. S. national income accounts, which has been criticized by Yu and Rosen, among others,[19] is explicable with reference to an economic theory which abstracts from institutional factors: there are no theoretical constructs which call for quantification here. The main thrust of government has been on the "Flow-of-funds" accounts, presumably because the Federal Reserve System has accepted some responsibility for planning and controlling money flows. The interrelated social accounting systems of France, Holland and Norway, countries which have established forms of national economic planning, provide a sharp contrast to the U. S. and U. K. systems, which contain a vast amount of statistical material but are composed of sets of accounts leading "separate lives."

The Soviet System

In the Soviet system of social accounting, a techno-economic production plan constitutes a budget in real terms, on the basis of which the accounts themselves are constructed. The main purpose of these accounts appears to be aimed at adjusting money flows to correspond with the real flows envisaged in the plan. There are three kinds of account:

1. National product.
2. National income.
3. Flow of funds.

The national product is defined in Marxist terms as: $C_a + V + M$, where C_a is the constant capital (equipment and production materials), V the variable capital (subsistence requirements of labor) and M the surplus-value, produced by the variable capital. National income is defined as V + M. The national product account is divided into investment (A) and consumption (B) as a preliminary to controlling the distribution of income in money terms.[20]

In the Soviet system, as in any other, there is no question of an equality between "surplus-value" and "investment"; firms are not allowed to retain the whole of their profits, or forced to rely on profits for their investments. The greater part of profits is paid over to the state, and firms receive subsidies for the acquisition of equipment. The picture must, therefore, be completed with the aid of a flow-of-funds account, which in this context is primarily a cash account for the whole economy. This cash account is a consolidated statement of the transactions of the various organs of the State, state enterprises, banks and other institutions, together with estimates for the public.

The Soviet National Product Account[21]

Sector	Branch	Functions	Allocation	Use
Public Coopera-tives Small traders Capitalis-tic firms	Manufac-turing Construc-tion Agriculture Transpor-tation of goods Production communica-tions Production commercial services Other tangible production Restaurants Production services of banks	A. Investment goods: 1. Fixed capital 2. Working capital B. Consumption goods: these are allocated to →	1. Equipment industries 2. Consumption good industries Households Collectives Inventory changes Government reserves and then to →	Intermediate consumption: 1. Depreciation (capital) consumption) 2. Reduction of working capital e.g., raw materials inventory National income* 1. Fixed capital formation 2. Working capital formation 3. Increase in stocks of consumption goods 4. Consumption *V + M

The national income account shows how the national product is distributed, in the form V + M.

The Soviet National Income Account[22]

Real	Monetary
I. Consumption goods 1. Households 2. Collectives a. Civil b. Military II. Investment goods 1. Productive fixed capital 2. Nonproductive fixed capital 3. Working capital	I. Wages and social security (V) 1. Wages—tangible production 2. Social security charges 3. Income of agricultural and craftsmen's cooperatives II. Surplus-value (M) 1. Profits a. State enterprises b. Agricultural and craftsmen's cooperatives c. Small traders d. Capitalistic firms 2. Turnover taxes

Receipts and Payments of the Soviet Union[23]

Receipts	Payments
A. Receipts from enterprises, state agencies and cooperatives.	A. Payments to enterprises, state agencies and cooperatives.
1. Public sector wages and cooperative members' income	1. Purchases of goods from state enterprises and cooperatives.
2. Receipts of communal units other than from sales	2. Payments for services:
3. Sales of agricultural produce to state and cooperatives	a. Rent
4. Pensions	b. Transportation
5. Study bourses	c. Other current services
6. Interest, insurance, construction loans	d. Cinema, theater and other shows
7. Other	e. Sanatoria, holiday homes, etc.
Total Section A	f. Other services
	3. Taxes, insurance, subscriptions
	4. Saving
	Total Section A
B. Receipts from the sale of goods and services to the population.	B. Payments for purchases of goods and services by the population.
1. Receipts from communal sales	1. Purchases on the communal market
2. Receipts from craftsmen's sales	2. Other purchases
Total Section B	Total Section B
Total A + B	Total A + B
(= reduction in money supply)	(= increase in money supply)

Whereas the product account appears to be an attempt to portray the process whereby real goods and services are produced and the capital used up in the process is replaced, the receipts and payments account shows the transactional relations between the sectors of the economy. It is, therefore, more of a cash account than a funds statement.

The U. S. System

We shall regard the U. S. system of social accounts as representative of the non-Communist world; it is not as well articulated as some systems, but provides more statistical detail than most.[24] The division of the economy into production and consumption conflicts with the transactional basis of primary sectorization, and is conceptually narrower than the Soviet division into investment and consumption; this may arise out of the reliance of Western economists on marginal techniques of analysis. The assumption that physical quantities of goods and services are the basic measures, separable from the prices by which they must be multiplied to arrive at values, is a first indication that we shall find the same Ricardian model of the economy underlying both the Soviet and the U. S. systems. Hicks is explicit on this point: there are two problems involved in the determination of the national income, the enumeration of real goods and services and their evaluation in money.[25]

There is also an index number problem, which has been studied at length by welfare economists.[26]

Unlike the Soviet system, the U. S. accounts fail completely to come to grips with the physical quantities, and start with monetary data concerning payments, which are adjusted for accruals to make them correspond with acquisitions and disposals. Consolidation of transactions originating in the business sector, however, obliges the accountant to accommodate data concerning uses, the most important item being depreciation. The imputations of interest in the business sector accounts and of rental income in the personal sector accounts further aggravate the duality of the construction of these accounts, which can be seen on a comparison with the Soviet receipts and payments account to deal essentially with acquisitions rather than uses. This attempt to include nonmarket phenomena obscures the money flows of the nation, so that a quite separate Flow-of-funds (or "money flows") account is produced by the Federal Reserve System. Identification of this "flow" in the real world discloses the existence of capital movements in addition to those differences included in the essentially "current" income and product account; the net result of the Flow-of-funds account is to equate saving and investment and to demonstrate the institutional structure of each of these classifications.

The Flow-of-funds statement is, therefore, comparable not with the receipts and payments account of the Soviet system but with the funds statement of the business enterprise. In the last analysis, the U. S. national accounts, like the business accounts which they attempt to imitate, do not include a statement of cash flow; this is submerged in the detailed statistics of the Federal Reserve System, and only the net increase or decrease of the money supply is incorporated in the Flow-of-funds statement.

U. S. National Income and Product Account

Income	Product
Factor payments	
Wages and salaries	Sales to consumers
Rental income of persons	Sales to government
Interest received	Sales to abroad
Corporate and other profits (including retentions)	Sales to investors
	Net change in inventories
Corporate profits taxes	
Social security payments	
Transfer payments	
Depreciation (not a payment)	
Indirect business taxes	
Business and government transfers	

U. S. National Flow-of-Funds Account

Current expenditures	Current receipts
Goods and services	Income receipts
Transfer payments	Transfer receipts
Capital expenditures	
Financial investment	Increase in liabilities

NB. There is usually a balancing figure, due to a statistical discrepancy.

The input-output tables which make up the third principal component of the U. S. system of social accounts are something of an oddity; they attempt to perform, in money terms, the function which the Soviet national product account performs in real terms. The assumption of an identity between money flows and real flows is supported by additional assumptions of *constant* input coefficients (as compared with the Soviet practice of using calculated norms as techno-economic coefficients), a *constant* allocation of inputs to outputs in multiproduct firms, and *constant* prices.[27] The result is a set of tables which purports to quantify the "flow" of resources interindustry, between the public and private sectors, and between the U. S. and the rest of the world, but which in fact represents a primitive attempt to analyze complex economic phenomena using an inadequate conceptual framework. In this it resembles the cost departmentalization tables used in industry, particularly in the late 19th century, which led indirectly to irrational price competition and ultimately to price-fixing agreements, trusts and cartels. It seems unfortunate that the knowledge accumulated by cost accountants and industrial engineers during the past seventy years could not have been tapped before Leontief started his enormous undertaking.[28]

Turning to the measurement of wealth: although the earliest national statistical exercises were aimed at the

measurement of wealth, recent emphasis has been on Fisherian "income flows." For this reason the U. S. does not count a national balance sheet among its social accounts, although unofficial attempts to construct one have been made.[29]

The structure of a national system of social accounts of the non-Communist type is shown in Figure 10, which also reveals the extent to which the U. S. is in a position to implement it in its entirety. The dotted lines signify the elements and connections which are as yet incomplete, and the diagram should be read in conjunction with the criticisms of the U. S. social accounting system which this chapter contains. In the conceptual framework of Chapter V, the diagram shows only the capital and revenue "flows" and the cash "flow" would necessitate a separate set of accounts linked to the right-hand boxes through cash transactions. Flow accounts for other forms of resources, including credit, would likewise call for separate sets of accounts, linked to particular values as they appear in balance sheets.

Social Accounting Critically Appraised

Both systems of social accounting are incomplete, although their technical deficiencies could conceivably be rectified as economic statisticians learn more about

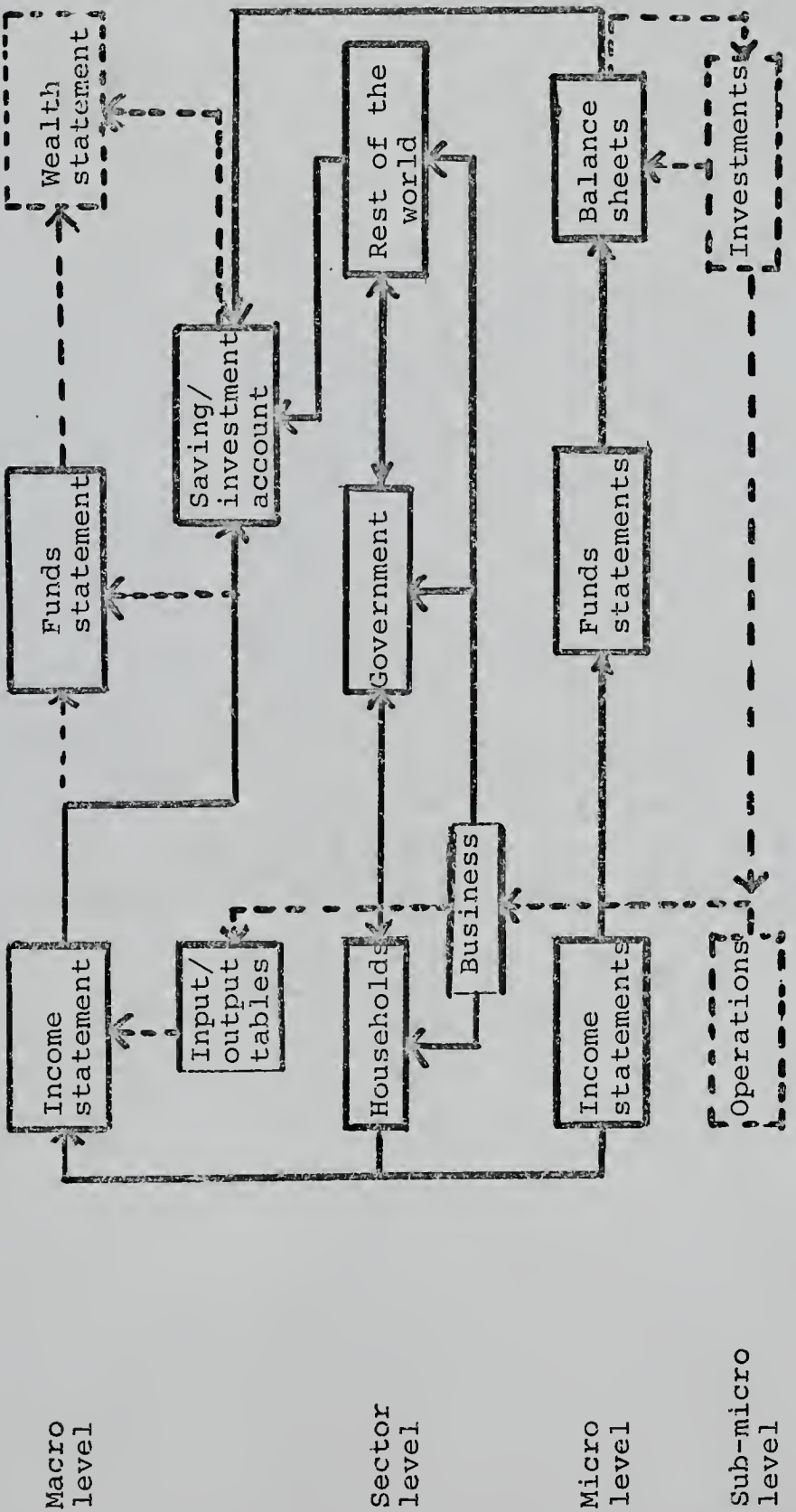


Figure 10. A National System of Social Accounts

accounting, or as accountants occupy themselves with social accounting. What is more to the point, however, is that both systems are conceptually defective, since they proceed from certain beliefs about economic realities which are scarcely tenable in a 20th century environment. The Soviet social accounts are founded on Marxist economic theory,[30] and a misreading of it, at that.[31] This not only leads to the adoption of a "narrow" concept of income which excludes many services; it also precludes a rational approach to investment because of the inability to value the services of capital which is inherent in Marxism. A further feature of the Soviet economy which undermines the effectiveness of the social accounts is the characteristic directive system, with planning effected primarily in physical quantities and prices imposed from the planning level rather than agreed at the level of consumption, or investment. The basic materials of Soviet social accounting are money and physical resources, the *balances de ressources en nature* as Marczewski calls them, lists of which are submitted to the political organs of the state for consumption and investment decisions. The confrontation between ideology and reality takes place at the highest political level, and the task of the planning branch of government is to translate the wishes of the political organ into a form capable of fulfillment. The prices which are used

in the social accounts enter into the planning process at a comparatively late stage; they are "valuations," it is true, but of a kind which differs fundamentally from the agreed values of a free society originating in the subjective considerations of a multitude of individuals. There is no way of determining whether the contents of the Soviet national product or income accounts are "true" or "false"; only cash receipts and payments are capable of objective verification.

If the society which the Soviet leaders are engaged in planning were in fact susceptible to direction of this kind, that is, if the people were willing to accept the valuations made by the planning officials, then this method of constructing social accounts would not be open to criticism. The values would provide stimuli of a quasi-physical nature, and the "body" politic would react accordingly. But the Soviet people are not essentially different from other people, and each individual is capable of developing his own values; since there is no official institutional framework within which these values can be asserted, he must necessarily create an unofficial one. The unofficial institutions which arise exert their pressures against the organs of the state, and the resulting compromise falls far from the planned parameters of the national budget. The usefulness of the Soviet social

accounts appears to lie more in the initiation of a debate than in the resolution of a conflict arising out of the fact that means are scarce relative to ends.

The U. S. system also fails to come to grips with this problem since the relevant aspects of valuation are purposely avoided.

> Instead of seeking to build up a single total, such as the national income, an investigation is first made of the classification of accounting entities, of the types of accounts that they keep and of the transactions into which they enter. In this way, all the transacting entities of an economic system are classified into broad sectors such as productive enterprises, financial intermediaries and final consumers, and a series of accounts for each of these sectors is set up, in which the separate entries represent economically distinct categories of transaction. Economic activity is represented by money flows and related bookkeeping transactions, actual or imputed, between accounts. The national income and other similar aggregates are obtained from the system by selecting and combining the constituent entries in the accounts.[32]

It is not essential that a system of social accounts should provide, at one and the same time, an accounting analysis of the economy such as would aid the planning process and also the economic aggregates required by politicians and economic theorists, any more than the measurement of income is a necessary feature of a business accounting system. The French *Comptes de la Nation* differ from the U. S. and most other non-Communist social accounts in that they constitute a disaggregated set of interrelated accounts; they do not show "gross national product" or "national income" and there is no financial statement

as such which is designed to reveal the national income or product, or capital formation. Indeed, the definitions of flows used by French macro-economists differ from those of U. S. and U. K. macro-economists, and the aggregate "gross domestic product," for example, is obtainable from the *Comptes de la Nation* where the aggregate "gross national product" is not.

The fundamental problem, as the welfare economists have pointed out, is "Who shall value the national income?" Income is a personal concept relating to consumption, whether present or anticipated future; it quantifies being "better off," in Hicks' phrase, and must relate to an identifiable individual who can be said to have changed his state in this way. Profit, or business net income, is the result of a substitution of revenues for costs, and must be related to a stage in a process of production, whether called an "entity" or a "profit center." Measurement, defined as expressing the degree of difference in distinguishable characteristics and bringing it into a certain relationship with a set of numbers (in this context, a monetary scale), is an observable social phenomenon in both cases. The *social* income can only be regarded as a measurable fact if we first "set up a theory from which income is derived as a concept by postulation and then . . . associate this concept with a certain set of primary facts."[33] The social

accounts are believed to find their theoretical foundation in Keynes' *General Theory*, but closer inspection will reveal that the model used is essentially the Walrasian systematization of a closed economy, which was adapted by Hicks and Hansen to cope with some of Keynes' more manageable criticisms of that system's lack of contemporary realism.[34] On the other hand, the principal feature of current work in the field of welfare economics is the meticulous demonstration of the inapplicability of neoclassical price theory to the development of propositions concerning human welfare; the virtual impossibility of bringing such propositions beyond a point of banal generality is the main product of these publications.[35]

The transition from individual, or small group, personal income to national, or social, income can be made in at least two ways. An individual dictator or an oligarchy can impose his or their values upon a society, so that the national income can be found from his or their subjective preferences; we have indicated in our remarks on the Soviet system that a modern economy is too complex for this. Alternatively, we can appoint specialists to carry out this task on behalf of the population as a whole, as we delegate so many of the important tasks of our society to committees of experts. These men would have to be experts in valuation, however, not in statistics;

they would need to be chosen from the ranks of those whose rationality was buttressed by a knowledge of men and affairs. In the last analysis, the measurement of the national income turns out to be a political action, as the measurement of business income turned out to be a business judgment; on no account can it be a purely statistical exercise based upon the summation and consolidation of money flows.

To this the national income accountant may reply that his aggregates, while derived from money flows, are surrogates for the "real" income and product which we would prefer to know, but fail to grasp. The use of the word "real" here is the source of much difficulty, because of a duality of interpretation of the manner in which it is contrasted with "monetary." The adjustment of money values by means of a price index so as to express them in terms of a common base can never improve the usefulness of national income statistics beyond making them more comparable; it is a pure smoothing exercise, and any deficiencies of the initial observations are transferred intact to the adjusted figures. This version of "real" national income, i.e., current national income adjusted by means of a price level index, is different from the concept of "real" national income as the goods and services which, measured in physical quantities, are to be multiplied by

prices in arriving at an index of welfare, or production. It is this latter concept for which money national income is to serve as a surrogate.

If monetary measurements of national income are to be used in this way, then the implications of our hypothesis are that separate systems of accounts must be set up for investment (including production) and for consumption, since the bases of valuation adopted in the two areas of human activity are fundamentally distinct. Whereas money as a medium of exchange and as an asset takes precedence over its other functions in the consumption area, in the investment area we are interested in money as a unit of account and as a measure of value. Once this is accepted, then it becomes unnecessary to answer the question: "Who shall value the social income?" for the social income becomes a simple aggregate of payments. The valuation problem relates solely to the national *product*; the monetary transactions which constitute the national income, and which are a function of the national product together with interpersonal money transfers, present virtually no separate valuation problems to confuse the analyst who is concerned with developing models for planning and control.

We must distinguish clearly between our two conceptually distinct but transactionally related areas of accounting for investment and consumption. The national

product is defined as a representation in money of the social output of goods and services for a given period, divided into consumption and investment goods and services. The valuation of these objects is a critical problem, depending as it does upon expectations and other subjective considerations at the time of investment, and the possibility that these may change during the period of production. The national income is defined as an aggregate of the means of payment made available to the population in a given period, derived from the sources designated "factor shares" in distribution theory, and which may be used for consumption or financial investment (saving). The preparation of a national product account calls for an image of the organization and processes of production of a society; with this, the analysis can be assimilated to that of the individual production unit. This is shown in the matrix of Figure 11, where the columns are those of Figure 9, extended to include transfers of the proceeds of distribution (e.g., dividends, donations, subsidies and subventions) and the rows represent a tolerably realistic summary of the many facets of a modern economy; the rest of the world sector is included to convert the model into a closed system.[36]

The national income account would show the factor and transfer payments on the *right-hand* side and acquisitions of goods and services from investment sources on the

Sectors	Investment	Equipment	Finance	Credit	Supplies	Costs	Products	Distribution[8]	Transfers	Surplus/ Deficit
Extraction[1]										
Construction										
Manufacture										
Transportation										
Distribution										
Regulation[2]										
Stabilization[3]										
Combination[4]										
Protection[5]										
Administration[6]										
Education										
Recreation[7]										
Rest of the world										
Totals							[9]	[10]		

Notes: [1]Agriculture, fishing, mining, exploration.
[2]Banks, produce markets, stock exchanges.
[3]Insurance, pension funds.
[4]Trade unions, employers' associations.
[5]Law courts, police and fire services, the professions.
[6]Nonspecified government functions. Defense may be treated as a sector.
[7]TV, cinema, sports.
[8]Of all products, not only those of the distributive trades.
[9]National product at factor costs.
[10]National product at market prices.

Figure 11. Proposed Model of the Social Product Account

left; the retained earnings of corporations would not be included with the former, or sales of investment goods (or inventory changes) with the latter. The difference between incomes and acquisitions constitutes saving, which can thus fail to equal investment *ex post*; this would convert the national accounts from an identity to a set of behavioral equations and provide the analyst with an invaluable tool for planning and control decisions. We suspect that many of the false problems which have preoccupied national income statisticians would also disappear, such as: how to account for "investment" in consumer durables; what happens to the national "income" when the economist marries his housekeeper; or whether the national income can be truly said to have increased because a rocket launch at Cape Kennedy had to be aborted.[37]

Conclusion

The statement that the social accounts of the non-Communist countries are conceptually deficient, because they have been constructed on the basis of a Ricardian image of a preindustrial society, implies that their usefulness is highly suspect, quite apart from any weaknesses to which the data may testify and which arise out of statistical problems of collection and presentation.[38] Recent work of the United Nations on its system of national

accounts, which demonstrates both the articulation of the full system and its representation in matrix form, still fails to distinguish between investment and money flows, which are combined in the various accounts in a manner wholly at variance with economic realities.[39] We have put forward suggestions for fundamental changes which we regard as necessary for the modernization of the system, and an economic theorist may well object to so radical an approach on the grounds that the existing system is based upon a well-understood conceptual framework which, while incomplete, is nevertheless better than nothing. If the constituents of these theories can find their counterparts in the social accounts, then the latter can be used for testing and refining the theories. To this we can only reply by quoting from the seminal report of 1947:

> In so far as the entries in the working system fall short of some theoretical ideal, either because a compromise has been made for lack of data or because the ideal is not expressible in terms of operations which permit of measurement, they will be misleading if they are used for purposes other than those for which they have been constructed. It is thus important to examine the definitions employed in order to see the limitations on the legitimate use of the system. Thus, for example, the concepts of consumer's expenditure and capital formation which seem appropriate from the point of view of distinguishing between the two principal components of the national product do not necessarily coincide with consumption and additions to wealth and such differences must be made explicit.[40]

Our proposal to separate product "flows" from income "flows" would make necessary the preparation of

national balance sheets and wealth statements, since the dynamic elements of the former can only be considered in relation to changes in the states disclosed by the latter. It would be unwise to underestimate the difficulty of this task in the light of studies which have already been made in this area,[41] although a regionalization of the task would undoubtedly help to render it more manageable. We may point out that our separation effects a massive simplification, since capital goods fall to be valued only in the investment accounts, and the balance sheet items of the consumption accounts are limited to financial assets and liabilities. On these items, as on the constituents of the proposed Social Product Account, data are readily available, although they could obviously be improved considerably.

We are prepared to acknowledge a limited usefulness of the social accounts prepared by free economies at the present time; there is the overriding necessity to experiment in this field, which transcends quality judgments, and there is a demonstrated use in international negotiations, as, for example, in determining appropriate contributions to the United Nations, NATO and other paranational organizations. International comparisons of income, wealth and welfare are another matter entirely; one need only consider the case of the U.S.A. whose national income and gross

national product appear to have doubled during a period when its urban societies have all but collapsed, its public services have been demonstrably inadequate to cope with the needs of the population, and enormous money incomes have been made available to individual and corporate landowners to induce them not to produce goods which are nevertheless scarce in relation to individual needs. We submit that our suggested scheme would throw some light on the nature of the problem posed by these anomalies, since it would be possible to demonstrate, if such were the case, that money incomes of $900 billions had been made available at a time when the social product had a value of, say, $500 billions. The implications of such information for the attack on inflation are obvious. Whether the information can be regarded as useful, however, is in the last analysis, a philosophical question; if we believe that all planning of a social nature is contrary to the interests of the individual, then social accounting is clearly an exercise of exquisite futility. We prefer to take a position somewhat more favorable to the endeavor, by stating that a limited amount of planning has proved possible even in a free society, and that the potential benefits of such planning can be determined only by experiment and the evaluation of evidence.

NOTES

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3. Paul Studenski, *The Income of Nations* (New York, 1958), Chs. 2-10.

4. Edward F. Denison, "Report on Tripartite Discussions of National Income Measurement," *Studies in Income and Wealth*, Vol. 10, Conference on Research in Income and Wealth (New York: National Bureau of Economic Research, 1947).

5. J. Marczewski, *Planification et Croissance Economique des Démocraties Populaires*, Vol. 1 (Paris: Presses Universitaires de France, 1956), p. 155.

6. J. R. Hicks, "The Valuation of the Social Income," London, *Economica*, Vol. VII, No. 26 (1940), pp. 105-24.

7. First English edition, Oxford (1942).

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9. C. G. Clark, *National Income and Outlay* (London: Macmillan and Company, 1937).

10. R. F. Harrod, *Life of John Maynard Keynes* (New York: Harcourt, Brace, 1951), pp. 497-503.

11. *Ibid.*, p. 498.

12. Studenski, p. 153.

13. See Gerhard Colm, "Experiences in the use of Social Accounting in Public Policy in the United States," *Income and Wealth*, Series I, International Association for Research in Income and Wealth (Cambridge, 1951).

14. M. Yanovsky, *Social Accounting Systems* (Chicago: Aldine Publishing Co., 1965), pp. 12, 216; and Jean Meyer, *Comptabilité d'Entreprise et Comptabilité Nationale* (Paris: Dunod, 1969), p. 11.

15. "The Valuation of the Social Income."

16. A. C. Pigou, *The Economics of Welfare* (London: Macmillan and Company, 1920).

17. Richard Stone, *The Role of Measurement in Economics* (Cambridge, England, 1951), p. 3.

18. See, for example, "The National Income and Product Accounts of the U. S.: Revised Estimates, 1929-64," *Survey of Current Business* (August, 1965), p. 6.

19. Sam Rosen, *National Income* (New York: Holt, Rinehart and Winston, 1963).

20. Marczewski, p. 492.

21. Adapted from J. Marczewski, "The role of national income accounts in the planned economies of the Soviet system," *Income and Wealth*, Series IV, Phyllis Deane (ed.) (London: Bowes & Bowes, 1955).

22. *Ibid.*

23. *Ibid.*

24. Yanovsky, *op. cit.*, Ch. II; and *The National Economic Accounts of the U. S. A.: Review, Appraisal and Recommendations*, National Bureau of Economic Research, General Series 64 (1958), p. 28.

25. Hicks, "The Valuation of the Social Income," p. 105.

26. I. M. D. Little, *A Critique of Welfare Economics*, (2d ed.; Oxford, 1957), Ch. XII; and J. de V. Graaff, *Theoretical Welfare Economics* (Cambridge, Massachusetts, 1957), Ch. XI.

27. See Hollis B. Chenery and Paul G. Clark, *Interindustry Analysis* (New York: John Wiley and Sons, Inc., 1959), pp. 157-78.

28. Wassily Leontief, *The Structure of the American Economy, 1919-29* (rev. ed.; New York: Oxford University Press, 1951).

29. Raymond Goldsmith, *A Study of Saving in the U. S.* (Princeton, 1956), Vol. 3, Part 1.

30. Studenski, p. 352.

31. *Ibid.*, pp. 22-3; and Michael Kaser, "A Survey of the National Accounts of Eastern Europe," in *Income and Wealth*, Series IX, ed. Phyllis Deane (London: Bowes and Bowes, 1961), pp. 143-144.

32. *Measurement of National Income and the Construction of Social Accounts*, Report of the Subcommittee on National Income Statistics of the League of Nations Committee of Statistical Experts, United Nations (1947), p. 7.

33. Richard Stone, *Measurement in Economics*, p. 9.

34. The *General Theory* is sufficiently obscure in places to be quoted, like the Scriptures, for a variety of purposes. We claim its support for our attempt to bring investment into the center of accounting theory, as Keynes attempted to direct attention to the importance of investment in economic theory. The particular point at issue appears from a study of J. R. Hicks, "Mr. Keynes and the Classics," *Econometrica*, New Series, Vol. 5 (April, 1937), pp. 147-59; and Alvin Hansen, *A Guide to Keynes* (New York: McGraw-Hill, 1953), pp. 3-35.

35. Little; Graaff; William J. Baumol, *Welfare Economics and the Theory of the State* (London, 1952).

36. E. Fuerth attempted someting on these lines in "A Flow Chart for Social Accountants," *Accounting Research*, Vol. 4 (1953), pp. 214-238, but without sectorization; he did not bring out the dependence of income upon investment.

37. See *Measurement of National Income and the Construction of Social Accounts*, Chs. II-IV, and similar official publications.

38. See Oscar Morgenstern, *On the Accuracy of Economic Observations* (1st ed.; Princeton, 1950), Section IV.

39. *A System of National Accounts* (New York: United Nations, 1968), espec. Chs. II and III.

40. *Measurement of National Income and the Construction of Social Accounts*, p. 25.

41. R. W. Goldsmith and R. E. Lipsey, *Studies in the National Balance Sheet of the U. S.*, National Bureau of Economic Research (Princeton, 1963); and *Measuring the Nation's Wealth*, Vol. 29, Studies in Income and Wealth, National Bureau of Economic Research, Washington (1964).

CHAPTER VII

THE FRENCH ACCOUNTING EXPERIMENT

France presents us with a well-documented example of the use of accounting for economic development. As with any social experiment, it is impossible to associate cause and effect so as to support a conclusion that the French accounting experiment contributed to the economic recovery of that country after World War II; we can only point to the fact that there has been, and still is, a widely-held belief on the part of competent French officials that accounting does have a significant part to play in the economic development of the modern state.

In Chapter I we drew attention to the fact that the French economy had been devastated by war, and that its first postwar government, faced with the task of stimulating a rapid recovery to something like the prewar level of social output, decided on measures aimed at creating a strong accounting profession. It may be asked why, in a country versed in the arts, sciences and technology, whose people had made notable contributions to accounting theory and practice during the 19th century, it was necessary for government intervention for this purpose. The answer to this question is to be found in

the observation that, by the 1930s, accounting had become dominated by the law; not only was the French accountant engaged largely in satisfying the requirements of the country's company and tax laws, but his professional activities were as closely regulated as those of the other professions in France, and accounting was taught in law schools rather than in faculties of economics or business administration.

The civil servants to whom was entrusted the postwar reconstruction appear to have appreciated the need to use accountants for planning and control, rather than for the passive description of juridical observations. They introduced special legislation in order to create an organ of state which would be an alternative source of influence over the accounting profession. The aim of this agency was to foster the study of relationships between the firm and its environment, and between the various disciplines which contribute techniques to the management of investment and production, and which use accounts as an analytical method.

History and Organization

The French commercial code and the company laws of 1867 were the principal sources of accounting regulations prior to World War II. In 1945, the Ministry of Finances

and Economic Affairs set up a Committee for the Rationalization of Accounting, whose task was to propose a national uniform system of accounts and to make recommendations for its application and utilization for the benefit of the national economy. The first national chart of accounts, or *Plan comptable général*, appeared in 1947,[1] and in the same year the Committee was replaced by the *Conseil Supérieure de la Comptabilité*, charged with supervising the introduction of the *Plan*. In 1957 the name of this body was changed to *Conseil National de la Comptabilité*. The chart was to be applied in all state agencies of an industrial or commercial type, of which nationalization had created a good number, and in "mixed" enterprises, those firms in which both public and private interests participated. The chart was accompanied by a model balance sheet and profit and loss account, together with detailed instructions for the operation of the accounting system and the preparation of period financial statements.

The *Plan* of 1947 appeared at a time when *dirigisme*, or direction from above, was the dominant influence on French politics, and its authors envisaged the eventual compulsory application of the national chart of accounts to all public and private enterprises in France. A series of ministerial orders applied the chart, with modifications of detail in each case, to government agencies, public

enterprises and firms operating with state backing, or subject to state control. The last situation could arise through the acknowledged interest of a broad section of the population (e.g., the agricultural cooperatives), or because the firms in question had received substantial fiscal benefits through revaluation of assets. After ten years' experience with the chart it was found advisable to make its application voluntary in most of the private sector, and a revised version of the *Plan* was introduced by ministerial order dated May 11, 1957.[2] This is a volume of some 250 pages, including a detailed chart of accounts, supporting the summary chart we have reproduced in translation on p. 210, together with a series of model financial and statistical reports. It also contains the texts of the ministerial orders mentioned above, a manual of operating instructions, some definitions of technical terms, and a variety of ideas on financial and accounting problems. A second revision is in progress at the time of writing this study.

The *Conseil*, which is responsible for these initiatives, has been assigned the following goals:

1. Coordination and synthesis of theoretical and technical research in accounting, together with practical applications.

2. In cooperation with other interested parties:

FRENCH NATIONAL CHART OF ACCOUNTS

FINANCIAL ACCOUNTS								COST ACCOUNTS	SPECIAL ACCOUNTS
BALANCE SHEET ACCOUNTS					PROFIT AND LOSS ACCOUNTS		RESULTS ACCOUNTS	COST ACCOUNTS	
Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	Class 9	Class 0
Permanent Capital	Fixed Assets	Stocks	Personal Accounts	Liquid Accounts	Expenses by Type	Revenues by Type	Results	Costs	Special
10 Capital.	20 Formation expenses.	30 Goods.	40 Suppliers.	50 Loans payable (less than one year).	60 Purchases.	70 Sales of goods and finished products.	80 Trading account.	90 Reciprocal accounts.	00 Contingent liabilities, etc.
11 Reserves.		31 Raw materials.	41 Customers.		61 Personnel.		81 . . .	91 } Cost	
12 Profit and loss account balance.	21 Fixed assets.	32 Consumable supplies.	42 Personnel.	51 Loans receivable (less than one year).	62 Taxes.	71. Government subventions for operating expenses.	82 . . .	92 } centres, etc.	
13 . . .	22 . . .	33 Scrap and defective work.	43 State.	52 Bills and warrants payable.	63 Services and supplies.	72 Sales of scrap, etc.	83 . . .	93 Products, cost of sales.	
14 Government subventions for equipment.	23 Fixed assets in construction (or in course of acquisition).	34 Semi-finished goods.	44 Partners.	53 Bills and warrants receivable.	64 Transportation and travel.	73 Selling price reductions.	84 . . .	94 Permanent inventory	
15 Provisions.	24 Fixed assets destroyed by war.	35 Finished products.	45 Branches, subsidiaries, holding company or head office.	54 Cheques and coupons to be cashed.	65 . . .	74 Rebates, reductions and allowances received.	85 . . .	95 . . .	
16 Loans payable (more than one year).	25 Loans receivable (more than one year).	36 Work in progress.	46 Sundry debtors and creditors.	55 Stocks and shares, treasury bonds.	66 Miscellaneous.	75 . . .	86 Exchange of products and services without charge.	96 Standard cost variances.	
17 Branches, subsidiaries, etc.	26 Stocks and shares.	37 Packing materials.	47 Accruals – liabilities.	56 Banks and postal checking accounts.	67 Financial.	76 By-products.	87 Profit and loss account.	97 Differences between costs charged and actual.	
18 . . .	27 Guarantee deposits.	38 . . .	48 Accruals – assets.	57 Cash.	68 Depreciation and provisions.	77 Financial revenues.	88 Results in suspense.	98 Cost operating statements.	
19 . . .	28 . . .	39 . . .	49 Transitory accounts.	58 Imprest funds and other advances to be accounted for.	69 . . .	78 Products manufactured for own use; expenses applicable to other periods.	89 Balance Sheet.	99 Internal transfers.	
	29 . . .			59 Internal transfers.		79 . . .			

From *Plan Comptable Général* (1957) (our transl.) .

a. To centralize knowledge, initiate studies and disseminate information on the teaching of accounting in schools and colleges.

b. To advise on accounting regulations or recommendations before any promulgations by government agencies, public commissions, or committees controlled directly or indirectly by the State.

c. To propose any measures relating to the rational use of accounts by firms, or in the form of public budgets or social accounts.

3. Development and adaptation of the *Plan comptable général*.[3]

The interdisciplinary character of the *Conseil* has been purposely achieved in order to combine representatives from the law, economics, business administration, statistics, scientific management and the accounting profession for the attainment of these objectives. The president of the *Conseil* is a senior civil servant, and there are five vice-presidents representing, respectively, the Ministry, government accounting, the leading professional institute of accountants (*l'Ordre des experts comptables et comptables agréés*), business firms and higher education. In addition, the *Conseil* comprises representatives of those institutions which have accounting as their object (schools of accountancy, publishers of accounting and ancillary works, auditors of public enterprises, etc.), other accountancy societies, organizations of chief accountants and industrial engineers, trade unions and employers' associations, together with civil servants selected because of their accounting

experience and other persons chosen for their knowledge of the law, economics and finance.

The *Conseil* meets in plenary session to define its policies and to draw up its program. The detailed work is delegated to *Sections*, whose activities are coordinated by an administrative department under seven *rapporteurs* (discussants). The sections cover:

Section 1.	Documentation, public relations, dissemination of information. Studies relating to the professional education of accountants, and courses in schools and colleges. General problems arising out of the application of the *Plan*.
Section 2.	Principles and techniques of financial accounting. Rules for drawing up a balance sheet, profit and loss account and appropriation account, particularly in relation to public enterprises and "mixed" firms, where the procedures are complicated by legal considerations.
Section 3.	Managerial and cost accounting.
Section 4.	Agricultural accounting, including agricultural cooperatives.
Section 5.	Government accounting and accounting for government agencies.
Section 6.	Social accounting. Relations between business, government and social accounts.
Section 7.	Efficient accounting methods. Budgeting and business planning. Statistics for management. Accounting equipment.

The Period 1947-62

A decree of 1962 (No. 62-470) revised the conditions under which the application of the *Plan* was to proceed, and called for progress reports, the first of which was published in 1963.[4] The report noted that the *Plan* had been adopted by virtually all public enterprises (coal, electricity, gas, air and rail transportation, etc.) and by a large proportion of the "mixed" firms. While it was more difficult to draw firm conclusions concerning its application in the private sector, progress was satisfactory for a number of reasons:

1. Fiscal laws had favorized the *Plan's* adoption.
2. Teachers had taught the form and contents of the *Plan* to many who were now practicing accountants.
3. The intrinsic qualities of the *Plan* had recommended it to many firms as both practical and convenient.

The benefits which flowed from the adoption of the *Plan* were given as: an established terminology which eliminated ambiguities; precise and logical rules for classification and analysis; principles aiding the determination of values; a common language facilitating communication between the manager and the accountant. These benefits were largely restricted to the area of financial accounting, and experience had revealed the need for substantial research on an industry basis in order to establish norms in the area of cost accounting. This was

one of the reasons underlying the 1957 revision, which had replaced the obligatory cost accounting provisions of the 1947 *Plan* with more flexible rules which gave firms virtually complete freedom in this area.

The new *Plan* modified the previous one by suppressing all regulations which called for sanctions in the event of noncompliance, and replacing instructions by recommendations throughout. It also laid down the rule that all parts of the *Plan* dealing with bookkeeping methods and records were to be regarded as recommendations for financial accounting only; even those undertakings which were under statutory obligation to apply the chart were granted virtually complete freedom as to the form and content of their cost accounts.

This change in policy is all the more remarkable when it is recalled that one of the factors which led to the introduction of the original *Plan* was widespread tax evasion through the falsification of accounts. The explanation lies not only in the swing to the right which French politics experienced during this period, but also in the great measure of support which the first *Plan* received from commerce and industry, and its wide voluntary acceptance. For example, over 45,000 copies of the first *Plan* were sold to the public, and also large number of textbooks by individual writers which undertook its exposition.[5]

Nevertheless, it was acknowledged that:

> a minimum of accounting discipline may be imposed where businesses call for financial aid from the State, or tender for its business.[6]

It is also interesting to note the disappearance of the phrase "gross profit" from the model profit and loss account. The authors of the *Plan* stated:

> Many accounting practitioners will doubtless regret that the account does not reveal a gross profit. This point has been the subject of great argument. It has appeared that opinions differ seriously concerning the meaning of this expression, and that it would not be possible to use the gross profit as a basis for calculating 'break-even' points unless all so-called 'variable' expenses were deducted from sales, irrespective of their type or function (purchasing, production, distribution, administration).[7]

Progress Since 1962

A major result of the 1962 decree was the establishment of professional committees for industries, with the objective of producing uniform accounting systems compatible with the *Plan* for each industrial grouping. Such systems would, it was expected, lead to the adoption of charts of accounts which, while basically homogeneous with the *Plan*, could reflect the particular features of the industry concerned; at the same time, solutions adopted by one industry to problems experienced also by others would be analogous and consistent. Thus, for example, the definition of "purchases" in one industry should correspond with the definition of "sales" in the industry from which they are bought.

Guidelines were laid down for these committees by a special subcommittee of the *Conseil*, composed of the *rapporteurs des sections* and representatives of the employers' associations and government agencies involved, together with professional accountants. First priority was given to propositions concerning financial accounting, but in the light of the significance of the cost accounts for certain elements of the financial accounts, the study of cost accounting should be undertaken before the completion of work on financial accounting. For its studies of financial accounting, the professional committee should be constituted on the widest possible basis, because of the influence of size on the problems posed by this area. The study of cost accounting problems should be delegated to persons familiar with managerial uses of accounting information, and this work would be coordinated by the professional committee, and not by the *Conseil*. Finally, the taxonomic problem was resolved pragmatically: the optimum level in the pyramid of industrial structures should be the highest level at which uniform accounting could be achieved rapidly. All attempts to classify a priori were, therefore abandoned in advance, and replaced by a preliminary study of the possibilities of the situation, *vide* Mary Parker Follett.

An initiative tending to inform accountants and industrial organizations of the plans being laid was the circulation of a paper outlining the objectives of the *Conseil* and of the measures being taken to constitute professional committees. It was known that some work was already being done in a few industries at different levels, so that it was decided to establish contact with them as representative industries: metal-working, heavy electrical, textiles, chemicals. By July, 1963, the following classification had been adopted, and most of these industries had submitted adaptations of the *Plan* for approval by 1966 at the latest.

Power. (Coal, electricity, gas, atomic energy, certain domestic oil companies.) It was found advisable to set up separate professional committees for oil research and exploration (production of hydrocarbons) and for refining and distributing.

Building construction. It was found advisable to set up separate committees for public works and other building construction, the latter to pay particular attention to the needs of small firms of craftsmen. In the event, a joint *Plan* was adopted.

Building materials. Because of the complexity of this industry, no progress was reported through 1965.[8]

Metal-working. The close ties between the metallurgical, mechanical and electrical industries rendered the task of classification complicated.

a. Iron and steel—the committee's work was delayed by problems in valuing fixed assets.

b. Mechanical and metal-working—

1. First transformation of steel, and iron-founding.

2. Non-ferrous metals (except for bauxite, the bulk of these are imported).

3. Fabrication.

4. Automobiles and cycles.

5. Other mechanical and metal-working.

c. Electrical—heavy electrical and electronics.

Chemicals.

Textiles. A basic problem arose through the fact that the historic organization of the industry is on the basis of the materials used, whereas technology is now of prime importance. It would have been preferable to classify the industry into spinning, weaving, knitting and so on, but in the event it was decided to form two committees, one for those industries which start with the raw material, and one for those which transform the products of the first. These also produced a joint *Plan*.

Printing and graphic arts.

Wood-working.

Leather and furs. Separate *Plans* adopted for tanneries and for shoemakers.

Transportation. No initiatives were reported in respect of maritime transport, although two of the largest French firms had adopted the *Plan* in its original form; difficulties were experienced with inland water transportation, which was operated largely by the public sector. Road transportation was likewise difficult to organize.

Banks and insurance. These were already subject to legal regulations prescribing the form and content of their accounts, which antedated the first *Plan*, and it is ironic that the greatest obstacles in the way of the adoption of the *Plan* lay in the fields of credit and finance.

Food. The retail butchers were among the first to adapt the *Plan* for their use. Other branches were: wholesale grocery, perishable foodstuffs, multiple retail stores.

Adaptations were foreseen for the clothing, pharmaceutical, paper and boxmaking and furniture industries, and proposals were under consideration for agriculture, forestry, various branches of food manufacture, ship and aircraft manufacture, defense contractors, rubber goods, rental housing and apartments, hospitals, and a variety of other trades and industries.[9]

The Psychological and Technical Problems

Psychological Problems

Although in general favorable, reactions to the work of the *Conseil* have been unfavorably influenced by certain factors, notably fear of the way in which government might make use of information obtained as a result of the work of the professional committees. Fear of fiscal consequences is the most commonly expressed, in particular, of the possible outcome of a situation in which the tax laws and the prescriptions of the *Plan* conflict. For its part, the *Conseil* has expressed to the Minister the view that no fiscal regulation should affect either the terminology and rules of the *Plan*, or the normal methods of keeping accounts, and whatever the advantages of fiscal measures implying a divergence between the tax laws and accounting norms, these advantages should be obtained in the form of measures affecting assessment to tax and not in the form of modifications of the process of profit determination.

Representatives of those industries to which government is an important customer also experienced some

hesitancy in providing information which might be useful for the regulation of their markets, particularly when the committees proceeded to discuss cost accounting. They required to know in advance what rights the Ministry would acquire for investigating their cost accounts during the course of negotiations, in contract determination, and in post-audit. The *Conseil* was only able to assure the parties that its interventions were designed to facilitate the resolution of disputes which might arise from problems of accounting, a frequent occurrence in this area. It is obvious that the regulation of such markets would be greatly helped by uniform cost accounting, as recent developments in the U.S.A. bear witness,[10] but it is equally clear that, in order to pursue its objectives of improving the quality and flow of accounting information generally, the Ministry would seek to avoid conflict by relying on the findings of the professional committee. A difficulty might arise through a government agency laying down definitions and rules before the relevant adaptation of the *Plan* appeared, so that it would be advisable to promulgate such regulations as temporary guidelines pending the completion of the professional committee's work.

Another fear, more rarely expressed but frequently manifested in one form or another, was that the extension

of the *Plan* to all trades and industries would lead to a degree of uniformity rendering the *Plan* difficult to apply in particular firms (the "my firm is different" syndrome). The danger foreseen is that the inflexibility of a uniform system would impede the development of accounting as a managerial information system. The form which this fear might take was the attempt to set up a professional committee within an industry or branch, where no technical reason was apparent. Again, it might lead to the desire to remake the *Plan comptable général*, that is, to reopen issues concerning definitions, principles and choice between alternatives. Both of these manifestations of insecurity required tactful handling; the former in the professional committees themselves, and the latter by the *Conseil*, which was able to point to its efforts to collect the observations and suggestions made in these circumstances with a view to the periodic revision of the *Plan*.

The reticences displayed by members of the committees as a consequence of these fears were supplemented by others: the "wait and see" attitude; the disappointment of those who believed that the adaptation of the *Plan* was a simple technical problem, only to discover its concealed difficulties of definition and interpretation; the misunderstanding of the nature and potentialities of cost accounting in particular, and managerial accounting in general. It is

apparent from the two Reports cited that the French experiment did not benefit from any special advantages in the field of human relations, other than a willingness on the part of the officials concerned to face important psychological problems, and to overcome them.

Technical Problems

We have already drawn attention to two technical problems faced in this experiment: the identification of an industrial classification under which professional committees could be formed, and the ascertainment of those particular features of a trade or industry, whether of structure or of size, having effects upon the accounts themselves. In respect of the former, experience has confirmed the wisdom of the decision taken, and a considerable assistance was obtained from other government agencies engaged in regulation in carrying out the necessary research. Indeed, the reports of the *Conseil* emphasize the importance of this taxonomic function in arriving at the formation of committees which do not contain elements capable of obstructing the work of adapting the *Plan* because of their essential heterogeneity. It is noteworthy that although only a small number of industries were subject to this danger, the risk was regarded as too great to be taken.

The work of the committees revealed that in many cases the search for a solution of a recognized accounting

problem led to the discovery of other problems which had remained hidden, or incapable of clear statement. These problems may be divided into two classes: problems of general interest, and problems specific to the industry. Among the former, it is necessary to decide as and when they arise whether they require immediate solution, or whether a solution has to be deferred until the *Plan* can be reconsidered as a whole. Among the latter are many which present themselves in a similar fashion in other industries, so that the degree of specificness of the problem becomes an issue; the representatives of the *Conseil* have the task of seeing that exceptions remain exceptional.

One example of this situation may be cited. Technological change causes firms to acquire equipment and installations of a high degree of specialization, and a question sometimes arises concerning their conformity to one of the "fixed asset" classifications without qualification, i.e., under which of the headings of the *Plan* should they be included? In the case of oil production it was decided to open two new accounts specially defined for the particular case, viz:

213 Specialized installations.
217 Long distance pipelines.

Subsequently, analogous situations arose in other industries, which showed that the account for specialized installations could be used in a variety of adaptations

of the *Plan*; even the pipeline account proved useful for equipment which, while not identical, was sufficiently similar to be classified under this account number.

The existence of "free accounts," corresponding to matrix cells containing zeros, permits a considerable degree of variation within the *Plan*, and as long as these are not preempted by the *Plan comptable général* they can be used for purposes specific to the industry, even though other industries are using them in quite different sub-classifications within the main class. The use of these "free accounts" appears to be one of the points at which pressure on the *Conseil* builds up.

The existence of firms occupying more than one industrial classification, called "polyvalent," raises the problem of compatibility; there must be a high degree of uniformity between the *Plans* of the various industries even though the firm may opt to adopt any one of them. This situation concerns financial accounting rather than cost accounting, where the solution is facilitated if the activities in question are carried out in different establishments. Nevertheless, the financial accounting problem is acute where the same account has to be allocated to different purposes at the same time, and if the firm is big enough it may be necessary to consider it as a subject for a special secondary adaptation. Where the "polyvalences"

present a certain regularity, as in the case of mechanical and electrical engineering, or chemicals and pharmaceuticals, the solution can be worked out in advance, but not where there is a time-lag in the completion of the work of the relevant professional committees. In the oil industry, for example, the production committee completed its work while the refinery committee was still sitting; liaison was effected by having a representative of "refining" on the "production" committee, but the latter's choices must impose themselves to some extent on the former's deliberations. In view of this and the preceding problem, the *Conseil* sees additivity as restricted to the three-digit accounts, reducing to two digits for inventory and purchase accounts.

Accounting for research and development was considered at length by the oil production committee. While all such expenditures could have been charged to Account No. 22, the *Plan* laid down two restrictions: fictitious values in respect of research which is known to be abortive should not be shown as assets, and items previously treated as operating expenses should not subsequently be shown as sources of profit. The solution to this problem was originally envisaged in the form of a depreciation adjustment, which could amount to 100% of the amount capitalized, but opposition from accountants, based

on a suspicion of potential abuses on the part of both managers and the tax authorities, led to a reconsideration of this issue, which appears not to have arrived at a satisfactory conclusion.

No one will be surprised to learn that interest on capital presented another insoluble problem, particularly in the iron and steel industry, where this item assumes considerable importance. Should some of these costs be capitalized, either as fixed assets or as organization costs? and at what accounting cost, since the administrative work involved cannot be reduced to a simple formula? In spite of these apparent obstacles, we believe that the committees will eventually reach satisfactory solutions to these delicate problems of valuation, because the model with which they are working is fundamentally sound.

Conclusion

This brief description of the French accounting experiment shows the application of the accounting model of the firm to a wide range of commercial and industrial activities in a manner tending to the elimination of those elegant variations and unnecessary proliferations which confuse the analyst and arouse the teacher's ire. The similarity of the chart reproduced on p. 210 to our Figure 9 in Chapter V is apparent; the differences of detail suggest

a higher level of disagreement than the models in fact contain, and we prefer the chart in Figure 9 merely on grounds of convenience for presentation and explanation. We are thus confirmed in our view that Figure 9 represents an acceptable image of reality, and one on which a new theory of accounting can safely be constructed.

NOTES

1. Decree No. 47-2051 dated October 22, 1947. See Bernard M. Berry, "Uniform Accounting in France: Le Plan Comptable," London, *The Accountant*, Vol. 140 (February 26, 1949), pp. 157-61; and (March 5, 1949), pp. 176-80.

2. *Plan comptable général* (Paris: Imprimérie Nationale, 1957).

3. *Premier Rapport Sur l'Application Progressive du Plan Comptable Général* (Paris: Ministry of Finances and Economic Affairs, July 1, 1963).

4. *Ibid.*

5. Kenneth S. Most, "Uniform Accounting in France," London, *The Accountant* (November 23, 1957), pp. 594-6.

6. *Plan comptable général*, p. 9 (our transl.).

7. *Ibid.*, p. 13.

8. *Deuxième et Troisième Rapports Sur l'Application Progressive du Plan Comptable Général* (Paris: Ministry of Finances and Economic Affairs, December 31, 1965).

9. *Ibid.*

10. See *Feasibility of Applying Uniform Cost Accounting Standards to Negotiated Defense Contracts*, Comptroller General of the U. S., Government Accounting Office, Washington (January 19, 1970).

CHAPTER VIII

ACCOUNTING THEORY AND ECONOMIC DEVELOPMENT

In the first chapter of this work we started with a postulate that the behavior of individuals in a society may be studied in relation to both consumption and investment, which, being distinct modes of behavior, must be kept separate in any formal analysis. We are, therefore, postulating a conflict of needs underlying the problems of resource allocation, but of a somewhat different nature from the conventional economic classification into consumption and saving. The form of this classification is given by Marczewski as follows:[1]

1. Individual present needs = Consumption
2. Individual future needs = Private capital formation
3. Collective present needs = Current production of consumption goods
4. Collective future needs = Current production of investment goods

By elevating the discussion to a higher level of abstraction, we can treat the financial concept of private capital formation as personal saving, and arrive at a purely subjective classification of goods into *consumption*, and *investment*. *Production* refers to processes and not resource allocations. Marczewski's classification then

becomes: individual present and future needs (consumption and saving), and collective present and future needs (investment). The conflict between private and public consumption, saving, investment and production, is seen to be a second order question, to be resolved, in a free society at least, on issues of efficiency and economy.

In order to relate accounting theory to economic development, we shall assume a State in which the ideological conflict between private individual needs and public individual needs is replaced by the economic question of how shall given needs be satisfied at the lowest social cost, defined as sacrifice of resources. It is further assumed that, in order for needs to be placed in a hierarchy for purposes of decision, they can be quantified by means of a system of money valuation. It may be shocking to some if we suggest that human needs can be represented in money, but observation reveals that we do arrive at money values for a wide range of noncommercial situations—student bourses, accident compensation, artistic performances, charitable services—and that these valuations are no different in kind from any others, being subjective judgments made objective by interpersonal agreement. Were we to adopt any other method of establishing priorities, it could lay claim to no higher degree of acceptability than this.

Three liberating events which are nowhere celebrated, but which underlie the benefits enjoyed by free men everywhere, are, in order of occurrence:

1. The valuation of personal services, in the form of wages, whereby men were enabled to separate their work from their personalities, and thus escape from slavery.

2. The valuation of ability to perform contracts, in the form of credit, whereby able men were placed in possession of resources to which their birth and position gave them no rights.

3. The valuation of impersonal services, in the form of depreciation and amortization generally, which extended the scope of money valuations to virtually all problems concerning the allocation of scarce resources.

In the year 2,000 A.D., when money as a means of payment will have lost its significance, and when property rights as the 19th century knew them will have virtually disappeared, the twin functions of accounting will finally assume their full importance: the attest function, which has been described as "telling managers what they already know," and rendering valuations objective for the benefit of third parties, which comes under the general heading of financial reporting. In order to see why this should be so, we shall review our theoretical formulations.

A New Theory of Accounting

We have based our new theory of accounting on the observation that men use accounts for purposes of prediction,

planning and control. We have, therefore, directed attention away from the conventional list of assumptions required by accounting theorists—profit maximization, income determination, double-entry bookkeeping, the going concern, the entity, attaching and matching—and toward the account, use of which distinguishes accounting from all other forms of planning and control.

The account displays the following characteristics:

1. It is in two parts, one for in-flows, one for out-flows.
2. It is a complex of form and content.
3. It contains observations concerning value and time, expressed in a given language and manipulated with the aid of arithmetical techniques.

It follows from this that the concept of a "stock" account is redundant; all accounts deal with flows in the sense of changes between one point in time and another. The balance sheet, which is an account for the business at a particular point in time, simply abstracts from time, since a point has no dimension, but it does not thereby convert flows into something else, or arrest the process of change which accounts are designed to represent. To attempt to construct separate models for stock variables and flow variables is another of the logical errors to which we have drawn attention in this work.

The purely technical features of the account, including the way in which a multitude of accounts can be

manipulated as a system, are generally understood; they have been converted into algebra by Ijiri, Mattessich, Cooper and others, and into vectorial notation by Mattessich. The results are clumsy, and there are, in fact, no mathematical processes which can accomplish what accounts can do, namely, quantify *and date* movements of values; the best that mathematics can do is to make drastic simplifying assumptions, such as, that everything happens at the end of the month, or that events take place with some form of regularity.

The obscure feature of the account, and the one which underlies the criticisms of accounting summarized by Mattessich,[2] is valuation. We have emphasized the subjectivity of valuation, which permits "historical costs" to become "opportunity costs" if the interested parties so agree, and which converts "arbitrary" allocations into "allocations, the reason for which I fail to understand." We have also indicated that the valuations usable in accounts are restricted only by human imagination and ability to agree, so that the criticisms of accounting as too narrow, or lacking in behavioral functions, can be dismissed as criticism of accountants.

Before drawing our conclusions on the subject of valuation and the additivity of values, we wish to point to the implications of the accounting theory outlined above for the teaching of accounting, and for accounting textbooks

in particular. The acceptance of our emphasis on planning rather than control will lead to the preparation of textbooks in which budgeting precedes financial and cost accounting for transactions, rather than the other way round, as is now invariably the case.[3] The abandonment of unnecessary assumptions, and the acceptance of the subjectivity of valuation, must effect a radical change in the contents of these texts, to appreciate the enormity of which it suffices to state that they will omit such timeworn propositions as: that revenues are receipts from sales; that costs are money payments; that liabilities are amounts owed; that assets are things owned having value to the owner; that costs attach; that costs are to be matched with revenues; that profit is business income; that cash flows.

Value and Additivity

The contents of this study suggest strongly that economists and accountants may have been mistaken when they assumed that their subjects were akin to those physical sciences in which mathematical logic has been used with such striking success. It is more probable, we think, that accounting can be compared with ecology in that it depicts a complex of relationships between man and his environment, any one of which may, at a particular moment in time, assume a critical importance for the achievement of his goals. Ecology is unlikely to produce the spectacular discoveries

which other departments of science have accustomed us to expect, yet it is indispensable to man's survival. Accounting appears pedestrian to some, but it may likewise be indispensable to the formal acts of planning and control which modern industrial man has found it increasingly useful to undertake.

The difference between the two approaches to science is best revealed by the contrast between measurement and valuation which was brought out in Chapter V, where we identified the subjectivity of value as a critical element in accounting methodology. Values are made objective by interpersonal agreement, of which the formation of prices in markets is simply a special case. The subjectivity of value has long been recognized in security markets:

> There is no such thing as a final answer to security values. A dozen experts will arrive at 12 different conclusions. It often happens that a few moments later each would alter his verdict if given a chance to reconsider because of a changed condition. Market values are fixed only in part by balance sheets and income statements; much more by the hopes and fears of humanity; by greed, ambition, acts of God, invention, financial stress and strain, weather, discovery, fashion and numberless other causes impossible to be listed without omission.[4]

The adoption of accounting methodology for planning and control, which this feature of valuation makes possible, depends for its usefulness on the systematic representation of real processes whereby needs can be satisfied, and in Chapter V we presented a model within which investment and the processes of production can be analyzed, both in the

private and public sectors. In Chapter VI we attempted to show how this model can be extended to social accounting, so that the system can be related to the consumption needs of a society as well as its investment and production processes. It appears to us that there is a definite limit to the use of accounting methodology in the area of consumption, and that logical and procedural problems, which are not capable of being solved in the present state of human knowledge, must arise if the attempt is made to extend the use of accounts in this area beyond the conceptual boundaries of acquisition and disposal.

In the Soviet system of social accounting, which reflects a policy of giving priority to the collective over the individual on purely ideological grounds, the basic materials of the planner are data on physical resources, divided into labor, materials and productive capacity. The relation between disposable and allocated resources uses techno-economic coefficients, recalling Leontief's a_{ik} coefficients; the latter, however, are simply static interindustry deliveries as parts of total output, both at constant prices. The differences between the Soviet *balances de ressources en nature* and Leontief's inputs and outputs are as follows:[5]

1. The former relate to a single, well-defined, factor or product, in the form:

Opening balance + current production + imports
= disposable

and

Investment + consumption + exports + reserve
= allocation.

Leontief is concerned principally with outputs, although these become the inputs of succeeding industries and sectors.

2. They are measured in physical units, where Leontief uses money measures.

3. They are prepared for three successive years (past, current and next).

4. Labor resources include all those of work age, including students, who are allocated to educational institutions.

5. The Soviet *balances* are analyzed by regions and not simply by industries and sectors.

We do not envisage the adaptation of the Soviet system to the planning requirements of a free society, not only because we regard planning in this sense as incompatible with the freedom of the individual, but also because we have serious doubts whether values can, in fact, be broken down into quantities and prices, the two elements being inseparable in the majority of valuation situations.[5]

This leads us to a consideration of the additivity of valuations. Many accounting theorists and practitioners have criticized financial statements inter alia on the grounds that they contain measurements of different qualities ("direct" and "indirect" valuations, for example) or in dollars of different epochs, representing different

purchasing power equivalents. These critics assume that the additivity of accounting data would be improved by the adoption of a homogeneous class of valuation models,[7] or by price level adjustments using indices. Morgenstern, on the other hand, has suggested that a balance sheet (by which he presumably means a complex of financial statements based upon balance sheet concepts) is a cell containing a "single hard core or kernel of accurate figures to which the ordinary ideas of errors apply, surrounded by successive layers of figures gradually farther and farther away in character from the core because of the manner in which they are conceived, although in outward monetary appearance indistinguishable in their presentation, even down to the last decimals. An aggregation from several balance sheets is, therefore, the summation of such information: only the arithmetic *sums of the kernels* can have a claim to 'accuracy' to which the customary notions of error can be applied."[8] He thus saw a serious statistical problem in the development of a theory capable of handling such data, and in a subsequent edition of the same work, on the basis of an assumption that current cash realization equivalents are the measurement to be approximated, he proposed a probabilistic structure of assets in which mathematically expected values can be stated together with standard error measurements.[9]

Since we see the accounting use of money as a measurement of value and a unit of account, and not in the first place as a means of payment or an asset, we can see little usefulness in financial statements prepared on the basis of current cash equivalents, except in the case of a business or a part of a business for which liquidation is imminent. We regard accounts as *sets and subsets of values*, so that the possibility of performing mathematical operations other than simple aggregation is a function of the homogeneity of the observed realities underlying the values which an account or accounts contain.[10] The degree of homogeneity which permits simple aggregation is dependent on interpersonal agreement to that end, and cannot be rendered objective in any other perceptual sense. An account for land and buildings, for example, may aggregate valuations of real properties in different locations, subject to different legal restrictions, and available for different economic uses; their expression in homogeneous physical quantities (square or cubic feet, quantities of brick, timber or concrete, or quantifiable descriptions of operating machinery) does not permit us to assume that their values are additive. One man may aggregate these values for his purposes without let or hindrance; a group of interested individuals may add some and exclude others, or simply fail to agree on any additivity whatsoever.[11]

We are in substantial agreement with Shackle on this point, who rejects the applicability of probability theory to investment valuations.[12] In his view, the formal theory of investment in economics involves an assumption of certainty, so that there is no risk of a non-receipt, or, at worst, a measurable risk which we may call "certainty equivalence." The nature of investment decisions is to deal with a range within which there is "complete and unqualified indeterminancy"; if the expected earnings of a piece of equipment constitutes a range of equal possibilities, with nc probability assignment possible, then an individual will choose the largest estimate as a working hypothesis, because this is most attractive to him. We would simply add to this that a group of individuals who wish to reach agreement on value for the purpose of an investment decision in which they are all interested may choose a value below the largest estimate, which will be the highest to which they can all, in good conscience, agree.

The Importance of Accounting in National Planning

The modern state which seeks economic development experiences a dilemma from which there appears, at first sight, no escape. Forced to compete at one and the same time with the most advanced nations in its industrial markets, and with the most backward or underpopulated with

its agricultural products, its leaders may conclude that only by keeping industrial wages low and by collectivizing agriculture can the country produce at a cost which will permit exports to finance the necessary imports of plant, machinery and raw materials. The key to this policy, however, which is the restriction of personal consumption through keeping down disposable incomes, is constantly under pressure from another aspect of modern international relations, the rapid flow of ideas. Radio, television, films, books, magazines and personal contacts stimulate the tastes and appetites of the poorest and least energetic of the world's populations as well as those of the wealthy and thrusting. The people desire costly distractions, consumer durables, fashion garments, exotic foods; either the drive to higher wages and imports of noninvestment goods frustrates the development policy, or else the country collapses into a totalitarianism from which, as far as we know, there may be no return.

There is, however, one solution which may offer some hope to those developing countries which have not yet surrendered to the tyranny of the corporate state. The industrial and agricultural nations with which they must compete are frequently inefficient in their methods; great wealth leads them to overinvestment or uneconomical production; or the large scale of their productive apparatus renders them inflexible and insensitive to changes in demand;

or a preoccupation with considerations of prestige and vainglory causes them to squander their resources in search of "the bubble reputation." The developing state, aware of these possibilities, will seek to foster its competitive advantages by specialization in those areas where flexibility is at a premium, and by eliminating waste in both private enterprises and government agencies.

If, as we have suggested, accounting is a planning and control methodology, then it is reasonable to see in the attention which some developing countries have paid to founding or strengthening their accounting professions, a recognition of this fact.[13] The need to value, which lies at the base of all investment decisions, including current decisions relating to ongoing production, leads to the choice of a planning model in which values are explicit variables; the time constraint which is imposed by changing consumer expectations leads to the choice of accounts, which make time an explicit variable. As long as the model is used scientifically, with the correspondance between the abstraction and its underlying reality continually verified, it can be a useful tool for economizing in the wider sense of the word, that is, for minimizing the input requirements for any given output.

In those developed or industrialized nations where investment is delegated, by conscious political choice, to the level of society at which cost and benefit can be most

clearly perceived, we can see many useful purposes being served by a social accounting which proceeds from the identification of the plans of the various sectors, industries and branches of the population. The presentation of these plans as a consolidation of accounts permits the establishment of divergencies between aims and achievements in terms of society as a whole, and allows the regulatory agencies of government to intervene rationally and consistently in order to remove those obstacles which stand in the way of the fulfillment of individual economic goals. Even the consolidation of "historical" accounts divorced from a comparison with "planned" accounts can yield results, in the form of questions, the answers to which may aid in the resolution of social conflicts, and information which individual planners can rely upon as points of departure for their personal projections and decisions. We do not believe, however, that the full potentiality of even this restricted aspect of social accounting is capable of achievement with the models in use at the present time.

Conclusion

In conclusion, we may restate the preoccupations which have rendered necessary this new approach to accounting theory in order to determine the relevance of accounting to the economic development of the modern state.

Economic activities of production and distribution are no longer characterized by regular exchanges in markets. Many of them require long periods of time to elapse between inputs and outputs, frequently several years and in some cases much longer. Many of them by-pass markets entirely for long periods of time, as for example, the integrated production and marketing operations of the international oil corporations; the production and distribution operations of public institutions transact only on input markets, and obtain many of their inputs from nonmarket sources. Some huge defense contracts are negotiated under conditions which make reference to markets meaningless. The tendency for economic activities to be concentrated in large public and private production units, with clearly separated financiers and managers and well-defined hierarchies within each of these categories, renders psychological assumptions applicable to tenant-farmers or town locksmiths of dubious relevance.

"Between the inhumanity of the marginalists and the inhumanity of the marxists, is it impossible to construct an economic science truly that of man?" asked Marchal.[14] He thought so; we would gladly prove him wrong, and to that end this study is humbly dedicated.

NOTES

1. J. Marczewski, *Planification et Croissance Economique des Démocraties Populaires*, Vol. II (Paris: Presses Universitaires de France, 1956), p. 424.

2. *Supra*, Ch. II.

3. R. N. Anthony, in *Management Accounting* (Homewood: Richard D. Irwin, Inc., 1956), has acknowledged the logic of this position, on p. 2.

4. Gerald Loeb, *The Battle for Investment Survival*, quoted by 'Adam Smith,' *The Money Game* (New York: Dell Publishing Co., Inc., 1967), p. 22.

5. Marczewski, II, p. 450. The problem is demonstrated mathematically by him on pp. 453-67.

6. Robert R. Sterling, in "Elements of Pure Accounting Theory," *The Accounting Review*, Vol. 42 (January, 1967), pp. 62-73, suggests that "historical cost" accounting can be explained on the grounds that quantities and prices are separable phenomena.

7. E.g., Edgar O. Edwards and Philip W. Bell, *The Theory and Measurement of Business Income* (California, 1961).

8. Oscar Morgenstern, *On the Accuracy of Economic Observations* (1st ed.; Princeton, 1950), p. 31.

9. *Ibid.* (2d ed.; 1963), pp. 76-79.

10. G. E. M. de St. Croix provides evidence that Greek accountants regarded the values they recorded as sets, e.g., the building accounts of the Parthenon, 434-433 B.C., which contain observations in different currencies. See "Greek and Roman Accounting," in *Studies in the History of Accounting*, ed. A. C. Littleton and B. S. Yamey (Homewood: Richard D. Irwin, Inc., 1956) at pp. 23-4.

11. The published consolidated financial statements of General Motors, Inc., for example, do not add together the real properties of the manufacturing corporation and its divisions with the real properties of General Motors Acceptance Corporation, although the latter is a wholly-owned subsidiary of the former.

12. G. L. S. Shackle, "The Nature of the Inducement to Invest," London, *The Revue of Economic Studies*, Vol. VIII, No. 1 (October, 1940), pp. 44-8.

13. "Relations between an underdeveloped country and the rest of the world are not generally favorable to spontaneous industrialization." Marczewski, II, p. 435 (our transl.).

14. J. Marchal, *Cours d'Economie Politique* (Paris: Librairie des Medicis, 1952), p. xi (our transl.).

APPENDIX

Werner Sombart. *Der Moderne Kapitalismus*. 3d ed. Munich and Leipzig: Duncker and Humblot, 1919, Vol. II, 1st half. Chapter X, "The Birth of the Capitalist Enterprise," pp. 110-36

Translated by Kenneth S. Most

III. *The Business as Accounting Entity: The ratio (account)*

1. *The historical development of accounting.*—The introduction of accounting was of the greatest significance for the full development of the capitalistic enterprise.

We know that the artisanal organization of medieval trade (and anything like bookkeeping was unthinkable for other branches of business life) found its expression in an incomplete and highly personalized bookkeeping. The sparse and confused collection of notes which characterizes the German trade books of the 14th and 15th centuries had, as sole object, to recall to the memory of the business manager particular events and conditions in his business. The books were memoranda in the most primitive sense of the word.

The public household was the place where an organized or "objective" bookkeeping, comprehensible to third parties took root.

Naturally, the *Italian* city communities took the first steps. From the 13th century on, perhaps even earlier, orderly business management starts to appear. Inventories of movable and real property are taken, the *tavole delle possessioni* in Florence, in two copies; special officials (*notai*) are appointed to provide annual reports on the public debt (Milan, Pisa, Florence). Strict supervision of communal receipts and payments is intrcduced. In 1225 the Milanese *Podesta* orders a monthly check on the government cash and requires officials to submit monthly accounts. All statutes contain bookkeeping regulations: the *Breve pisano* of 1286, for example, requires two separate books, one for receipts and one for payments; in Venice monthly audits and surprise cash checks shall take place. Balance sheets were constructed for the Italian states in the 14th century: we have them for Florence from the years 1336-38, for Treviso from 1341, for Rome from 1368, for Milan from 1463

An earlier accounting regulation was forced upon the papal household, thanks to its extraordinarily high receipts, and also on the French and English royal households.

In the private profit sector the bankers were probably the first to keep accounts systematically, because of special features of their business. The laws of cities such as Pavia, Piacenza, and Novara, indicate the exactitude of their accounts. In the 14th century, city administrations were told to keep their books in the manner customary in banking circles. What was that? and how did bookkeeping grow into a highly organized system?

The history of accounting must begin with the sentence: in the beginning was the account: the *ratio*. We rightly refer to the study of bookkeeping, even today, as accounting, and both the French and Italian languages use this word: accounting, to designate the whole subject of bookkeeping: *comptabilité*, *ragioneria*. What is true of the entire system is true to an even greater extent of its beginnings; accounting grew by means of constructions using accounts; by putting them into accounts, the writer of an unanalyzed and personalized collection of notes broke them into two parts and built them into a firm sequence of thoughts, on which all subsequent accounting could be based.

We can accept on the basis of the evidence available to us that accounting constructions were developed in 13th century Italy, and that, in France in the 14th century, real accounts were to be found side by side with personal accounts, which originally existed on their own. [Evidence cited.]

The second step in the development of accounting was double-entry: the German *Doppik* or the French *loi digraphique*, whereby every item is recorded on opposite sides of two accounts, so that one account is debited with the same amount with which the other is credited, on which double-entry bookkeeping, *la partita doppia*, *la comptabilité a parties doubles* is based. Through double-entry bookkeeping, the entire accounts of a business are tied together, as a bundle of sticks with string.

The time when this step was attained appears to have been the second half of the 14th century. The city administration of Genoa was already keeping its books of account on the double-entry basis in the year 1340, and according

to H. Sieveking, the old account books of Soranzo, which fall within the 14th century, were kept on the double-entry basis. It is well known that double-entry bookkeeping was later known as the "Venetian style," and we can deduce from this that it first saw its construction (or use?) in Venice.

However double-entry, the *loi diagraphique*, characterizes accounting, the use of this principle does not suffice to complete the system. True, the essential nature of double-entry bookkeeping, which undoubtedly consists in following the complete circular flow of capital through a business and measuring and recording it, is not apparent until the system of accounts is complete. We know that this is not the case until, side by side with the other accounts, a profit and loss account and a capital account enter the picture, to which the balances of the other accounts are carried; without this, the accounts remain disconnected. The circular flow of capital which double-entry bookkeeping is designed to embrace can only be shown in full when these accounts are put in place: from the capital account to the transaction accounts through the profit and loss account and back into the capital account.

Historically, this completion of double-entry accounting took place in two steps: the first led to the introduction of the profit and loss account; the second, finally, to the creation of a capital account. The Soranzo's new ledger, which belongs to the 15th century, has a profit and loss account but no capital account; the account book kept by Andrea Barbarigo in 1430/40 has a capital account at the end.

Here, not only are the goods accounts regularly closed to the profit and loss account, as in the Soranzo's new ledger, but the profit and loss account is also formally closed out to the capital account: the accounts of 1430 and 1432 feed the account of 1434. The balance of this account is credited to the capital account "Andrea Barbarigo."

In the beginning of the 15th century, then, came the first scientific system of double-entry bookkeeping, in the theoretical framework of which all subsequent practical achievements were to be fully accommodated. The system of Fra Luca (Pacioli) published in 1494, which has kept its fame in spite of all researches into the history of accounting, earned for him the title of first bookkeeping theorist, *il primo autore di ragioneria*.

[Bibliographical note, in which Sombart points out that Pacioli's double-entry did not grow out of single-entry bookkeeping, the latter being a crippled version of the former, and of later date.]

Even though the system of double-entry bookkeeping was virtually complete in Pacioli's version, it was far from being the highly-developed and organized system we know today. One shortcoming, visible in Pacioli and in the 16th century writers, was overcome simply through practice: the process of balancing the books; only by means of this process can the latent interrelationship of the individual accounts be made manifest. Pacioli does not mention balancing or annual closing. Simon Stevin (1608) was the first to require that the books be closed annually, besides at the merchant's death and when the business was liquidated. Even with this, however, a real problem remained.

This real problem, it is known, is that the profit or loss calculated from the balances of the other accounts is fictitious and not true, because two conditions have been disregarded which materially affect the size of the actual profit or loss: 1. the fact that during the accounting period, part of the overheads cannot be exactly determined; 2. the fact that, from the moment of their entry into the business, values may (and in most cases do) diminish. If profit or loss is to be accurately determined, then all values must be reported as at the moment of balancing, and this is the purpose of the inventory. "Thus, the final trial balance is dependent upon an operation external to the bookkeeping system, namely, the inventory."

If the bookkeeping theorists of the 17th century called for the books to be closed annually, and a yearly balance sheet, it was for essentially bookkeeping purposes; as in the case of de la Porte, it was a purely mechanistic function or, as Schär correctly states, "an accounting trick, an equivalence of identities." When was the need for an inventory recognized? It was long thought that the idea of a closing inventory appeared about the end of the 17th century—at the same time—otherwise the French *Ordonnance* of 1673 could not have made such an inventory a legal obligation.

Article VIII of Title III of the Ordonnance lays down, in fact: *Seront aussi tenus tous les Marchands de faire dans même delai de six mois, inventaire sous leur seing de tous leurs effets mobiliers et immobiliers, et de leurs dettes actives et passives, le quel sera recollé et renouvellé de deux ans en deux ans.*

It is tempting to ascribe this idea to the two Savarys, who were known to have fathered the 1673 *Ordonnance de Commerce*, and who provide a very detailed commentary on this regulation in their scientific works, *Le parfait negociant* and *Dictionnaire de commerce*.

On closer examination, however, it appears that the view that the two Savarys, in their works or through the provisions of the 1673 law, saw the closing inventory as a complement of double-entry bookkeeping, is false. The inventory which they called for and for which an exact valuation was required, applied only to retailers, who did not keep double-entry books and for whom this inventory was designed to act as a substitute. The usage of the time restricted the word "marchands" to retailers, and the Savarys always refer expressly in their works to "marchands en detail." Businesses which kept double-entry books retained the purely accounting balancing operation: the opening balance sheet, when the books were closed, at the end of the year, was buried by the new balance sheet: it took the place of the inventory: *quand un marchand ou negociant tient ses livres en parties doubles, le bilan d'entreé lui sert d'Inventaire, qu'il porte au commencement du nouveau Journal et du nouveau grand livre*. (J. Savary, *Dictionnaire de Commerce*, 2, 438.)

Nor do we find in the 18th century a requirement to ascertain values by taking an inventory. Not even Büsch requires an inventory but leaves goods in the balance sheet at their purchase prices. G. H. Buse (1804) compares the quantities in inventory with the differences between purchases and sales, but uses purchase prices only.

Can it be true that the age of early capitalism ended without establishing the idea of a non-accounting inventory as a necessary element in the complete system of double-entry bookkeeping? The question will have to be answered by research specifically directed to that end. We are content here to have established that the system of double-entry bookkeeping was fully developed during the early capitalist period. Let us see what basic significance this new form of business organization had for the creation and expansion of the capitalistic enterprise.

2. *The Significance of Accounting in the Development of Capitalism.*—Order increases our strength, not least in economic affairs. "Order and clarity increase the desire to save and to acquire wealth. A person who manages his affairs badly feels well in the dark; he does not want to

add together the bills he owes. The good manager finds nothing more pleasant than to check the totals of his growing wealth daily. Not even an unfortunate accident frightens him, for he knows immediately the advantages which he can place on the other side." This generalization is applicable to all economic conditions; to the farmer as well as to the craftsman, to the capitalistic enterprise as well as to the housewife. The conviction that order strengthens the economic mind leads to the vivid realization that the very special organization of businesses through accounting is inherent in the development of capitalism. It is hard to imagine capitalism without double-entry bookkeeping: they belong together like form and content. And we may well question whether capitalism found in double-entry bookkeeping a tool with which to apply its forces, or whether the spirit of double-entry bookkeeping first gave birth to capitalism.

Double-entry bookkeeping! No textbook of this science or art can fail to quote the proud words (not Goethe's, however) of Wilhelm Meister's brother-in-law: "It is one of the most beautiful discoveries of the human spirit and every good housekeeper should introduce it into his economy." I believe that one can truly understand this observation of Werner the businessman only if one does not read the second phrase: "Every private household would do well to use double-entry bookkeeping," but rather understands him to explain double-entry bookkeeping as one of the most grandiose and consequential inventions—rather creations—of the human spirit. If its significance is to be correctly understood, it must be compared with the "knowledge" which scientists have built up since the 16th century, concerning relationships in the physical world. Double-entry bookkeeping came from the same spirit which produced the systems of Galileo and Newton, and the subject matter of modern physics and chemistry.

By the same means it organizes perceptions into a system, and one can characterize it as the first cosmos constructed on the basis of mechanistic thought. Double-entry bookkeeping captures for us the cosmos of an economic, more precisely, a capitalistic world by the same means that later the great natural scientists used to construct the solar system and the corpuscles of the blood (or captures us, which means the same thing). Double-entry bookkeeping is based on the methodological principle that all perceptions will be manipulated only as quantities, the basic principle of quantification which has delivered up to us

all the wonders of nature, and which appeared here for the first time in human history in all its clarity. Without too much difficulty, we can recognize in double-entry bookkeeping the ideas of gravitation, of the circulation of the blood, of the conservation of energy and others which the physical sciences have discovered. And even—I would say—on a purely aesthetic plane we cannot regard double-entry bookkeeping without wonder and astonishment, as being one of the most artistic representations of the fantastic spiritual richness of European man.

More important to us here is to measure the influence which the new system had on the course of European economic life. I would like to put this thought into the foreground: that because of double-entry bookkeeping, conditions were created which permitted the essential ideas of the capitalistic economic system to be fully developed: the creation of wealth and the idea of economic rationality.

The idea of creation of wealth is developed in double-entry bookkeeping to the point where the "wealth producing sum," that is, the amount invested for the purpose of obtaining profits, is separated from all natural objectives of human welfare. In double-entry bookkeeping there is only one objective: the increase of a sum of money, expressed in purely quantitative terms. He who buries himself in double-entry bookkeeping forgets all quantities of goods and work, forgets all the organic limitations of the necessity to satisfy human wants, and satisfies himself solely with the idea of wealth: he cannot do otherwise if he is to understand this system: he may not see shoes or ships, corn or cotton, but only sums of money which grow bigger or smaller.

[Quotation from Seidler.]

This manner of looking at things first led to the concept of capital. One can thus say, that prior to double-entry bookkeeping there was no such category as "capital," and that without it, capital would not exist. We can in fact define capital as the property of wealth which a double-entry bookkeeping system embraces.

In close connection to this lies another thought: that it led to the first full rationalization of economic life, insofar as one of the external signs of this rationalization is the tendency to make people accountable for

all stages of the economic process. Here we see the close relationship between the overriding wealth-creating principle and rationality; both dissolve the economic world into figures, one to state its objective as the increase of wealth, the other to aid in its achievement. How very much accountability is affected by double-entry bookkeeping is obvious: the latter recognizes no economic processes outside the books of account: *quod non est in libris, non est in mundo*: to get onto the books, a thing must be capable of expression in terms of money. But money is represented by figures, so that every economic process must correspond with a figure; production and consumption become calculation. In accordance with this viewpoint, auxiliary expressions, are created. Thus we see the class of concepts known as "exchange value" take shape, which are handled extensively only within the framework of an accounting system.

But rationalization of the economy is aided toward the other two directions in which, as we have already seen, it seeks to operate: double-entry bookkeeping serves also the purposes and plans of management.

It has been correctly pointed out that it provides the first full insight into the shortcomings which may affect an economic organization, so that it is also a condition precedent for a progressive, systematic improvement of the operations of a business. Through the separate treatment of the individual departments of an undertaking, every single element of success or fortune can be shown in the various accounts. It has also been correctly remarked that the far-reaching planning activities of the undertaking are also assured by its bookkeeping. *"L'importance de la Comtabilité consiste non seulement dans l'etude de l'activité écouleé d'une entreprise, mais encore dans les indications qu'elle fournit pour la direction future. D'après l'observation et l'étude des causes et consequences des évènements accomplis, elle donne la possibilité de préjuger l'activité future et de trouver des bases sures pour raisonner les actions a venir."* (L. Gomberg, *La science de la comptabilité et son système scientifique*, 1901), p. 36).

In pursuing its objectives, it creates the conceptual framework, or helps to create it, with the aid of which we are accustomed to grasp the nature of a capitalistic economy: the classes of fixed and circulating capital, costs of production and other concepts arise from the use of the basic ideas of double-entry bookkeeping, and without them

would probably not have arisen, or would be much less clear; the scientific equipment of micro- and macro-economics, insofar as they relate to capitalist economies, has (often unconsciously) been taken over, in great part, from the storehouse of double-entry bookkeeping.

As double entry bookkeeping first created the concept of capital, so it simultaneously created the concept of the capitalistic enterprise as that economic organization, that institution, whose object is the evaluation of a particular capital. Indeed, here at the birth of the capitalistic enterprise, the creative cooperation of double-entry bookkeeping appears most obvious. We have established that the essence of the capitalistic enterprise as an assemblage of property must be seen to lie in the separation of the business from its owners. The bookkeeping system substantially aids this separation of the business.

It operates this separation in two respects; by liberating the accounts and with them the management of the business from the person of the businessman, and by ordering them in accordance with purely material considerations. The preparation of the accounts becomes objective and mechanized. Objective because the procedure is generalized and made independent of the accidental characteristics of the businessman's person; made representative, customary, so that wherever it may be used, it is comprehensible to all. In the trade books of the Middle Ages only the proprietor of the business could (and should) find his way; every qualified person can understand a systematically kept set of books. For this reason, the founders of double-entry bookkeeping laid down the principles of clarity and comprehensibility. Thus, Luca Pacioli in Chapter 12: "Close each journal entry by drawing a line from the end of the last word of the explanation of the entry to the figures obtained. You will do the same in the Memorandum, drawing a single diagonal line through each entry in this manner, "/," showing that the item has been entered in the Journal. Should you not wish to draw this line through the entry, mark through the first letter at the beginning of the entry, or the last letter at the end. In any event, use some sign by which you understand that the item has been transferred to the Journal.

"Although you may use various expressions and signs, you must nevertheless attempt tc use those common

to other businessmen, so that you will not appear deficient in the usual business customs."

[From the translation by R. Gene Brown and Kenneth S. Johnston, New York, McGraw-Hill Book Co., Inc. (1963).]

Moreover, by means of double-entry bookkeeping, accounting is not only made objective, it is mechanized. Once begun, accounting can be carried on in a particular direction. Schär characterises this feature of double-entry bookkeeping well, saying that it converts accounting into an "automatic system." (*Zwangsläufiges System*).

As business management ceased in this way to be a highly personal affair, in the place of personal management we find the substitution of impersonal management; the business replaces the entrepreneur as an independent entity, moved by its own internal laws. Further, it does so in two senses: in that the business, represented by its capital, appears as an entity, through its incorporation in the accounting system; and in that the person of the entrepreneur is shown clearly to be separate from the entity "the business," and appears more as its creditor than as its owner.

The separation of the business by means of its accounts is the essential contribution of double-entry bookkeeping, and is often stated to be so. Particularly happy is Gomberg's phrasing, which I again use: *En organisant la comptabilité d'une entreprise quelconque, on ne poursuit pas le but de déterminer le revenu de son propriétaire, du capitaliste lui-même, qui peut avoir des gains et des pertes provenant des sources étrangères a l'entreprise en question; mais on veut raisonner sur l'avantage de l'exploitation de l'entreprise donnée.* (p. 66.)

Il ne faut donc pas confondre l'entreprise avec le capitaliste, son proprietaire. Ces deux sont separés par la comptabilité, qui considère le proprietaire de l'entreprise comme une personne tierce, comme son créancier pour le capital qu'il lui a remis.

"Entrepreneur and enterprise are separated from each other by double-entry bookkeeping": that is the kernel of the matter. [Sombart considers the juridical aspects of this separation.]

[Sombart examines the etymological origins of the word *Firma* (firm) and its Italian counterpart, *Ragione*. The Latin *ratio* meant "account" as in Cicero: *par est ratio acceptorum et datorum*.]

This etymology is no more than a welcome confirmation of the view represented here: that bookkeeping produced the concept of the independent business and that the capitalistic undertaking developed from this accounting entity.

The very illuminating close relationship between the development of the legal concept of the firm and the development of accounting appears to be also demonstrable with reference to the wide dissemination of a legal rule attributable to Bartolus: in deciding questions of liability, the court may examine the business books of account. This view was confirmed by all subsequent Roman law jurists, including those of the 16th century. This practice meant that legal opinion necessarily kept step with bookkeeping practice, and was materially aided thereby in arriving at the concept of the independent business.

3. *The growth of systematic business management.*—We have up to now traced the development of the system of double-entry bookkeeping, and established that it was essentially completed by the beginning of the 16th century, but that certain complementary details were probably not introduced before the end of the early capitalist period. From this, however, we know nothing about its application in practice. We would particularly like to have information on this question: to what extent, and how thoroughly, did business management operate, during the last centuries of the early capitalist period, in conformity with the teaching and instructions of business theorists?

We could only give a definitive answer to this question if we had statistical data concerning the books of account actually kept by businessmen. These we do not possess. We cannot even find enough typical examples of bookkeeping practice to infer from them the general state of bookkeeping in their time. Most of the business account books which have survived belong to the 15th and 16th centuries—perhaps two dozen in all—and 17th and 18th century account books have been made available until now in extremely small numbers.

So for the time being, until more authentic source materials are supplied to us—and it is hoped that business historians will soon make good the omission—we must rely on interpreting signs in order to decide on businessmen's knowledge of the art of business management and its application in the new capitalistic undertakings.

The picture which emerges from carefully examining the evidence is somewhat as follows: the fact that most of the well-kept account books known to us from the 14th and 15th centuries are Italian is certainly no accidental result of research into business history; Italy was at that time, without any doubt the leading mercantile community. We need only compare the Italian account books of those centuries with contemporary German examples in order to determine the disparity between these two countries. Generally, the Italian mind was further along the road to rationalization and mechanization. We can see how the modern state began to take shape in Italy in the Middle Ages. We can assume that a taste for the exact and calculating mind took deeper and deeper root in Renaissance man. Recall that the beginnings of land surveying and town planning can be traced to the Italian republics in the 14th century, that statistical method began to take shape there, that official measurements of time made tremendous steps forward in this period.

The history of measuring time and the growth of the use of clocks provides us with evidence of the variety of causes underlying modern life. While the precise division of time, which undoubtedly influenced rationalization, was originally the exclusive achievement of the religious community—in the Middle Ages it was necessary to measure time and divide it up only in the monasteries, which alone had clocks, *had* to have clocks—the modern division of time (into equal equinoctial hours) which permitted complete rationality, in contrast to the church and monastic division of time (into canonical hours, that is the variable hours of antiquity) was the work of modern princes. It was they who, set upon achieving improvements in city administration, particularly in Italy, wanted public striking clocks, which were invented at the beginning of the 14th century, and striking clocks were only possible if the day was divided into equal hours. Thus, the invention led to a change in mental attitudes; striking clocks, and with them the modern method of dividing up time, were imposed by the laity upon the churches

and monasteries, on which (because the church tower was usually the best place to put them) they first appeared.

[Sombart lists the places where clock towers appeared in the 14th century, with dates.]

We are particularly interested in seeing how the art of accounting developed and expanded. This will serve on the one hand as an expression of the general attitude of businessmen, and on the other hand, as a thermometer for measuring the state of business management techniques, which resulted from the combination of bookkeeping and commercial arithmetic. These were separate subjects, so that the development of accounting required a simultaneous development of commercial arithmetic and its dissemination among businessmen, which must have taken place through school instruction. It is therefore important to establish that in Italy, at a relatively early date, i.e., by the 14th century, arithmetic was taught in schools. Giov. Villani informs us that in Florence in 1340, 8-10,000 boys and girls were learning to read, and 1,000 to 1,200 boys in six schools were learning arithmetic.

[Sombart provides the bibliographical references and discusses the authenticity of the estimates.]

In Paris there were also numerous primary schools in the Middle Ages, which were attended by several thousand pupils in the 15th century.

What did they learn in arithmetic lessons? We can answer: essentially the contents of the *Liber abacci* of Leonardo of Pisa. This book taught the four basic operations underlying commercial arithmetic, and also the rule of three, and contained a large quantity of examples concerning matters of interest to businessmen: weights, coinage, dimensions, exchange equivalents, etc.

[Sombart lists the relevant chapters.]

To this the following centuries saw the addition of the abacus, and in Italy in the 15th century pupils were already being taught interest and discount calculations. About the end of the century, the final version of the rule of three made its appearance.

We must beware of drawing exaggerated conclusions concerning the level of businessmen's education from the level of the extensive and intensive development of arithmetic and systematic business management at the time. Even in Italy, throughout the entire Middle Ages and later well into the period of early capitalism, patriarchal systems flourished, even in large businesses. We know a great deal about the clans and their thoroughly uncapitalistic business administration. Even the manner in which the books were kept was often rough and ready. The books of the Soranzo and the Barbarigo are full of inaccuracies, discrepancies, obscurities. It appears to have been the exception to have a well-kept set of books. According to bookkeeping experts, such an exception is provided by the account books of Giac. Badoer. (G. Brambilla, *Storia della ragioneria Italiana*, (1901) pp. 55 et seq.)

Sometimes anecdotes provide the best picture of the general attitude or style of a period. Thus, I would like to introduce here a few words from the family records of the Albertis which appear to me to throw light on conditions in the business community of Florence during the late Middle Ages.

Leon Battista recounts:

Maestro Benedetti Alberti was fond of saying: it suits the efficient businessman to have ink always on his fingers. He explained that it is the duty of every merchant, as indeed, of every businessman who has transactions with many people, to write everything down, every contract, every receipt and every payment, and to check so often, that he seems always to have pen in hand.

From this anecdote we learn:

1. that it was not a universal custom among the business community of Florence to keep books.

2. that the head of a "world-wide" trading concern kept his books himself, at least in part.

3. that he was as clumsy as a schoolboy who writes with ink for the first time, and gets it on his fingers.

This picture is confirmed when we learn that Domenico Manzoni, who re-worked Pacioli's chapters on

bookkeeping and amplified them with numerous examples, had a collection of twelve lettering models in his mercantile library, in the year 1564.

We must also remember that the Arabic numerals introduced by Leonardo of Pisa had to fight a lengthy battle before they overcame. I recall that even in 1299, the use of Arabic numerals was forbidden. As late as the 16th century we can still find Latin numerals used in theoretical works on bookkeeping as well as in many Italian books of account. It has been correctly pointed out that Latin numerals did not render double-entry bookkeeping impossible, but it cannot be denied that they placed severe restrictions on the free evolution of the principles of accounting and on accountability in general.

If, then, we see in Italy only a slow dissemination of systematic (i.e., capitalistic) business management, it will be well to place its beginning and growth in other countries appreciably later in time. We know that in the 16th century German merchants were still learning arithmetic in the Italian cities; they even brought bookkeeping *a la Venezia* back with them. But these are merely particular cases. Knowledge became more general when German writers published books on double-entry bookkeeping and the related commercial arithmetic. This took place during the 16th century. But the first works of this kind to appear in Germany, such as those of Magister Henricus Grammateus (1518), of Joann Gottlieb (1531) etc., are well behind Luca Pacioli in their systemization. Only gradually were the heights of the Italian theory attained and its application was correspondingly slow. Account books of the 16th and 17th centuries provide evidence of our halting development of business accounting. Adam Riese's country seems, however, to have taken over the leadership in this field of learning in the 16th century.

In the other countries north of the Alps, the new system of bookkeeping and commercial arithmetic made slow but steady progress.

The books of Andr. Ryff (end of the 16th century) and the account books of Froben and Episkopius show that double-entry bookkeeping was as yet unknown in Switzerland. Ryff admits that his agents, and the necessity to settle accounts with them periodically, imposed upon him the need to keep books rigorously. On the other hand, Geering

asserts that by the beginning of the 17th century, all large trading concerns in Switzerland kept their books in the Italian style.

In England, the first author of a text on double-entry bookkeeping was Hugh Oldcastle (1543). But James Peele, in the preface to his 1569 book on accounting, remarked that the art was new in England and that business-men and their apprentices took lessons from him.

At any rate, throughout the 16th century business life in England was also virtually untouched by these changes. We find in the books, even of the great trading companies of the time, a quite medieval and artisanal type of record-keeping. Improvement is noticeable at the beginning of the 17th century; for example, the concept of capital enters into the books of account, doubtless under the influence of those merchants who came into contact with Italians, as members of the Levant Company.

What some bookkeeping conditions were like even at the beginning of the 18th century can be seen from the following story: Zetner of Strasburg was invited to England by an industrialist "who had a large manufactory of woollen goods in Exeter, to obtain an accounting from the manager of the factory, who had not submitted one for twenty years" (*Zetners Reissjournal*, E. Reuss (1912) p. 75).

The new art first found entry into Holland and France through a translation of Luca Pacoli into Flemish and French, by Jan Ympyn (1543).

Holland developed its own culture in the field of bookkeeping theory and practice. The path-breaking bookkeeping works of the northern Netherlands were the 1583 publication by Nicolaas Petri Van Deventer, *Practique om te leeren reeckenen, cypheren ende boekhuden (met die Regel coss) ende geometrie, seer profitelycken voor alle coopluyden*, and in 1588, *Boeckhouden op de Italiaensche maniere*. The best known Dutch teacher of this subject is Simon Stevin, whose *Hypomnemata Mathematica* appeared in 1605-8 as an aid to the Prince of Nassau's educational schemes.

In the 17th century, more than 60 books on accounting were published in the Dutch language. [Sombart notes that

the growth of foreign exchange banking and currency arbitrage in Holland stimulated interest in bookkeeping, in order to be able quickly and accurately to calculate profit or loss. The Dutch produced specialist tests on this subject before anyone else.]

Leadership in commercial arithmetic, which certainly lay in Italy at the start, was now taken over by Holland. Holland was the exemplar, not only for all middle-class virtues, but also for arithmetical precision. In the 18th century for example, the discrepancy between the American and Dutch arts of commerce was noticed. Benjamin Franklin tells the story of the widow of one of his associates, a Dutch woman by birth; how she sent him regular and exact accounts which her husband (an American) when alive, never did. ". . . the knowledge of accounts" he adds, "makes a part of female education" in Holland (*Memoir*, I, p. 150 (1833)).

From what we know of French account books of the 16th and 17th centuries, the state of the art of bookkeeping there was extremely variable; the number and types of books of account differ from case to case.

[S. mentions French sources, one of which (Maillefer) acknowledged double-entry as a novelty in the middle of the 17th century.]

In the 17th century, however, France apparently became, with Holland, the country in which commercial arithmetic reached an unusual degree of advancement. [In a note, S. complains of the absence of decisive evidence and hopes that his efforts will stimulate historical research in this area.] We may conclude this from the unusually large number of excellent "businessmen's books" in the French language, such as the Savarys', the two Ricards', and so on.

We may also take as a sign of highly developed business techniques the fact that France was the first country in Europe to enact legislation urging every businessman--wholesale as well as retail--to keep books of account.

The Ordonnance of 1673, Title III, Article I, states: *Les negociants et marchands tant en gros qu' en detail auront un Livre qui contiendra tout leur Négoce, leurs lettres de change, leurs dettes actives et passives, et les deniers employés a la dépenses de leur maison.*

They were admonished, not obliged. *L'Ordonnance enjoigne aux Marchands et Negocians d'avoir des Livres sur les quels ils écriront toutes leurs affaires; neansmoines ils ne seront point forcez d'en avoir, cela dependra de leur volonté.* There was only an indirect element of force in that an accusation of fraudulent bankruptcy could be refuted with books of account. Thus comments Savary, father of the *Ordonnance* (*Le parfait negociant*, I, p. 248).

To be legally recognized, books of account had to be certified by a consul or mayor. *Les livres des Negocians et Marchands tant en gros qu'en détail, seront signés sur le premier et dernier feuillet, par l'un des Consuls dans les villes où il y a jurisdiction consulaire et dans les autres par le maire ou l'un des Echevins, sans frai ni droits, et les feuillets paraphés et cottés par premier et dernier de la main de ceux qui auront été commis par les Consuls ou maire et échevins, dont sera fait mention au premier feuillet* (Article II, line 3).

These provisions undoubtedly represent a step forward in the direction of organized business management, which however already existed in France, since before the *Ordonnance* of 1673 it was the custom for wholesalers to keep books of accounts, as Savary assures us (*Le parfait negociant*, I, p. 249).

Again, we must recall that we refer only to the beginnings of accounting. For what the *Ordonnance* calls for, and what Savary found to be "nothing new" in France, was a simple *journal*, in which all business transactions were set down in chronological order. Of course, some businesses also kept double-entry books; but certainly not the majority.

Did England then become, not only the greatest trading nation, but also the most advanced country in business management techniques? We do know that at the beginning of the 19th century, German businessmen looked to Holland and England as the countries of advanced commercial training, which at that time appears to have reached its apogee within Germany in the city of Hamburg. One knowledgeable observer of the 1830s wrote the following words on the relationship of these countries to each other:

> To such free and clear views of business affairs as have Englishmen, businessmen through and through, the Hamburger arrives rarely, or late; that decisiveness, independence which the former displays, the latter is almost completely lacking in this connection. In spite of this, one can hold up the commercial accuracy of the Hamburger as an example to the rest of Germany; it is almost equal to that of the Dutch, although significantly more generous than the fearful Mynheer (Lud. Schleicher, *Das merkantilische Hamburg* (1838) p. 75).

Hamburg did most in the 18th century for the cultivation of the arts of business, of which Joh. Büsch was the outstanding representative.

If we survey the entire period of early capitalism we arrive at the conviction that throughout the whole of Europe, business techniques began to be based on new principles, that everywhere and in consequence of this, capitalistic enterprises arose, but that in no case before the second half of the 17th century had more than a small proportion of firms taken the steps which led away from unsystematized and highly personalized management, so that the general type of business, even in the last centuries of early capitalism, represents a transitional phenomenon. We shall be confirmed in this viewpoint when, in the following chapter, we study the development of capitalist forms of business enterprise.

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BIOGRAPHICAL SKETCH

Kenneth S. Most was born on February 4, 1924, in Leeds, England. After serving articles (apprenticeship) with a public accountant, he qualified by examination as a Chartered Accountant in 1946, and was admitted to the English Institute of Chartered Accountants, first as an Associate and, from 1960, as a Fellow. After twenty years as an auditor and financial consultant, during which period he graduated Bachelor of Laws as an external student of London University, he joined the London Polytechnic in its School of Management Studies (1960), where he taught finance and accounting for four years. In 1964 he became Head of the School of Accounting in the Singapore Polytechnic, later in the University of Singapore. Since 1967 he has pursued work at the University of Florida for the Degrees of Master of Arts with a major in Accounting (1968) and Doctor of Philosophy with a major in Economics.

He was a Simon Research Fellow in the Department of Economics of the University of Manchester during the session 1958-59, and has been visiting professor at a number of European schools of business administration. At the University of Florida he has taught both accounting and finance; he was awarded an Earhart Foundation Scholarship

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Mr. Most has written several books and many articles on accounting and finance. He is married and has three children.

This dissertation was prepared under the direction of the chairman of the candidate's supervisory committee and has been approved by all members of that committee. It was submitted to the Dean of the College of Business Administration and to the Graduate Council, and was approved as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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