# MANAGEMENT ACCOUNTING PHILOSOPHY III: THE MANAGEMENT ACCOUNTING EVALUATION FRAMEWORK

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**This article, the final piece of a three-part series, outlines an evaluation framework so that management accounting places the manager and enterprise optimization front and center.**

The first two articles in this series proposed a structure comprising a foundation and two cornerstones for management accounting (MA), intended as the first steps towards the restoration of the profession. The foundation is the recognition that the correspondence definition of truth is wholly applicable to MA. The two cornerstones are the principle of causality for operational modeling and the principle of analogy to support managers' optimization endeavors.

One will find ample support for the proposed structure in MA tradition, which has endured its share of criticism from new approaches that have emerged since the early 1980s. [1] To put these criticisms and the claims of prevailing MA approaches into perspective this article first outlines an evaluation framework. The framework, in line with the need for MA to be manager and enterprise optimization centric, is based on the laws and principles discussed in the first two articles, and comprises three dimensions: 1) the optimization scope; 2) the underlying inductive principles; and 3) the degree of system structure. As was the case in the first two articles, philosophy will again be called upon, this time to assist in evaluating prevailing criticisms and assertions in MA. A number of recognized logical errors will prove helpful in this regard.

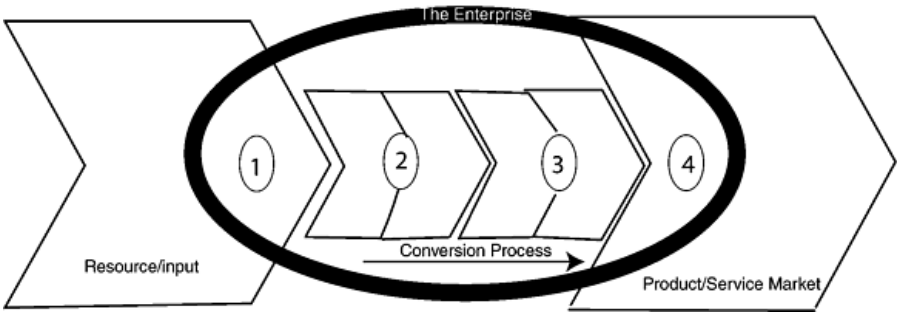
## Evaluation dimension 1: Optimization scope

Optimization scope comprises two dimensions: 1) the value chain areas earmarked for optimization focus (breadth of optimization scope); and 2) the range of decisions used in optimization actions (the depth of optimization scope). For MA to support managers' optimization endeavors these two dimensions dictate the reach of its cost model.

The first scope dimension, *breadth*, consists of four value chain optimization areas: 1) sourcing the resource/input markets; 2) applying inputs in the conversion process; 3) producing outputs; and 4) applying enterprise outputs in product/service markets. [2] Exhibit 1 depicts each of these areas.

**Exhibit 1.**

**Optimization Areas in the Extended Value Chain**




*Sourcing resource/input markets* refers to new technologies, methods, and resources acquired to optimize conversion where decisions strive to maximize limited investment resources through capital replacement, investment, sourcing, and resource outsourcing. *Applying inputs in conversion* emphasizes efficiency (doing things right). Decisions address the application and utilization of resources, resource realignment or redeployment, process improvements, eliminating waste, and capacity management. *Producing outputs* focuses on effectiveness (doing the right things) in terms of producing the right outputs. Decisions here deal with product make-or-buy, supporting new product introduction, process improvements, reengineering, and eliminating waste. *Applying enterprise outputs* to product/service markets is an area where decisions cover target markets and market segments, costs-to-serve these, product/service mix, product discontinuance, entering new markets and/or new products in existing markets.

The following are two examples of optimization focus based on the value chain areas. In mining precious metals, ore yield is the primary determinant of product costs. Leading edge geological exploration and the most efficient inputs for processing ore tonnage place the emphasis on the input side of Exhibit 1 . In contrast, high-tech industries are subject to product life cycles measured in months and often supersede the majority of their products in one year. Consequently, the emphasis is on R&D, new product technologies, their introduction to the market, and related first-mover advantages. The focus is decidedly more toward the two output areas.

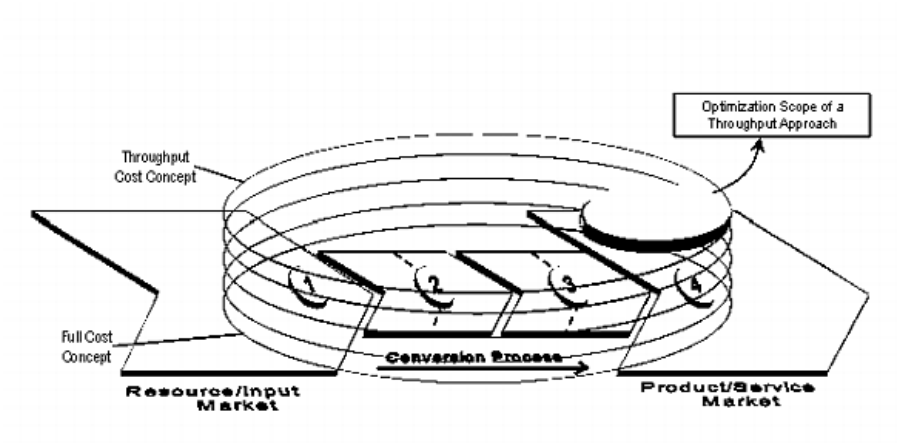
The second optimization scope dimension, *depth*, is concerned with the information needs related to the magnitude of change that result from optimization decisions. More incisive decisions require deeper insight into causal relationships and the decision's effects. For MA this means providing information on a range of cost concepts appropriate to the full range of optimization decisions, which include:

- Throughput costs (when deciding to produce one additional unit within the relevant range on a constrained resource)
- Incremental costs (the difference in total cost between two alternatives in a decision)
- Short run variable/proportional costs (when considering the opportunity cost of mutually exclusive uses of resources)
- Attributable costs (for divestment decisions such as a bank outsourcing its information technology function) [3]
- Full costs (for strategic decisions such as a tool manufacturer entering the South American market by establishing a plant in the region).

In the evaluation framework the optimization scope dimension serves to gauge an MA approach's optimization capabilities. For example, the optimization scope of a throughput approach is illustrated in Exhibit 2 . Compared to the full breadth and depth of optimization scope (the transparent oval disks in Exhibit 2 ) the throughput approach's optimization capability is represented by the solid disk on top. The approach's breadth covers portions of value chain area three (producing outputs) and area four (apply outputs to markets) while its depth caters only for the first cost concept (through-put costs) useful for decisions that result in small changes in output.

**Exhibit 2.**

**Depth and Breadth of MA Scope**

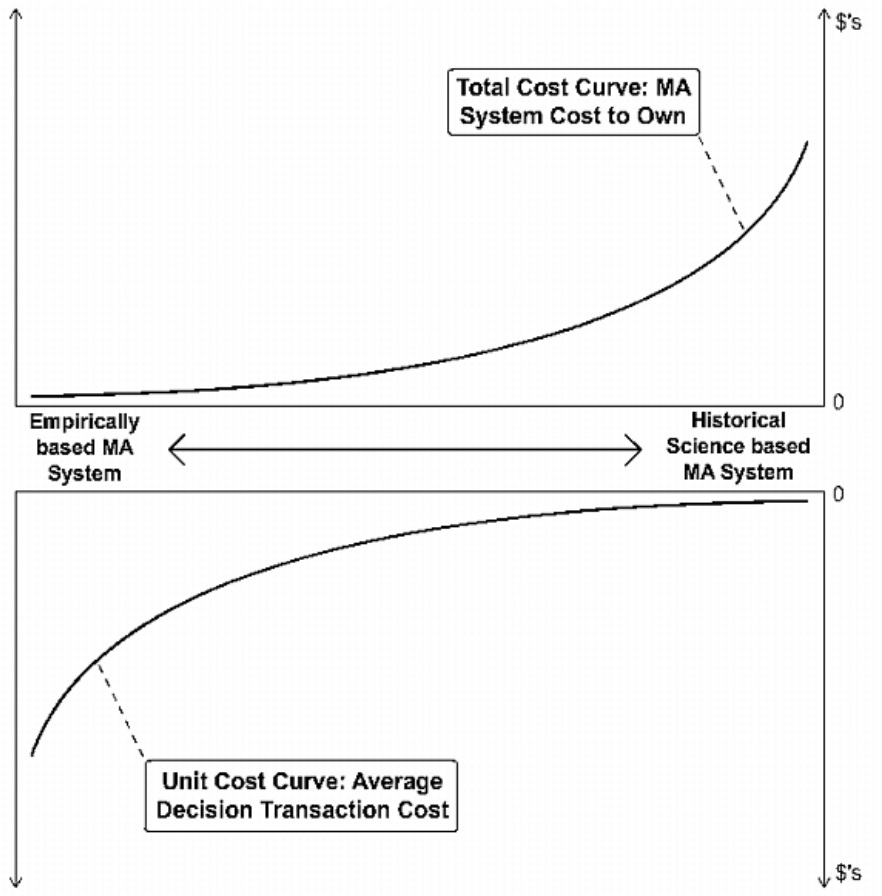



## Evaluation dimension 2: Inductive principles

As indicated in the second article in this series, the inductive principles of empirical science and historical science are both featured in MA systems. There are tradeoffs between these two branches as the primary basis for an MA system. Exhibit 3 illustrates the tradeoff between total system cost and decision transaction cost. [4] A pure empirical system relies on special studies for decision support and has high decision transaction costs but low system cost. In contrast, a system with a comprehensive cost model that relies on historical science principles to support a wide range of optimization decisions has high system costs but low decision transaction costs.

**Exhibit 3.**

**MA Systems Inductive Principles Cost Trade-Offs**




Companies that do not have an MA system, or have a simplified system, depend on the empirical approach for many decisions. Such an approach is expensive where the nature of the business dictates the need for extensive optimization scope. The empirical approach is also subject to timing offsets such as an event that cannot be observed within the time the decision must be made, i.e., a special study on a product not manufactured for a while or construction and civil engineering projects. In contrast, a system based on the inductive principles of historical science will over time establish and refine its standards as it experiences/observes such infrequent events and includes them in the cost model, significantly lowering the cost and the risk of these types of decisions.

The appropriate mix of these two branches of inductive logic in an MA system is influenced by a number of factors such as the volume of decisions and the ratio of small decisions (those within the relevant range) to more penetrating decisions (e.g., capacity adjustment and product rationalization decisions). The complexity of an enterprise and its optimization scope also plays an important role; more challenging and dynamic optimization environments require the sophistication of an MA system based on historical science.

## Evaluation dimension 3: The degree of system structure

The third dimension of the evaluation framework accounts for the degree of formal structure in the MA system. For example, consider Exhibit 3 as it would apply for a sole proprietor who has all the information he needs for decision making in his head. Decision transaction cost will be *very* low even without a formally structured system—the best of both worlds. As a business grows, however, the lack of formal structure becomes a liability. A large global enterprise can no longer rely on what is in one person's head to be successful; much more structure is required in its MA information. A need for structure is directly related to the complexity of the business. Complexity in turn is a function of a myriad of factors (size, length of product life cycles, geographical spread, diversity in product service offerings, industry, and competitive landscape).

Although the system cost of a comprehensive historical science based solution is its biggest disadvantage, the structure it provides

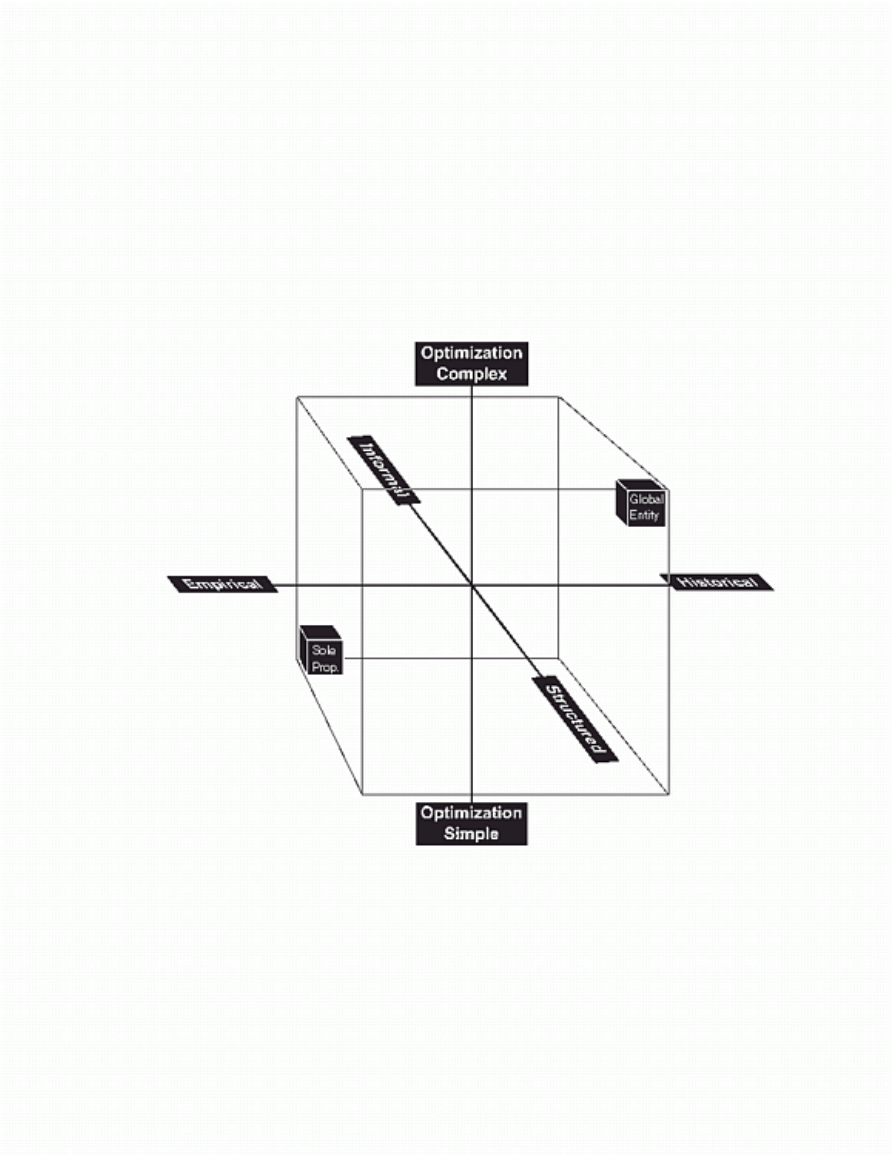
holds advantages, such as consistent data, transparency in optimization efforts, and less risk when timing offsets occur. Moreover, with value chain integration in MA, the system cost disadvantage is significantly reduced. [5] Integrating MA into operational systems means that their implementation largely encompasses the MA system and that operational maintenance activities double as cost model maintenance. Research indicates that value chain integration contributes significantly towards making historical science based MA systems cost effective and sustainable. [6]

## The evaluation framework

The three evaluation dimensions are combined into the framework in Exhibit 4 and make up the three axes of the graph: inductive principles (the x-axis), optimization scope (the y-axis) and degree of system structure (the z-axis). Exhibit 4 also illustrates the mapping of the two enterprise optimization extremes already mentioned. The first extreme is the sole proprietorship with a system based solely on empirical principles, a simple optimization equation, and very little formal structure. On the opposite end is the global entity with a complex optimization challenge, the need for a high degree of structure in its MA information, and a system based on historical science principles.

**Exhibit 4.**

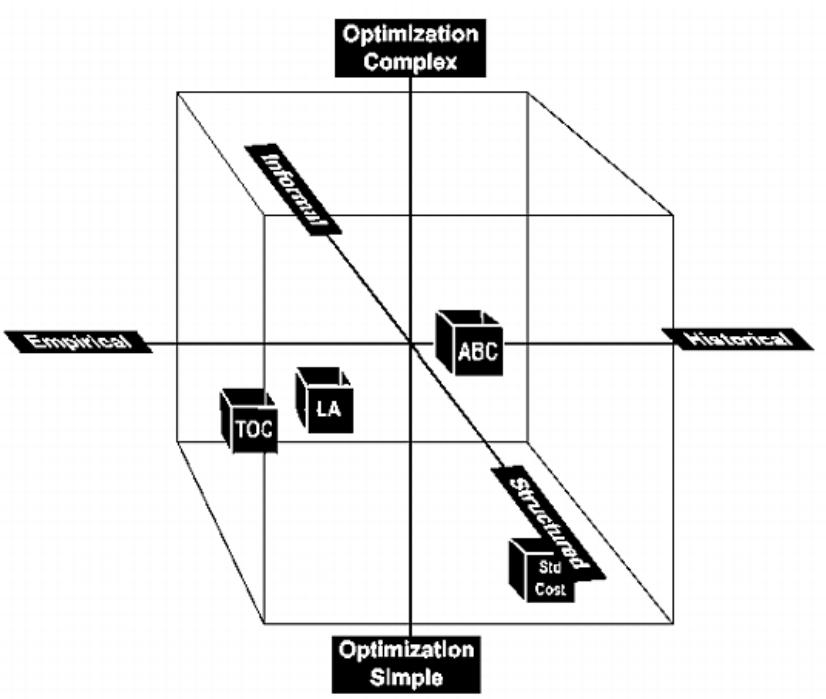
**Evaluation Framework**




It is important to note that the MA structure proposed in this series of articles applies throughout the framework; the sole proprietor—like the global entity—must use information that corresponds to the facts and apply the principle of analogy in enterprise optimization. The universal nature of the evaluation framework allows for the mapping of prevailing approaches in MA, as illustrated in Exhibit 5 . [7]

**Exhibit 5.**

**Prevailing MA Approach Mapping**




Activity-based costing (ABC), while somewhat difficult to map because of its lack of implementation standards, falls on the high side of structure and on the low side of a historical science system due to its inability to come to terms with the modeling of fixed costs. ABC, for various reasons such as incongruent treatment of MA concepts, has seen limited success as an enterprise optimization tool.

Lean accounting (LA)—on the back of lean manufacturing—in its purest form depends upon long product life cycles, 8–9 years in automotive, and right-sized production facilities to limit optimization scope to the relevant range. Limiting optimization variables in this manner seems to work for companies or industries where product differentiation is the norm and price manipulation can be used to reach optimal output volumes. [8] For decisions beyond the relevant range, lean accounting defaults to an empirical model. [9] In cases where some of the lean preconditions (product life cycles, right-sizing, or price elasticity) cannot be met or their potential does not exist, the approach results in significant amounts of excess/idle capacity. [10] Lean accounting faces challenges to support optimization even within the relevant range and scores low on this dimension. [11] Companies with a dynamic and complex optimization challenge (frequent adjustments outside the relevant range) cannot be expected to take lean accounting's empirical leanings seriously. As far as structure is concerned, lean accounting insists on limited structure and prefers a single cost object (the value stream).

The theory of constraints (TOC) is both less structured than lean accounting and assumed to be more dependent on empirical special studies due to its lack of even a summary cost object. The TOC through-put-only focus means it scores low on overall enterprise optimization. Standard costing, while highly structured and based on historical science, scores low on optimization, for all the reasons unearthed over the last number of decades.

The mapping in Exhibit 5 of prevailing MA approaches sets the scene for a critical look at a number of their assertions. It is important to recognize that there is a whole spectrum of MA sophistication in Exhibit 4 along a path from the sole proprietorship to the global entity. It is this recognition of the varying demands on MA that serves as the backdrop for the prevailing approaches' claims and assertions.

## Fallacies

The 1980s and 90s spawned a number of new MA approaches, each with its own criticisms of what had gone before and claims as to its own capabilities and benefits. Many of these criticisms and claims are valid, but there are also those that err in their logic and/or conclusions; they commit what philosophy calls fallacies.

A fallacy is defined as a logical error, e.g., reasoning that does not follow the rules of rational inference. [12] Philosophy recognizes more than forty fallacies. In an apparent attempt to show that philosophers do have a sense of humor, these have colloquial or comical names like “nothing-buttery,” “red herring,” and “argument of the beard.” Being aware of fallacies helps refute errors, protect valid conclusions from criticism, and prevent the acceptance of conclusions for inadequate reasons, all objectives of this paper. [13] The proposed MA structure is firmly grounded in the laws and principles of logic, and one would expect to be able to readily expose fallacies. Pointing out fallacies in prevailing approaches also serves to shore up the proposed MA structure or *fill up its moat* so to speak.

*Fallacies: simplicity in MA*. Probably the most persistent and seductive refrain in MA over the last two decades has been the promotion of simple solutions to the optimization challenge. Simplicity reasoning is not a new phenomenon in MA. Church almost a century ago had the following to say about it:” … no method that fails to provide the information in this detailed form is anything more than a sham. *No facts that are in themselves complex can be represented in fewer elements than they naturally possess.“* And “The snare of the `simple system' is responsible for more inefficiency and loss than is generally realized.“ [14] Harsh words indeed. The response to simplicity reasoning today requires that two aspects, also stressed by Church's emphasis, are understood: 1) the nature of enterprise optimization; and 2) the reasoning that forms the basis for the simplicity push.

First, the business world is complex. Global competition, extended supply chains, shorter product life *cycles*, increasing R&D costs, and successive waves of technology at ever higher complexity and cost provide convincing examples and point to inevitable progression along the path of MA sophistication. [15] It is therefore reasonable to expect the optimization of a large number of entities to be complex and also rational to infer that the logical system (whether empirical or historical) required to support optimization must cater to that complexity.

Second, simplicity reasoning in MA is not based on the premise that the business world is simple—it clearly is very complex—but that MA must be simple. Such reasoning is contrary to the law of rational inference, and as Church pointed out it is along this line that simplicity reasoning must be challenged.

As can be expected, reductive fallacies feature prominently in simplicity reasoning but its errors are not limited to just one category. Moreover, simplicity reasoning in MA does not commit individual logical errors independently; instead it weaves a number of fallacies into a compound but ultimately flawed and invalid argument. Reductive fallacies reduce a multi-faceted problem (e.g., enterprise optimization) to some aspect of the problem, “nothing-buttery” reduces a complex issue to “*nothing-but*“ a single point. [16] In MA, the nothing-buttery fallacy is evident in claims that enterprise optimization is nothing but throughput maximization or nothing but optimizing the lean accounting value stream. The problem with these “nothing-but” claims is that they require “more-than” knowledge. For example, enterprise optimization is clearly much more than just throughput. What do throughput proponents know about the stepped relationships of certain costs in capacity adjustment decisions that affords them the luxury of shunning the need for any insight into these relationships? Those in the know of the “nothing-but” solutions never share their “more-than” knowledge. Why?

In the MA structure proposed in this series of articles, optimization scope is broadly defined and areas of less significance or more optimization focus result from informed decisions that knowingly strike a balance between managers' information needs, practical limitations, and cost-benefit. This level of transparency is clearly superior and preferred to a cloak-and-dagger approach that proposes a solution predicated on special “more-than” knowledge into which nobody else has insight.

Introducing a red herring to the discussion will always divert attention, which brings us to the *diversion fallacy*. [17] Rather than prove its point, simplicity reasoning throws the undesirability of complexity into the mix. [18] The red herring fallacy simply evades the real question: Is the simple solution feasible in demanding enterprise optimization scenarios? The complexity-red herring changes the subject, and the simplicity proponent proceeds as if his/her point has been proven. This tactic is particularly effective where the red herring (complexity) and the point to be dodged (the feasibility of simplicity) are intertwined as in simplicity reasoning in MA.

Simplicity is easy to promote as a palatable solution when it resonates with our avoidance of conflict in having to deal with the inconsistencies and confusion of a relativist MA environment or complexity in business. Neither the allure of a simple solution nor the undesirability of unnecessary complexity in MA in any way proves that a simple approach is the optimum solution or even feasible when it comes to all enterprise optimization scenarios. The evaluation framework highlighted the fact that simplicity has a place in unstructured, empirical, and simple optimization scenarios. The broad-brush applicability to the other end of the scale implied by simplicity proponents lacks credibility and substance.

Next, the reasoning of the *slippery slope fallacy* [19] says, “Reject one thing (a comprehensive approach) because it will slip into another

thing (unnecessary complexity).” This argument relies on the domino-theory and insists that a solution should be rejected because it, of necessity, leads to an undesirable consequence. For example: “If we train more management accountants, financial accounting will suffer.” This logical fallacy implies a necessary connection or at least an inevitable one. However, lack of a real logical connection means there is no domino effect or slippery slope to slide down. Unnecessary complexity does not inevitably follow on a comprehensive solution. [20]

A reductive fallacy called *the complex question* [21] is characterized by the classic loaded question: “Do you still beat your spouse?” An MA version sounds like this: “Do you really want that complex MA system that your shop floor people won't understand?” Complex questions combine two questions into one, one of which is typically based on a dubious assumption (in this case, that the feasibility of a simple solution to enterprise optimization has been proven or that the shop floor is always the center of the universe and *must* understand all the intricacies of enterprise optimization). For good measure, proponents throw a red herring (complexity) into the mix and imply a slippery slope awaiting adopters of a comprehensive approach. It is exactly such murky reasoning—a nothing-buttery red herring on a slippery slope rolled into a complex question—that the proposed structure intends to expose.

The path forward for sensible debate on the complexity-simplicity issue must be based on five steps to be taken by the proponents of simple solutions, namely:

1. Define simplicity in MA.
2. Show why the laws and principles of logic are not valid for MA and why the proposed cornerstones must be applied inconsistently (as the simple solutions do).
3. Reveal the “more-than” knowledge that enables the conclusion that their “nothing-but” optimization scope is all that is needed for comprehensive enterprise optimization.
4. Drop the red herring and show unequivocally that the simple solution is capable of satisfying the entire spectrum of MA sophistication. Failing this, the argument at best is against unnecessary complexity in MA and not against a comprehensive solution that is as simple as possible.
5. Employ sound reasoning in their discourse.

## Quo vadis?

Where to from here? This series of articles argued for the laws and principles of logic as the basis for MA. The first article, using deductive logic, showed that MA can and must correspond to the facts, i.e., its information has to be a true reflection of economic activity. The second article illustrated how inductive logic, and in particular the principle of causality, serves as the basis to achieve MA's “correspondence to the facts” objective. Moreover, the case was made for using historical science principles (causality and analogy) in decision science and for managers' analogous responsibilities. These basic building blocks were combined into a proposed structure for MA, intended as the basis for making the profession both manager and enterprise optimization centric.

The proposed structure is unassailable for at least four reasons. First, the naysayer must argue against the applicability of the laws and principles of logic in MA; he must argue for MA to be an illogical representation of enterprise economic activity, which would be absurd. Second, the principle of causality, as the chief cornerstone, is pervasive throughout MA history and in current application: all prevailing approaches use it, albeit inconsistently. Third, as demonstrated in the second article, the proposed structure integrates readily with the existing MA body of knowledge. Fourth, its principles are clearly pervasive in current MA and managerial practice.

The MA profession finds itself in a state of disarray and its customers (managers) alienated. Understanding why this happened is vital to recognizing the path out of the current maze. The explosion in tools and methods in the 1980s introduced their own sets of concepts, principles, and as is now evident, errors. This divergence, which can be traced to the generic fallacy, set in motion an environment where anything goes, i.e., relativism. As was argued in the first article in this series, MA is in a downward spiral because relativism is rife in the profession. Relativism is self-defeating and at its core illogical. In MA it led to conflicting theories, confusion, contradictions, lack of real learning and progress, and an inability to communicate effectively—both internally and externally.

MA is in dire need of guidance and structure. The basic building blocks of the profession lie strewn across the landscape, hidden behind fallacies and overgrown by rogue principles. However, they do still fit together coherently and are able to provide the bedrock the profession needs. Clearly, the mere presence of sound principles does not prevent using unsuitable principles or committing fallacies. Sound principles, like superior weapons, are defensive mechanisms that keep rogue enterprises at bay and are wielded when

necessary, but this requires them to be kept, guarded, and maintained. There is therefore only one sensible course of action for MA going forward: embrace the proposed structure, guard and apply its key tenets, and in that process root out rogue principles, malpractices, and fallacies. An adapted Albert Einstein quote says it best: “The management accountant must not merely wait and criticize, he must defend the cause the best he can. The fate of the profession will be such as the

profession deserves.“ [22]

[1] MA Tradition as used in this series of articles refers to the body of MA knowledge accumulated over more than a century prior to the explosion in tools, methods, and “new” thinking in the 1980s and beyond.

[2] Jackiw, C. & Van der Merwe, A. 1999. “Strategic Cost Management in the Airline Industry.” *The Handbook of Airline Finance*. Butler, F. & Keller, M. Editors. McGraw-Hill. Oakdale, NY. p. 108.

[3] Shillinglaw, G. 1963. “The Concept of Attributable Cost.” *Journal of Accounting Research*. Chicago, IL. p. 73–85.

[4] System costs comprise implementation and maintenance costs and decision transaction costs comprise the costs to collect, collate and process decision support information.

[5] Clinton, D & Van der Merwe, A. 2006. “Management Accounting Approaches, Processes and Tools.” *Cost Management*.

[6] Friedl, G. 2006. “Lessons from German Cost Accounting.” Johannes Gutenberg-University of Mainz. A presentation at the CAM-I quarterly meeting. Dec 12, 2006. Phoenix, AZ.

[7] In this article only approaches that have enjoyed significant exposure in the U.S. will be addressed. Approaches like GPK (the German Grenzplankostenrechnung) and RCA (Resource Consumption Accounting) which have seen little exposure or are just now emerging out of the laboratory will not be addressed.

[8] Flint, J. 2006. “Toyota's Big Foot.” Forbes.com. http://www.forbes.com/columnists/2006/02/21/toyota-tundra-pickups-cz_jf_0221flint.html . “The usual Toyota strategy is to introduce a new vehicle at give-away prices to build volume.“

[9] Grasso L. 2006. “Response to a Letter to the Editors.” *Cost Management*, Thomson Tax & Accounting. New York, NY. p. 7

[10] Kennedy, F. & Maskell, B. 2006. “Accounting for the Lean Enterprise: Major Changes in the Accounting Paradigm.” A Statement on Management Accounting. Institute of Management Accountants. Montvale, NJ. p. 18. “One significant impact of these changes on the value stream is the reduction in nonproductive capacity and the increase in available capacity.“

[11] Thompson, J. and van der Merwe, A. 2007. “The Lowdown on Lean Accounting,” *Strategic Finance*. IMA. Montvale, NJ. February issue. For a detailed discussion on this and other challenges with lean accounting.

[12] Angeles, P.A. 1992. *HarperCollins Dictionary of Philosophy*. Harper-Collins Publishers, Inc.: New York, NY. Second Edition, p. 104.

[13] Geisler, N. L., & Brooks, R. M. 1990. *Come, Let Us Reason: An Introduction to Logical Thinking*, Baker Book House: Grand Rapids, Mich. p. 80.

[14] Church, A.H. 1910. “Production Factors in Cost Accounting and Works Management.” *The Engineering Magazine*. Republished by Arno Press. *The History of Accounting Series*. 1976. New York, NY. p.172–173. Emphasis per the original.

[15] Dutta, S. and Lawson, R. 2006. “The Coming Nanotech Revolution-Accounting Challenges,” *Cost Management*. May/June Issue. Vol. 20 Number 3. TTA: New York, NY. p. 39–48. In regard to nano-technology development cycle and investment costs compared to traditional manufacturing.

[16]

See note 13 above, page 106.

[17]

See note 13 above, page 102.

[18]

Grasso, L. 2006. “Barriers to Lean Accounting,” *Cost Management*. TTA: New York, NY. “They [accountants] may feel more valuable supplying *complex* and detailed data that others are unwilling or unable to supply, and they may feel that a *complex*, demanding environment must necessarily require *complex*, detailed data.” (emphasis supplied).

[19]

See note 13 above, page 113.

[20]

Albert Einstein said: “Everything should be as simple as possible, but not simpler.” As quoted by Savage, R.C. 1993. *Life Lessons: An Inspirational Instruction Book*. Inspirational Press: New York.

[21]

See note 13 above, page 106.

[22]

Adapted from Albert Einstein: “The individual must not merely wait and criticize, he must defend the cause the best he can. The fate of the world will be such as the world deserves.” http://thinkexist.com/