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KAUTILYA ON THE SCOPE AND METHODOLOGY OF ACCOUNTING, ORGANIZATIONAL DESIGN AND THE ROLE OF ETHICS IN ANCIENT INDIA

Abstract: Kautilya, a 4th century B.C.E. economist, recognized the importance of accounting methods in economic enterprises. He realized that a proper measurement of economic performance was absolutely essential for efficient allocation of resources, which was considered an important source of economic development. He viewed philosophy and political science as separate disciplines but considered accounting an integral part of economics. He specified a very broad scope for accounting and considered explanation and prediction as its proper objectives. Kautilya developed bookkeeping rules to record and classify economic data, emphasized the critical role of independent periodic audits and proposed the establishment of two important but separate offices - the Treasurer and Comptroller-Auditor, to increase accountability, specialization, and above all to reduce the scope for conflicts of interest. He also linked the successful enforcement of rules and regulations to their clarity, consistency and completeness. Kautilya believed that such measures were necessary but not sufficient to eliminate fraudulent accounting. He also emphasized the role of ethics, considering ethical values as the glue which binds society and promotes economic development.

INTRODUCTION

The virtuous one despises prosperity attained through ignominy. The bounds of good conduct should never be

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crossed. Truth and charity are the roots of righteousness. Righteousness is the ornament of all [Kautilya's *Sutra*, Subramanian, pp. 39, 47, 62].

It is possible to know even the path of birds flying in the sky but not the ways of government servants who hide their (dishonest) income [Kautilya's *Arthashastra*, p. 283].

Vishnugupta Chanakya Kautilya (popularly known as Chanakya) has been addressed as an Acharya or guru (professor or teacher) and a statesman. Nehru [1998, p. 123] describes Kautilya as follows: "He sat with the reins of empire in his hands and looked upon the emperor more as a loved pupil than as master. Simple and austere in his life, uninterested in the pomp and pageantry of high position."

Kautilya is credited with destroying the Nanda (tyrant) rule and installing Chandragupta Maurya (321-297 B.C.E.) on the throne. No one really knows the dates of his birth or of his death. It is almost certain that he and Chandragupta Maurya were adults in 321 B.C.E. when they succeeded in toppling the Nanda Dynasty. It is reasonable to assume that he was older and undoubtedly wiser than Chandragupta in order to command the respect necessary for success in destroying the Nanda rule. Kautilya was probably born around 360 B.C.E., was very influential during Chandragupta's rule (321-297 B.C.E.), and might have lived beyond the latter date. This implies that he was a junior contemporary of Aristotle (384-322 B.C.E.). However, there is no evidence that Kautilya was aware of Aristotle's ideas.

Kautilya wrote *The Arthashastra*, the science of wealth and welfare, during the latter half of the 4th century B.C.E.. *The Arthashastra* contains 150 chapters, which are classified by topic in 15 books. It consists of three reasonably well developed parts: (i) national security issues including a foreign policy, (ii) administration of justice including crime and punishment issues, and (iii) policies related to economic development, taxation, labor management and financial management. The latter includes a discussion on the critical role of accounting. *The Arthashastra* is a theoretical treatise designed to instruct kings everywhere and for all time. Kautilya also completed two other works: *Chanakya-Sutras* (Rules of Science) and *Chanakya-Rajanitisastra* (Science of Government Policies).

Kautilya's contributions to accounting may be classified under four headings: (i) the development of principles of accounting, (ii) the specification of the scope and methodology of

accounting, (iii) the codification of financial rules and regulations and the creation of an organizational structure to reduce the potential for conflicts of interest, and (iv) the role of ethics in the restraint of fraudulent accounting (often spawned by excessive greed), in the maintenance of law and order, the efficient allocation of resources, and the pursuit of happiness.

Mattessich [1998] sheds light on Kautilya's contributions under the first heading. He identifies elements of modern principles of accounting in Kautilya's *Arthashastra* and shows that it contains more accounting theory than Pacioli's *Summa*. Mattessich deserves much credit for his interpretations of Kautilya's implicit analysis. He makes insightful and bold observations, noting that many studies in accounting history have focused too narrowly on the search for the origin of double-entry bookkeeping. He places Kautilya's *Arthashastra* on a par with Pacioli's *Summa*.

In this paper, I concentrate on Kautilya's contributions under the remaining three headings. A modest attempt is made to offer glimpses into Kautilya's grand vision and his impeccable logic.

The second section of the paper contains Kautilya's ideas on the scope and methodology of accounting. Two types of arguments are presented to show that Kautilya considered explanation and prediction as the objectives of analytical inquiries related to accounting. First, it is argued that he did not recommend separating accounting from economics. He proposed testable hypotheses and thus implied that accounting had an equal claim to the use of the scientific method. Second, according to Kautilya, even if accounting is considered a discipline separate from economics, its methodology is still scientific. It appears on closer examination that Kautilya understood the importance of the accurate measurement of economic performance to economic growth. He linked decisions on production and trade patterns to profitability and implicitly considered innovation in accounting methods as a general-purpose technology (GPT), which improved the efficiency of the whole economy. Kautilya's ideas on the importance of the financial health of the Treasury to achieve the various objectives of the state are also included in this section.

According to Kautilya, the major underlying factor for resorting to aggressive and creative accounting (which he calls 'false accounting') is excessive greed, and he attempted to contain it through moral persuasion and legal means. He considered the conditions for ensuring honesty and systemic

efficiency. The third section of the paper lays out Kautilya's ideas on the necessary conditions for increasing efficiency and compliance. He proposed at least three conditions. First, he believed that citizens (including government officials) have to be informed of the laws. With that in mind, he modified, extended, and above all, codified the existing rules and regulations. Second, he proposed an organizational structure that reduces the scope for conflicts of interest. Third, he suggested comprehensive schemes of rewards and punishments to increase compliance. He suggested ways to handle problems that may arise whenever a principal (owner, shareholder, or even a king) entrusts financial operations to his agents (managers). This section of the paper also recognizes Kautilya's contributions on systematic record keeping, periodic accounting, budgeting, and independent auditing.

Kautilya was aware that ethical values encompass much more than the social values codified in rules and regulations. He believed that even the most comprehensive set of rules and regulations was insufficient for checking greed and eliminating the potential for fraudulent practices. The fourth section of the paper contains his ideas on the critical role of ethical values in maintaining law and order and the creation of wealth. He emphasized the role of virtue ethics in building good character. Recognizing that the concept of virtue ethics was already well developed in the *Vedas*, the Hindu religious scriptures and philosophy, he focused primarily on the action-oriented principles of ethics, such as the golden rule, fairness, and 'servant leadership' and undertaking various measures to improve the ethical climate. Before exploring these dimensions of Kautilya's work a brief introduction to *The Arthashastra* is provided in the next section.

A BRIEF INTRODUCTION TO KAUTILYA AND *THE ARTHASHASTRA*

Mattessich [1998] noted that Kautilya developed some rudimentary principles of modern accounting and stated: "One may even raise the question of why the *Arthashastra* concerns itself, at least to some extent, with accounting issues, while the even more comprehensive writings of Aristotle (despite revealing an awareness of economic issues) are silent about accounting theory." Kautilya had a grand vision for building an empire, one that was prosperous, secure, stable, and based on fairness. He realized that the attainment of prosperity required not only

human effort but also the accumulation of capital, which was not possible without the development of accounting methods.

Kautilya's Vision: Kautilya [pp. 120-121] stated his vision thus:

The kingdom shall be protected by fortifying the capital and the towns at the frontiers. The land should not only be capable of sustaining the [native] population but also outsiders [when they come into the kingdom] in times of calamities. It should be easy to defend from [attacks by] enemies and strong enough to control neighboring kingdoms. It should have productive land (free from swamps, rocky ground, saline land, uneven terrain and deserts as well as wild and [unruly] groups of people). It should be beautiful, being endowed with arable land, mines, timber forests, elephant forests, and good pastures rich in cattle. It should not depend [only on] rain for water. It should have good roads and waterways. It should have a productive economy, with a wide variety of commodities and the capacity to sustain a high level of taxation as well as a [large] army. The people shall be predominantly agriculturists [artisans and craftsman], devoted to work, honest, loyal and with intelligent masters and servants [6.1.8].

Kautilya realized that there was a large gap between his ideal economy and that prevailing in 4th century B.C.E.. His genius lies in anticipating the possible problems that may arise in eliminating such a gap and devising policies to resolve them. According to Kautilya, it was the moral duty (as well as enlightened self-interest) of a king to increase prosperity, judicial fairness and national security; and he constructed a complete conceptual framework and suggested practical measures to achieve these objectives. The level of abstract reasoning achieved in *The Arthashastra* was unique for its time.

Kautilya's *Arthashastra* was written in Sanskrit. Now, fortunately, many English translations are available. It hardly matters which translation is used, because all are accurate. Kangle's [1972, Part II] translation of *The Arthashastra* is considered the most authentic but is somewhat pedantic, and in adhering strictly to the Sanskrit language, lacks clarity in some instances. Rangarajan [1992] improves the textual clarity.

Two examples illustrate the differences between the two translations. First, original reference [1.19.34] to the Sanskrit Shloka (stanza) in Kautilya's *Arthashastra*. Kangle [Part II, p. 47] translates this as: "In the happiness of the subjects lies the happiness of the king and in what is beneficial to the subjects his

own benefit. What is dear to himself is not beneficial to the king, but what is dear to the subjects is beneficial (to him).” Its translation by Rangarajan [p. 149] is: “In the happiness of his subjects lies his happiness; in their welfare his welfare. He shall not consider as good only that which pleases him but treat as beneficial to him whatever pleases his subjects.” Second, the original reference [2.1.16] in Kautilya’s *Arthashastra*. Its translation by Kangle [Part II, p. 56]: “For, a king with a small treasury swallows up the citizens and the country people themselves.” Rangarajan [p. 253] translates thus: “A King with a depleted Treasury eats into the very vitality of the citizens and the country.” Occasionally in this paper, Kangle’s translation is used; but to a large extent my observations and interpretations are based on the version edited, rearranged, translated, and introduced by Rangarajan. The page references are from this translation but references to the original ones are also provided (to illustrate, [1.15] means Chapter Fifteen of Book One of *The Arthashastra*).

Date and Authorship of The Arthashastra: Much controversy surrounds the date and authorship of *The Arthashastra*. Many Western writers have advanced the hypotheses that it was not written during the 4th century B.C.E. and that many scholars authored it. Most of these hypotheses are advanced on the basis of ‘stylometric’ analysis - the frequency of use of certain words like *ca* (and) and *va* (or) which vary among different parts of *The Arthashastra* - and the fact that it is written in the third person. Recently, Mital [2000] devotes his entire book to rigorously and meticulously examining the statistical methods and evidence used, particularly by Trautmann, to test such hypotheses. He [p. 90] finds “This also shows that the difference in the use of *ca* and *va* is based on subject-matter and not on authorship.” Mital concludes that the methods used by Trautmann are both arbitrary and often contradictory and therefore, inadequate to prove his claims.

Other critics, analyzing the writing style, question whether Kautilya was the sole author of *The Arthashastra*. The writing style, at least in ancient India, was quite different from that prevailing today. Mital [pp. 22-23] notes, “On the basis of the opinions of Kautilya expressed in the third person, the view is put forward by Hillebrandt that it is not the work of Kautilya but of a school, and this is also the opinion of Keith and Winternitz. But Kane says: “In order to avoid looking too egotistical ancient writers generally put their views in the third person.”

Today, there exists no direct evidence against Kautilya being the sole author of *The Arthashastra*, nor evidence that it was not written during the 4th century B.C.E.. The indirect evidence, such as the writing style of various segments of *The Arthashastra*, is insufficient to challenge either the date of its writing or Kautilya as the sole author.

Possible Reasons for the Neglect of The Arthashastra: Kautilya's text was very widely referred to and revered by scholars for more than a thousand years after its writing. Ray [1999, p. 119] observes "Apart from the many authors like Asvaghosa, Kalidas, Bana, Visakhadatta, Dandin and others who were conversant with it, we have references to it and quotations from it right down to the days of Millnatha and Charitravardhana in the 14th and 15th centuries A.D. It may have lost much of its validity with the establishment of the Mogul Empire and particularly with the advent of the British rule."

It is remarkable that *The Arthashastra* survived the activities of some of the rulers of India. The fact that the text was written in Sanskrit did not facilitate its dissemination. The work resurfaced in 1904 when a manuscript was handed to Mr. Shamasastri, the Librarian at the Mysore Government Oriental Library.

KAUTILYA ON THE SCOPE AND METHODOLOGY OF ACCOUNTING

The use of science is the sight of truth [Kautilya's Sutra, Subramanian, p. 83].

Cushing [1989] observed: "Contemporary academic accountants have not deserted science, but they have in a fundamental sense deserted accounting. The majority of the research in today's leading academic accounting journals applies the research paradigms of economics and psychology within the institutional setting of accounting." He called this a crisis in accounting and suggested that one of the ways to resolve it is to simply redefine the scope of accounting. He concluded, "Accounting may be redefined in scientific terms as the science that attempts to explain and predict the economic performance of individuals or groups responsible for the utilization of economic resources." By contrast, according to Kautilya, explanation and prediction are the key goals for any objective inquiry in accounting. This means that by applying scientific methods, contemporary accountants do not abandon accounting; rather they

restore its original status and are prepared to realize its full potential.

Book 15 of *The Arthashastra* contains just one chapter, 'The Method of Science' but surprisingly it deals exclusively with methodology and interestingly, is placed at the end rather than the beginning of the work. It contains some stylistic rules of the kind that one might find in 'University of Chicago Manual of Style' or the style guide of *Accounting Historians Journal*. But other rules are more substantive, such as, stating a hypothesis, a verbal (non-technical) reasoning to prove it, a conclusion and a recommendation. It is not claimed, however, that it has the sophistication described by Backhouse [1997, Chapters 3-7], Godfrey-Smith [2003] or Mattessich [2000, Chapter 1].

The content of Kautilya's work indicates that the prerequisites for the establishment of the discipline of accounting already existed in India during 4th century B.C.E.. Kautilya used fractions, percentages, summation and subtraction operations, and even permutations and combinations quite extensively, displaying a deep knowledge of arithmetic. He developed not only bookkeeping rules but also the procedures for preparing periodic income statements and budgets and performing independent audits. Ifrah's [2000] findings also supports the existence of the required capabilities in arithmetic to support a separate discipline of accounting in the period under study. He [p. 434] writes, "Before the beginning of the fifth century B.C.E., then, all the necessary "ingredients" for the creation of the written place-value system had been amassed by the Indian Mathematicians."

Kautilya did not see the need for separating accounting from economics and believed that any demarcation of the boundary between them would be arbitrary. He considered accounting an integral part of economics. By contrast, he explicitly treated Political Science and Philosophy as separate disciplines. This view is supported by the fact that the role of accounting was considered to be embedded in economic policy. Kautilya perceived 'explanation and prediction' as the true objectives of a scientific inquiry and applied these to analyze the impact of various policies on the creation of wealth. He applied these objectives, both explicitly and implicitly, to inquiries relating to accounting. This leads to the conclusion by Kautilya that explanation and prediction lay within the rightful domain of accounting.

Kautilya on the Importance of Wealth: Kautilya methodically

approached economic issues by first explaining the importance of wealth and then suggesting policies for its creation. He [p. 637] observed “Man, without wealth, does not get it even after a hundred attempts. Just as elephants are needed to catch elephants, so does wealth capture more wealth. Wealth will slip away from that childish man who constantly consults the stars. The only [guiding] star of wealth is itself; what can the stars of the sky do [9.4.26-27]?” According to Kautilya, wealth complemented human effort (by enhancing labor productivity) in creating prosperity, which in turn creates more wealth.

Kautilya [p. 149] added, “In the absence of fruitful economic activity, both current prosperity and future growth are in danger of destruction. A king can achieve the desired objectives and abundance of riches by undertaking productive economic activity [1.19.35-36].” He advanced the hypothesis that the pursuit of productive activities was the key to stabilization of the current income and its rapid growth in the future.

Incentives to Encourage Creation of Wealth in the Private Sector: Kautilya explored all possible means of creating wealth. He suggested many policies to encourage capital formation in the private sector. For example, he [p. 231] recommended (i) *Tax Holidays*: “Any one who brings new land under cultivation shall be granted exemption from payment of agricultural taxes for a period of two years. For building or improving irrigation facilities exemption from water rates shall be granted [3.9.33].” (ii) *Full Protection of Private Property Rights*: Kautilya [p. 121] wrote “The wealth of the state shall be one acquired lawfully either by inheritance or by the king’s efforts [6.1.10].” He [p. 231] added, “Water works such as reservoirs, embankments and tanks can be privately owned and the owner shall be free to sell or mortgage them [3.9.34].” (iii) *Concessionary Loans*: He [p. 179] recommended, “[On new settlements] the cultivators shall be granted grains, cattle and money which they can repay at their convenience [2.1].” (iv) *Duty Free Imports*: Kautilya [p. 238] suggested “Any items that, at his discretion, the Chief Controller of Customs, may consider to be highly beneficial to the country (such as rare seeds) [2.21] are to be exempt from import duties.”

Kautilya on the Factors Relevant to Creating Wealth: Kautilya [p. 255] stated:

The following are the means of increasing the wealth of the State: ensuring the prosperity of state activities; continuing well tried policies; eliminating theft; keeping

strict control over government employees, increasing agricultural production; promoting trade; avoiding troubles and calamities; reducing exemptions and remissions and increasing cash income [2.8.3].

Obstruction, misuse of government property and false accounting by government servants lead to a reduction of wealth [2.8.4].

With no distraction, the people will be fully involved in the work in the fields and there will be an increase in the supply of labor, money, commodities, grain and liquids to the treasury [2.1.33-35].

He added, "Calamities to the treasury can be any internal or external action which has the effect of reducing the revenue. Financial health can be affected by misappropriation by chiefs, remission of taxes, scattered collection, false accounting and looting by enemies and tribes before the revenue reaches the Treasury [8.4.49]."

Two observations are in order. First, according to Kautilya 'false accounting' could be a serious threat to the creation of wealth. Second, this warning was central to core economic policies relating to economic growth, fiscal management and labor management. He discussed each of these means of creating wealth and the need to prevent loss by developing accounting methods.

Fiscal Policy: Kautilya recommended a mixed economy and argued for a very active role by the government. He explored ethically possible avenues to maximize the level of wealth in the public sector. He was aware of the limits placed on governments to raise revenue through taxation. Spengler [1971, p. 72] summarizes Kautilya's fiscal policy as follows:

Kautilya's discussion of taxation and expenditure, apparently in keeping with traditional doctrine, gave expression to three Indian principles: taxation power is limited; taxation should not be felt to be heavy or excessive; and tax increases should be graduated. One of his main concerns seems to have been the collection and expenditure of revenue in such ways as to build up the permanent revenue-yielding capacity of the economy. While he manifested little knowledge of tax shifting and incidence, he emphasized the long run, cautioned against too heavy taxation in the short run, and noted that a ruler could not tax at his pleasure, particularly in frontier regions where disgruntled taxpayers could flee to neighboring countries.

Incidentally, this functional relationship between the rate of income tax and the magnitude of tax revenue is now expressed in the Dupuit-Laffer curve.

Kautilya on the Importance of Financial Health: Kautilya emphasized heavily the financial health of the state and understood that a sound treasury was a prerequisite to accomplishing other goals. He [p. 253] stated, "All state activities depend first on the Treasury. Therefore, a King shall devote his best attention to it. A King with a depleted Treasury eats into the very vitality of the citizens and the country [2.8.1-2]." In fact, according to Kautilya [p. 147], a King should begin his day by receiving "reports on defense, revenue and expenditure." He [p. 145] added "Artha (sound economics) is the most important; for, dharma and kama are both dependent on it [1.7]." He [p. 255] continued "If receipts and expenditure are properly looked after, the King will not find himself in financial difficulties [5.3.45]." According to Kautilya, therefore, a king must carefully manage the financial affairs of the state.

Explanation and Prediction: Kautilya recommended both preventive and remedial measures to deal with natural disasters. He [p. 116] asserted: "In the interests of the prosperity of the country, a king should be diligent in foreseeing the possibility of calamities, try to avert them before they arise, overcome those which happen, remove all obstructions to economic activity and prevent loss of revenue to the state [8.4, 8.5]." It may be noted again that Kautilya considered the prevention of loss of revenue as crucial to economic prosperity.

Kautilya on the Evaluation of a Policy and the Anticipation of Analysis of Variance: Kautilya did not know how to measure risk or separate the total variation (in the dependent variable, wealth) into explained and unexplained (random) components. However, his insights into issues related to risk are revealed in his work. For example, he was aware of a risk-return trade-off and risk premium. He [p. 619] stated "As between land dependent on rain and land with flowing water [i.e. a river], a smaller tract with flowing water is preferable to a larger drier one because with flowing water, which is always available, the production of crops is assured [7.11]." He [p. 426] suggested an interest rate of 120% and 240% on commercial loans involving highly risky travel through forests and by sea respectively [3.11]. Incidentally, this indicates that capital was in short supply in

Kautilya's India. There were no usury laws to regulate interest rates at that time.

Similarly, Kautilya [p. 554] stated, "Events, both human and providential, govern the world [and its affairs]. Acts of God are those which are unforeseeable and whose origin is unknown. If the cause is knowable and hence foreseeable, its origin is human. If an act of God results in [helping] the achievement of one's objective, it is good fortune; otherwise, it is misfortune. [Likewise,] any human action which increases one's wealth is a good policy; otherwise, it is a bad policy [6.2.6-12]." This statement implicitly contains the following regression model:

$$W = X \beta + e \quad [1]$$

Where, W = wealth is the dependent variable, X = exogenous policy variables which may be used to create wealth or prevent any reduction in it, e = random error, the acts of God.

Kautilya used the word "knowable" for finding the causes that promote wealth and the word "foreseeable" for the ability to predict the impact of the various policies. It may be noted that the phrase 'if the cause is knowable and, hence, foreseeable' implies that Kautilya believed that if something can be explained, one should be able to predict it. In practice, that is not always possible. For example, Hahn [1984, p. 10] points out that while scientists are able to explain why earthquakes occur they cannot predict their occurrence.

Additionally, Kautilya [p. 120] stated, "A councilor or minister of the highest rank should be a native of the state, born in a high family and controllable [by the king]. He should have been trained in all the arts and have logical ability to foresee things. He should be intelligent, persevering, dexterous, eloquent, energetic, bold, brave, and able to endure adversities and firm in loyalty. He should neither be haughty nor fickle. He should be amicable and not excite hatred or enmity in others [1.9]." The requirement 'the logical ability to foresee things' for hiring a councilor or a minister is of interest since this 'forward looking' human behavior is the cornerstone of the recent rational expectations revolution.

Kautilya's analysis shows that the application of scientific methodology to accomplish the objectives of 'explanation and prediction' is embedded in accounting. He contended that innovations in accounting methods make two types of contributions. First, his analysis implies that just like innovations such as writing, printing, steam-engine, the electric dynamo and computer

microchips, accounting innovations are a general-purpose technology (GPT) which improves the efficiency of the whole economy (see Lipsey et al. [1998a,b] for a discussion on GPT). Second, he understood the importance of accounting methods in preventing loss of revenue by detecting fraud and thus contributing to the creation of wealth. Let me elaborate on these themes.

Importance of Accurate Measurement of Profits: Kautilya [Subramanian, 2000, pp. 32, 67, 73] in his *Sutras* advances these hypotheses: “Fortune follows human effort. Prosperity depends on the intellect. Intellect depends on education.” Kautilya was aware that an efficient allocation of resources depended on appropriate measurements of profits, which were critical to enhancing economic growth. He linked production-patterns and trade-patterns to expected profitability. He not only emphasized the estimation of expected profits for direction but also insisted on strict adherence to the prescribed uniform standards and accurate measurements of actual profits. It seems that he realized that in the absence of uniform standards and accurate measurement of economic performance, resources could not be allocated efficiently – measurement errors (whether inadvertent or deliberate) led to the mal-allocation of resources.

Kautilya, Production-Patterns and Economic Performance: Kautilya revealed an awareness of the concept of value added and suggested devoting resources where net returns were highest. Accordingly, he argued that growing rice was best, vegetables were the next best and sugarcane was the worst. He [p. 230] explained, “Sugarcane is very difficult to grow being susceptible to diseases and requiring much more expenditure [2.24].” Similarly, while discussing the protection of crops against calamities, he would protect the ripe crops first. He [p. 231] argued, “A loss of [ripe] crops is worse than a loss of seedlings, because, with grown crops, the labor put in is also lost [8.2].”

Profitability and Trade-Patterns: Kautilya [p. 237] stated:

The Chief Controller of State Trading shall ascertain the profitability of a trading operation with a foreign country using the following method. The price of the goods to be sold in the foreign country and the price likely to be realized on the goods imported in exchange shall be estimated. From the gross margin, all expenses, as described below, shall be deducted:

For caravans: customs duty, road cess, escort charges, tax payable at military stations, ferry charges, daily allowances paid to merchants and their assistants and the share payable to the foreign king.

For trade using ships: all the above plus the following additional charges: i.e., the cost of hiring ships and boats, provisions for the journey.

He shall, in general, trade with such foreign countries as will generate a profit; he shall avoid unprofitable areas [2.16].

It may be noted that Kautilya suggested predicting the prices of exports and imports for estimating expected profit. This he considered a critical factor for engaging in trade.

Kautilya and Innovation in Accounting Methods as a General-Purpose Technology: According to Kautilya, prosperity depended on capital, manpower, and an efficiency parameter (A). This in turn depended on proper accounting methods and general knowledge, ethical values, public infrastructure, and political stability (including law and order and protection of private property rights). Only in recent years has the efficiency parameter (A) received its due attention. For example, Hall and Jones [1996] ask "Why do some countries have higher levels of productivity, physical capital, and human capital than others?" They find, "Broadly speaking, our answer is infrastructure, which we take to include characteristics of the government, the culture, and the climate of a country." Kautilya's ideas may be expressed by the following production function:

$$Y = A (H, S, M, R) F (K, L) \quad [2]$$

Where Y = Gross Domestic Product (GDP), H = knowledge, which includes accounting methods, S = political stability and national security, M = ethical values, R = public infrastructure, (e.g., roads), K = capital (tools etc.), and L = manpower.

Lately, economics has been labeled an imperial science. For example, Stigler [1984] and Lazear [2000] point out that economics has been colonizing other disciplines such as sociology, history, political science, and law [also Spiegel, 1991, p. xxiv]. Similarly, Kautilya applied economic analysis to issues related to legal matters and to the problem of reneging (now called the time inconsistency problem) in negotiating treaties with foreign kings. Kautilya considered accounting to be an integral part of economics, thus implying that accounting could not colonize itself. Accountants were not deserting their discipline when pur-

suing the objectives of 'explanation and prediction'. According to Kautilya, the methodology of accounting is scientific and its scope very broad, thus making it unnecessary to redefine it. It is therefore apparent that the scientific methodology was used in accounting long before the paradigm of double-entry bookkeeping was popularized by Pacioli.

KAUTILYA ON CREATING THE NECESSARY CONDITIONS FOR REDUCING FRAUD

The ruler should avoid appointing persons who are fraudulent, dishonest, cruel, without enthusiasm, incompetent and cowardly [Kautilya's Rajanitisastra, Subramanian, p. 128].

Kautilya believed that prosperity requires the creation of wealth both in the private and public sectors. He suggested many economic policies to encourage the creation of wealth in the private sector. He also advocated minimizing government spending on administration in order to generate the maximum surplus for building the necessary public infrastructure. Additionally, in his scheme, some enterprises, such as, liquor sales and gambling, were to be managed by the government. Kautilya prescribed that each public enterprise be required to generate a maximum amount of profit without crossing ethical bounds. Therefore, accurate measurement of the economic performance of a public enterprise and the elimination of opportunities for misappropriation of public funds by government employees was deemed absolutely critical. For these reasons, adoption of an appropriate format for bookkeeping and codification, and compliance with financial rules could not be left to the discretion of individual enterprises. Kautilya attempted to develop solutions to mitigate such problems through uniform bookkeeping rules for recording data systematically and by advocating frequent periodic reporting and the adoption of independent audits to reduce system failures. He suggested incentive-based compensation mechanisms to reduce what we now recognize as moral hazard problems. As noted below, the Comptroller-Auditor (one official), who was ultimately responsible for financial matters, was required to be knowledgeable, efficient and incorruptible.

Kautilya realized that the fiscal health of the Treasury depended not only on developing an economically sound policy that increased the taxable capacity of the economy through economic development, but also on honest and efficient financial management. He was quite concerned about the possibility of

fraudulent accounting by government servants. He listed 40 possible ways in which corrupt employees could cheat and considered that it was not easy to detect cheating. He [p. 281] stated, "Just as it is impossible to know when a fish moving in water is drinking it, so it is impossible to find out when government servants in charge of undertakings misappropriate money [2.9]." He [p. 283] continued, "It is possible to know even the path of birds flying in the sky but not the ways of government servants who hide their (dishonest) income." Kautilya's primary goal was to minimize the scope of such eventualities.

He provided insights to possible inadvertent as well as deliberate accounting errors or irregularities, which decreased the revenue of public enterprises. He believed that revenue losses could be caused by system failures and moral failures. Accordingly, he identified the potential sources of such losses as: inadvertent recording errors, deliberately deceptive accounting, collusion among employees to misappropriate revenue, loss in productivity due to in-fighting among employees; and most importantly, he observed that principles are only as good as the people who practiced them.

Kautilya suggested three measures to deal with the problem of fraud. First, people have to be informed of the existing laws, since it is not possible to obey them in the absence of proper information. He codified (along with modifications and extensions) all the rules and regulations. According to Kautilya, the laws must be unambiguous and as comprehensive as possible. Second, he proposed an organizational structure, which reduced the scope for conflicts of interest. Third, he suggested long lists of punishments for cheating the government and rewards for commendable service. Each of these measures is now discussed in turn.

Laws Must have Clarity, Consistency, Completeness and be in Written Form: Kautilya wrote [p. 213] "The rule of kings depends primarily on [written] orders; even peace and war have their roots in them [2.10]." He believed that effective enforcement of rules and regulations requires clarity (no 'confusion'), completeness ('is avoiding redundancy or deficiency of letters, words and subject matter; citing reasons, quotations and illustrative examples'), and consistency ('non-contradiction') and must be in a written form. He [p. 213] suggested that the Royal Scribe "Have a [thorough] knowledge of all conventions, be quick in composition and have good handwriting. He shall also be able to read [clearly] documents and edicts [2.10.3]." Kautilya recommended

that the Royal Scribe be one of the highest paid (48000 panas) employees to emphasize and ensure that the Royal Edicts were accurately recorded. Kautilya [p. 215] went so far as to suggest "Cutting off both feet and a hand or a 900 panas" for the "Royal Scribe deliberately writing down wrongly a Royal Edict, by omission or commission [4.10.14]."

Designing an Organizational Structure to Minimize the Scope for Cheating and Conflicts of Interest: Kautilya realized that no financial management is possible in the absence of accurate and complete records. He proposed the establishment of two very important offices to monitor and manage the financial health of the state: the positions of Treasurer and Chief Comptroller-Auditor. Both were to be very well paid, and in turn they were to be incorruptible and efficient. It is very interesting to note that Kautilya divided financial responsibility between the Treasurer and the Comptroller-Auditor. Both were supposed to report directly to the king.

The Treasurer was responsible for managing assets while the Comptroller-Auditor handled: the construction and maintenance of the Records Office, maintenance of Records, compilation of rules, inspection, audit, and preparing and presenting financial reports to the king. Thus Kautilya attempted to encourage specialization, accountability and to limit the scope for conflicts of interest.

According to Kautilya [p. 225] "The Comptroller shall be responsible for the compilation of all fixed rules as well as the conventions used [2.7.3]." It appears that in 4th century B.C.E. India there were some accounting conventions, the application of which were monitored by the Comptroller-Auditor.

Kautilya was aware of other situations in which conflicts of interest could arise. He recommended that a king should appoint advisers and consult them according to the nature of the project. However, [p. 200] "No one who belongs to the side likely to be adversely affected by the project shall be consulted [1.15.46]." Similarly, he recommended an income tax on agricultural income and a kind of occupational tax on non-agricultural income to deny opportunities for income-shifting to merchants. He [p. 271] stated, "The tax shall be recovered, in cash, from those skilled in their work. Their offences shall not be forgiven, for they are apt to [evade the tax and] pretend that the sales made by them were on behalf of someone else [5.2]." Apparently, he was aware of the difficulty of collection of an income tax on the non-agricultural income.

Labor Management Policy: Finally, according to Kautilya, labor management policies were important to reducing fraud. Book-keeping was not restricted to compiling data, but also to correcting inadvertent errors and to discouraging and reducing manipulation or fraud. Similarly, audits tests could not ensure that all transactions were recorded accurately. Kautilya was concerned about the possibilities of overstating expenditures and understating revenues by employees siphoning off state resources. Kautilya recommended a judicious mix of monitoring, inspection and good wages. He understood the needs, nature and aspirations of workers. For example, he [Subramanian, 2000, p. 108] stated "One should avoid the country where there is no reward for work, no activity, no relatives or no means of learning." According to Kautilya [p. 283] "The king shall have the work of Heads of Departments inspected daily, for men are, by nature, fickle and, like horses, change after being put to work [2.9.2-4]." It was impossible for the king to supervise the Heads of Departments personally because they were stationed at distant locations. Therefore, the king should pay incentive wages to the Heads of Departments and also get their work inspected to reduce shirking. Similarly, he prescribed [p. 289] that the Chancellor and the Treasurer would be paid 24000 panas annually, "enough to make them efficient in their work." Such a high reward should be compared to the yearly minimum wage for an unskilled worker, which was only 60 panas at this time.

Kautilya recommended that errant individuals should be disciplined. He called for the creation of an intelligence service for apprehending violators, pursuing fair trials and punishing the guilty, depending on the nature and gravity of their offences. He recommended a judicious mix of incentive-based compensation, inspection, supervision and appropriate punishment to reduce cheating and shirking.

Spengler [1971, p. 74] summarizes Kautilya's labor management policies as follows: "His analysis, of course, was implicit, not explicit; it rested upon the assumption that individual behavior could be controlled in large measure through economic rewards and penalties, particularly when these were commensurate with the action to be encouraged or discouraged. Accordingly, while Kautilya looked at economic issues through the eyes of an economic administrator, he was aware that rules must fit man's economic propensities and foster rather than repress useful economic activity."

OTHER ACCOUNTING-RELATED PRESCRIPTIONS

As mentioned above, according to Kautilya, the level of net worth and its growth were of critical importance. Therefore, statements of the revenues and expenditures of public enterprises and of the state budget were required to monitor the growth in net wealth. He developed the necessary apparatus and financial rules and regulations to achieve the goal of sound financial health. He devised a system of bookkeeping rules and financial rules or codes of conduct to manage the financial affairs of the state.

Kautilya on Bookkeeping, Maintenance of Records and Periodic Accounting: Kautilya developed a format for 'recording, classifying and summarizing' data on financial variables. He suggested a comprehensive approach to maintaining accounts for revenue, expenditures and net balances for each department. According to Kautilya, the Comptroller-Auditor would maintain detailed accounts. He [p. 225] suggested "The Closing Day for the Accounting Year shall be the full moon day of the month of Asadha [June/July], the year consisting of 354 days (according to the lunar calendar) with a separate book for the intercalary month [2.7]."

Financial Rules for Appropriate Conduct: Kautilya specified many accounting rules. On the proper maintenance of accounts he [p. 278] stated, "All accounts shall be maintained in the proper form and legibly written without corrections. Failure to do so shall be a punishable offence [2.7.35]." On the timely submission of accounts he suggested, "Day-to-day accounts [to be submitted once a month] shall be presented before the end of the following month and late submission shall be penalized [2.7.26, 27]." He also instructed the account officers "Not lie about the accounts and not try to interpolate an entry as if it was forgotten [2.7]." He [p. 279] added "High officials shall be responsible for rendering the accounts in full for their sphere of activity without any contradiction in them. Those who tell lies or make contradictory statements shall pay the highest level standard penalty [2.7.25]."

It may be added that Kautilya was a realist. For example, he [p. 283] suggested, "The king shall forgive a trifling offence and be content even if the [net] revenue is small [p. 2.7.41]." Since he [p. 281] reasoned, "Just as it is impossible not to taste honey or poison that one may find at the tip of one's tongue, so it is

impossible for one dealing with government funds not to taste, at least a little bit, of the King's wealth [2.9.32]."

KAUTILYA ON THE ROLE OF ETHICS

Righteousness is the root of happiness. Greed clouds the intellect. Another's wealth, even if it be husk, should not be stolen [Kautilya's Sutras, Subramanian, pp. 20, 46, 51].

Issues relating to ethical conduct have been discussed since antiquity. Kautilya was no exception. He offered many insights, such as: no amount of rules and regulations or auditing can prevent unethical behavior, both character-building and action-oriented ethical values are essential for a solid grounding in ethics and in offering guidance to practice ethical behavior, ethical behavior helps in the maintenance of law and order and the creation of wealth, which promotes economic prosperity, and religious scriptures and philosophy are the sources of ethical values. However, only the first two insights, which have a particular relevance to accounting, are presented here.

Kautilya on the Sanctity of Contracts and Magnificence of Conscience: Kautilya used the word 'dharma' (which in general means duty) and righteousness in personal and social conduct. He [p. 107] described the basic ethical (dharmic) values as follows: "Duties common to all: Ahimsa [abstaining from injury to all living creatures]; satyam [truthfulness]; cleanliness; freedom from malice; compassion and tolerance [1.3.13]."

Kautilya believed that not only was it important to adhere to the principles of accounting but those who practiced them should behave ethically. He [pp. 133-134] stated: "Some teachers say that oppression by the Treasurer is worse because he harasses by finding fault with whatever is done and levies fines [which he pockets?]. The Chancellor, on the other hand, cannot do much harm since he is supervised by an [audit] bureau and can enjoy only what is legitimately assigned to him [8.4]." Kautilya was of the view that "The Treasurer can only appropriate what is brought into the treasury by others. But the Chancellor collects his own revenue first and then he may collect the king's revenue or even let it go to ruin; he can do as he pleases with other people's property [8.4]."

These statements imply that Kautilya considered that independent audits were necessary but insufficient in eliminating financial misappropriations. He noted that the financial affairs

of the Chancellor, who was responsible for collecting revenue from the countryside, was audited but could cause more financial loss than the Treasurer who was not audited. He urged the king to make every effort to appoint incorruptible individuals to such key positions.

Kautilya on Character-Building and Action-Oriented Values: The Greek philosophers Plato and Aristotle considered ethical values as virtues, emphasized the building of a person's good character and believed that good conduct would naturally follow. Post et al [2002, p. 129] notes: "Moral values acknowledged by Aristotle include courage, temperance, justice, and prudence. St. Thomas Aquinas added the Christian values of faith, hope, and charity to the list of morally desirable virtues. Additional virtues include honesty, compassion, generosity, fidelity, integrity, and self-control."

While Aristotle addressed the principle of virtue ethics he did not discuss any action-oriented principles of ethics. Kautilya referred to both virtue ethics and action-oriented principles of ethics. But he elaborated only on the action-oriented ethical values, such as, the golden rule, rights, fairness, and servant leadership. He [Subramanian, p. 83] wrote: "Proper behavior is more important than being virtuous." Kautilya was well educated in *Vedas* and philosophy but he thought that a discussion regarding personal character-building was beyond the scope of *The Arthashastra*. For example, he stated [p. 142] a prince "Should learn philosophy and the three *Vedas* from authoritative teachers, economics from the heads of [various government] departments, and the science of government from [not only] theoretical exponents of political science [but also] from practicing politicians."

Two remarks are in order. First, Kautilya believed that instilling ethical values in a child kept him ethical later in life whether he worked as a public servant (a politician or bureaucrat) or as a merchant (or an accountant) in the private sector. Second, the grounding in ethics, such as, the development of the capacity to follow one's conscience, look beyond self-interest and show benevolence toward others, was as important as learning professional skills.

Kautilya on Measures to Improve the Ethical Climate: Kautilya emphasized the creation of an ethical climate in the state and also suggested various measures to enhance it. He argued that bureaucratic organizations were necessary since nothing can be

accomplished without them but was very apprehensive about the potential for corruption and the difficulty of detecting such practices. He recognized that a good system of bookkeeping and auditing were necessary but not sufficient to guarantee ethical practices. In other words, an accounting method, no matter how sound, would not defeat 'aggressive and creative' accounting practices.

Kautilya [p. 286] identified several types of officials who might cause loss to the Treasury. A discussion of two types reveals the nature of his insights. According to Kautilya, an official who causes loss may be arrogant "about his learning, his wealth or the support he gets from highly placed persons" [2.7.10]. The phrase 'support he gets from highly placed persons' implies the potential for abuse from undue access to high officials. Similarly, an official may be greedy, "which prompts him to use false balances, weights or measures, or to make false assessments and calculations" [2.7.10]. Kautilya insisted on character references before a person was hired.

Kautilya suggested various measures to the king to improve the ethical climate. He [p. 121] stated: "A king endowed with the ideal personal qualities enriches the other elements when they are less than perfect [6.1]," adding [p. 123] "Whatever character the king has, the other elements also come to have the same [8.1]." According to Kautilya, a king should uphold the highest ethical standards and rule through his leadership and not by his authority. Among the other recommendations proposed were measures covering the laws against sexual harassment, child labor, and the establishment of an ethical code of conduct.

CONCLUSIONS

Kautilya offered a complete conceptual framework and a set of concrete policy measures to promote economic development and fairness. He specifically emphasized innovations in accounting methods along with the accumulation of capital, designing a fool-proof set of rules and regulations for reducing the potential for fraud, building of an impeccable character and promoting ethical values to achieve economic prosperity. The foregoing indicates that Kautilya developed a comprehensive system of accounting, including bookkeeping rules, periodic accounting, preparation and reporting of income statements and independent audits to monitor, manage and assess financial status.

Mattessich [1998] concluded that the origin of accounting principles found in Kautilya's *Arthashastra* place it on a par with

Pacioli's *Summa*. Kautilya's other contributions relating to the scope and methodology of accounting, the necessary conditions for reducing the potential for fraudulent accounting and conflicts of interest, facilitating compliance with rules and regulations, and the role of ethics have been discussed in this paper. It is claimed that Kautilya viewed accounting as an integral part of economics, placing explanation and prediction within its rightful domain, implying that the scope and methodology of accounting encompasses much more than mundane bookkeeping and auditing. Kautilya's encouragement of innovation in accounting methods may be compared with other general purpose technologies such as innovations in writing and printing.

According to Kautilya, the major underlying factor which drove aggressive and creative accounting (which he calls 'false accounting') practices was excessive greed. Kautilya attempted to contain false accounting through moral persuasion and legal means. He concluded that the successful enforcement of rules and regulations depended on their unambiguous codification. Further, organizational structures should be designed in a way which limited the scope for conflicts of interest. With that in mind, he suggested the establishment of two separate offices of Treasurer and Comptroller-Auditor. Also, he proposed the establishment of a reasonably complete system of governmental accounting comprising: bookkeeping rules, accounting conventions, financial reports, periodic accounting and independent auditing to increase compliance.

Kautilya understood the importance of virtue ethics and believed that they were sources of 'joy and bliss'. He confined his discussion primarily to action-oriented ethical principles and vigorously advanced them as essential to the maintenance of law and order, and to the promotion of economic development. According to Kautilya, a king must set high ethical standards, be a person displaying the highest moral character and must ensure that his successor was equally 'noble'.

Hence, more than a millennium before Pacioli's *Summa*, an Indian guru recognized the centrality of accounting to economic development and was promoting innovations in accounting methods.

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