

1-1-2007

Double vision: the theory of mutual causality and the strategic balanced scorecard

Edmund W. Watts
University of Wollongong, tedw@uow.edu.au

Carol J. McNair
US Coast Guard Academy, cmcnair@uow.edu.au

Follow this and additional works at: <https://ro.uow.edu.au/commpapers>



Part of the [Business Commons](#), and the [Social and Behavioral Sciences Commons](#)

Recommended Citation

Watts, Edmund W. and McNair, Carol J.: Double vision: the theory of mutual causality and the strategic balanced scorecard 2007, 1-32.
<https://ro.uow.edu.au/commpapers/2030>

Research Online is the open access institutional repository for the University of Wollongong. For further information contact the UOW Library: research-pubs@uow.edu.au

Double vision: the theory of mutual causality and the strategic balanced scorecard

Abstract

Management accounting researchers have criticised the practitioner-oriented management accounting techniques of the last decade for lacking integrated theories. A contrasting perspective is that these emerging techniques are not atheoretical, but rather natural applications of existing theory as defined in complementary disciplines. Using concepts theory, this paper relates the strategic balanced scorecard (SBSC) to the theoretical concepts of cybernetics. The three fundamental characteristics of cybernetics: causal relationships, communication and change are compared to the SBSC in practice. The results align the practical characteristics of the SBSC to contemporary descriptions of theory, specifically those directed towards abstraction and explanation, thus providing a value-added aspect to practical organisational processes.

Keywords

Double, vision, theory, mutual, causality, strategic, balanced, scorecard

Disciplines

Business | Social and Behavioral Sciences

Publication Details

Watts, T. & McNair, C. J. (2007). Double vision: the theory of mutual causality and the strategic balanced scorecard. APIRA 2007 - Auckland (pp. 1-32). Auckland: APIRA.

DOUBLE VISION:

The Theory of Mutual Causality and the Strategic Balanced Scorecard

Ted Watts, ^{a*}, C. J. McNair ^b

^a School of Accounting & Finance, University of Wollongong, NSW 2522, Australia

^b Department of Management, U.S. Coast Guard Academy, New London, CT 06320

Corresponding author

Tel: +61 2 4221-4005; fax: +61 2 4221-4297

E-mail address: tedw@uow.edu.au (Ted Watts)

Acknowledgements

The authors would like thank Paul Collier, Markus Milne and Cheryl McWatters for their valuable comments and suggestions as well as the participants at the Emerging Issues in International Accounting Conference (2006) and the Fifth Asia Pacific Interdisciplinary Research in Accounting Conference (2007) where earlier versions of this paper were presented.

DOUBLE VISION:

The Theory of Mutual Causality and the Strategic Balanced Scorecard

Abstract

Management accounting researchers have criticised the practitioner-oriented management accounting techniques of the last decade for lacking integrated theories. A contrasting perspective is that these emerging techniques are not atheoretical, but rather natural applications of existing theory as defined in complementary disciplines. Using concepts theory, this paper relates the strategic balanced scorecard (SBSC) to the theoretical concepts of cybernetics. The three fundamental characteristics of cybernetics: causal relationships, communication and change are compared to the SBSC in practice. The results align the practical characteristics of the SBSC to contemporary descriptions of theory, specifically those directed towards abstraction and explanation, thus providing a value-added aspect to practical organisational processes.

Key words: Cybernetics, strategic balanced scorecard, managerial accounting theory.

DOUBLE VISION:

The Theory of Mutual Causality and the Strategic Balanced Scorecard

1. Introduction

At what point does practice merge with theory, and theory with practice? This is an ongoing debate within management accounting, where the “laboratory” is often an organisation that is by its very nature complex. Adding to the complexity of the task facing researchers in this area is the unavoidable tension of applied research—how to carry out this research without becoming part of, or a proponent for, the phenomenon under study.

In a review of contemporary research in managerial accounting in both mainstream and practitioner-oriented accounting journals, Ittner and Larcker (2001, pp. 355-356) made several general observations regarding empirical managerial accounting, including:

...the research is driven by changes in practice... many papers are motivated purely by the fact that a certain topic has received considerable attention in the business press, with little effort to place the practice or study within some broader theoretical context... and...we are left with an underdeveloped body of research that fails to build on prior studies to increase our understanding of the topic....

Zimmerman (2001, p. 425) supports this argument when he notes:

The literature has failed to move from describing practice to developing and testing theories... one reason that the empirical managerial literature has

failed to produce a coherent body of knowledge is because the literature's objective is not to test theories.

While this argument may apply to articles in practitioner-oriented journals, it does not explain the lack of theory development in mainstream managerial accounting journals. It also does little to explain the ongoing failure of the discipline to provide a theoretical underpinning for recent accounting innovations in general, and the strategic balanced scorecard in particular.

While the failure to link modern practice with theory is a reasonable basis for criticizing developments in management accounting, it may not be as appropriate to suggest that a new theory needs to be created to make sense of the emergence and use of these new techniques. Instead, it may be more productive to examine current practices to determine to what extent they reflect, or embody, existing theoretical models. In other words, suggesting that management accounting research can only be grounded if it develops its own, unique theoretical structure may be a "bridge too far".

The motivation for this paper springs from Zimmerman's (2001, p. 426) challenge that without theory development our stock of knowledge in all areas of accounting inquiry will suffer. The challenge is to provide a conceptual lens that examines the practical-theoretical dualism that currently hampers the development of a conceptual understanding of practitioner-oriented techniques such as the strategic balanced scorecard (SBSC). Drawing on systems theory this paper argues that the theoretical

concepts of cybernetics provide a conceptual underpinning for the SBSC. Specifically, Maruyama's (1963) "second cybernetics" is used to explore the relationships between the four perspectives of the SBSC (Kaplan and Norton, 2001a). The purpose of this paper, therefore, is to provide a bridge between the theoretical aspects of cybernetics, in particular the "second" cybernetic conceptualised by Maruyama, to the practices of the SBSC. In doing so, this paper will contribute by providing a theoretical basis for studying the *praxis* of management accounting.

2. Conceptual Development

The mainstream conception of research within the discipline of management accounting is concerned with explaining cause and effect (Luft and Shields, 2003). Even the alternative, the critical research stream, has a similar purpose of change and improvement. For example Baxter and Chua (2003, p. 99) argue that the radical alternative mobilises "research to provide a platform for critique, change and improvement within organisations". In this regard we use understanding, or theory, to create improved practices (Chenhall, 2003).

Bennett (1991) identifies four basic levels of research: description, classification, explanation, and prediction. The third level, explanation, focuses this study. Explanation is an attempt to make sense of observations, by explaining the relationships observed and attributing causality based on some appropriate theory (Smith, 2003). The notion of explanation fits well with Llewelyn's notion model of "concepts theories". As Llewelyn (2003, p. 672) states, concepts constitute theories of practice, which provide

“fundamental tools used in social practice (and in social science) both to observe and represent the world”.

The question facing management accounting today is: “What is theory?” Much that informs accounting research developed within the natural and social sciences, providing what Llewelyn (2003, p. 663) refers to as “a bewildering array of theoretical forms”. This notion of theory is also discussed by Mautner (1997, p. 562), who sees it as “a set of propositions which provide principles of analysis or explanation of a subject matter”. Alternatively, Jary and Jary (1991, p. 658) offer a more formal view:

...(theory is) any set of hypotheses or propositions, linked by logical arguments, which is advanced to explain an area of empirical reality or type of phenomenon.

It would appear that research in modern management accounting is compatible with these conceptualisations of theory. Yet while the comments of Zimmerman (2001) and Ittner and Larcker (2001) are widely challenged (Baxter and Chua, 2003; Chenhall, 2003; Luft and Shields, 2003), it is still arguable that the SBSC does not rest in a theoretical construct. This is not because a theoretical construct has not been considered, though. In fact, some see the SBSC as a theory in its own right. For example, Nørreklit (2003, p. 591) points out that the American Accounting Association awarded the book *The Balanced Scorecard* the prize for best theoretical contribution for 1997.

Huang and Hu (2004, p. 65) suggest that the BSC is a manipulation of Drucker's theory of business, arguing that Drucker's assumptions about market, customers, competitors, technology and competencies parallel the four perspectives of the SBSC: innovation and learning, internal business process, customer, and financial. Others have considered specific theories (i.e., stakeholder theory), to explain particular scorecard perspectives or to enhance the strategic development components. While such inquiries add to the debate, their shortcomings are that they do not consider the BSC, or its extension the SBSC, as a whole—they only consider the four scorecard perspectives. While the procedural, strategic, and visionary aspects of the strategic balanced scorecard continue to revive and/or develop a comprehensive framework of organisational improvement, there is little development of a complementary conceptualisation that underpins this technique.

The increased management requirements of today's complex business environment are expressed in the SBSC through feedback loops and causal relationships. This parallels the reciprocal causal loops and specific aspects of the ongoing rationalisation process of the learning and interaction development of cybernetics theory. Specifically, they appear to be embodiments of the concepts of mutual reciprocal causality and positive and negative feedback as articulated through the notion of amplified heterogeneity (Maruyama, 1963; 1982). It can be argued, then, that a logical bridge can be built between the "second" cybernetic conceptualized by Maruyama (1963) to the practices of the SBSC, reflecting Llewelyn's (2003) notion of concepts theories.

Consequently, cybernetics, which Morgan (1986) sees as a theory of information, communication, and control, provides an understanding of the integrated and interactive management practices contained in the SBSC. The principles of Llewelyn's (2003, p. 674) concept theories "provide meaning and significance through linking the subjective and objective realms of experience". It appears that cybernetics provides a legitimate conceptual face to support the *praxis* of the SBSC (see Figure 1).

[Insert Figure 1]

2.1 The "First" Cybernetics

Cybernetics can be traced to the writings of Plato, who, in the *Republic* used *Kybernetike*, a Greek term to describe the art of steersmanship, both in its literal sense of piloting a vessel and the metaphorical sense of piloting the ship of state. The link from Plato to organisational theory is found in the works of thinkers such as Wiener (1948), Forrester (1968), and von Bertalanffy (1968). These theorists defined systems theory, emphasizing the self-regulating aspects of the firm and the use of feedback to reshape processes and to help achieve a vision or goal (Marx, 1970).

Systems theory is an "interdisciplinary science focusing upon the study of information, communication and control" (Morgan, 1986, p. 84). More recently this definition has been expanded to suggest that it is "a discipline for seeing wholes... a framework for seeing interrelationships rather than things, for seeing change rather than static snapshots" that is the cornerstone for the healthy, proactive, and learning organisation (Senge, 1991, p. 7).

Cybernetics in the 1950s focused on the system's ability to engage in self-regulating behaviour which depended on a process of information exchange involving negative feedback. Systems of negative feedback engage in automatic error detection and correction—movement beyond specified limits in one direction initiates movement in the opposite direction as the system seeks to maintain a desired course of action (Morgan, 1986). The development of cybernetics led to a theory of communication and learning stressing four key principles:

- 1) Systems must have the capacity to sense, monitor, and scan significant aspects of their environment.
- 2) They must be able to relate this information to the operating norms that guide systems behaviour.
- 3) They must be able to detect significant deviations from the norm.
- 4) They must be able to initiate corrective action when discrepancies are detected (Morgan, 1986, pp. 86-87).

The principle characteristic of these self-regulating systems is the presence of a control loop, which modifies system components on the basis of information inputs regarding performance, and comparison of performance with criterion value.

2.2 The "Second" Cybernetics

Attempts to apply cybernetic theories to organisations found that these models failed to incorporate key elements of living systems. This led to the extension of the "single loop"

model to that of a “double loop” learning system approach, such as Maruyama’s (1963) concept of a “second cybernetics.” The central component of Maruyama’s (1963) model is the realisation that the elements in the system influence each other either simultaneously or alternately. The major development flowing from the “first” cybernetics was the inclusion of mutual positive feedback between its elements. Thus the “second” cybernetics identifies the negative elements, the stagnation of development, or the obstruction to the development of the system, and the positive elements, the dynamics or strategic improvements to the system. This provides the interaction between the feedback loops, and through the concept of mutual causality, the effect this has in determining the system development.

The extension of the original cybernetic models permitted changes in the governing variables to cause ripples of change throughout the system, which is a process referred to by Maruyama (1963) as deviation–amplifying and deviation–counteracting mutual causal processes. A similar mechanism is supported by Argyris’ (1974, 1982) model, where double-loop learning allows modifications to an organisation’s policies and objectives through detection and correction of error and the detection and replication of positives.

Whereas Maruyama’s (1963) primary theme is the identification of mutual causality, his secondary theme is the process associated with mutual causality through the action of positive and negative feedback loops, which amplify the effects of the initial change, or “kick.” In economic terms this would be seen as the multiplier effect. According to Maruyama (1963, p. 164), “all processes of mutual causal relationships that amplify an

insignificant initial kick build up deviations and diverge from the initial condition.” The underlying rule is that only when the size of influence in one direction has an effect upon the size of influence in the other direction, and is in turn affected by it, is there a mutual causation.

In Maruyama’s model, interactions continuously generate heterogeneity and new patterns of mutually beneficial relations among heterogeneous elements. The development may be gradual or rapid. While changes need not occur in leaps, they usually occur continuously and gradually. However, leaps may occur because of either very rapid change, such as the exceeding of a threshold, or a major change in strategy (Maruyama, 1980). In other words, rapid change within a system can be random or purposive.

To purposely break a particular syndrome it is necessary to break the cycle of action and reaction by introducing a positive or negative influence into, or removing it from, the loop. The effect of this action would be to turn the deviation-amplifying process into a deviation-counteracting process which should lead to stabilisation, or at least oscillation [Maruyama, 1980]. In summary, some causal loops amplify change, while other loops counteract change.

Relating the “second” cybernetics to industry, management, business and government, Maruyama (1982) suggests that within society, particular activities affect, or are affected by, one another. Maruyama (1982) places these activities within four groupings: employment, inflation, interest rates, and government surplus/deficit, each of which

impacts on the business/societal balance required. Equilibrium is obtained when the four characteristics are in balance, thus producing a strategic balanced scorecard for society (see Figure 2).

[Insert Figure 2]

3. The Balanced Scorecard: A Systems Perspective

Kaplan and Norton's (1992, 1996a, 1996b, 2001a) balanced scorecard (BSC) approach enables managers to view performance from four important perspectives. First is the financial perspective, which includes profitability measures such as cash flow, sales growth, and operating income by division, increased market share and return on equity. Second is the customer perspective, which encompasses measures such as market share, response time, on time performance, product reliability, percent of sales from new products, percent of sales from established products and on-time delivery. Third, the innovation and learning perspective measures things such as new patents, the number of new product launches, process time to market, and time taken to develop next-generation products. Last is the internal business perspective, which focuses on quality, time and efficiency measures, direct materials efficiency variances, effect yield, manufacturing lead-time, head count and inventory.

The goal of the BSC is to force managers to focus on the handful of equally important (balanced) measures that are assumed to be critical success factors to sustain and improve performance in the chosen competitive environment (Lipe and Salterio, 2000). Causality is therefore an important aspect of the BSC concept. The BSC also denotes a

commanding top-down approach to its formulation. The measures on a BSC are used by executives to articulate the strategy of a business, to communicate the strategy of the business and help to align individual, organisational, and cross-departmental objectives to achieve a common goal (Kaplan and Norton, 1996b). In this way the BSC is a means of communication, information, and learning, which puts business strategy at the centre. These strategic measures are translated into diagnostic measures at the operational level of the business. The use of the innovation and learning perspective means the BSC extends the focus of internal descriptive objects over traditional management accounting techniques, but it remains essentially a performance measurement model that does not capture the essence of Maruyama's "second" cybernetics.

3.1 The Strategic Balanced Scorecard

Moving from the BSC to the SBSC requires moving from concepts that use performance measurements systems to improve performance to a system of integrated and interactive strategic management. Fundamental to the success of this enhanced system is the alignment of management processes which focus the entire organisation on the implementation of long-term strategy. Three key characteristics are central to this shift in focus: (1) mutual cause-and-effect linkages; (2) double-loop learning; and (3) the identification of a strategic initiative (Kaplan and Norton, 1998a).

As described by Kaplan and Norton (2001a, b), the chain of mutual cause-and-effect relationships should pervade all four perspectives of the SBSC. Every strategy identified for a SBSC should be an element in a chain of mutual casual relationships. These

elements communicate the strategies through each perspective by amplifying the effect of the action throughout the organisation (Kaplan and Norton, 1996b). This chain of cause-and-effect relationships represents senior management's assumptions about the relationship of processes and decisions enacted *today* that were expected to impact favourably on various core outcomes *tomorrow* (Kaplan and Norton, 1996a).

However, what is often overlooked in the practitioner literature is the reality that amplifying cause-and-effect relationships are also capable of amplifying unfavourable as well as favourable outcomes. The second principle, double-loop learning, in particular double-loop learning about strategic issues, becomes critical in understanding the impact of strategy on organisational performance.

Double-loop learning, or the process of learning to change underlying values and assumptions, occurs when managers question their underlying assumptions and reflect on whether the conceptual foundations under which they formulated their strategies are consistent with current evidence. This process acknowledges the need to adjust existing strategies, or devise new strategies, to capitalise on new opportunities or to counter new threats not anticipated when the initial strategies were implemented. This process mimics what Argyris and Schon (1974, p. 18) refer to as "form, test, and modify," or a hypothetic-deductive process. Such a process requires feedback about whether the planned strategy remains viable and successful, or to question the governing variables themselves. Double-loop learning occurs when error is detected and corrected (or a positive is detected and replicated) in ways that involve the modification of an

organisation's norms, policies and objectives (Argyris and Schon, 1978). In terms of the SBSC, the process "serves as the linchpin of the strategic learning process, linking the operations control process with the learning and control process for managing strategy" (Kaplan and Norton, 2001b, pp. 274-275).

The third characteristic of the SBSC, innovation (that is the "kick"), comes from the ability to improve business processes consistent with a customer value proposition. It depends on the ability of management to change organisational behaviour and focus existing knowledge on the organisation's strategic vision or goals (Kaplan and Norton, 2001b). Within the SBSC concept, this principle is located in the learning and growth perspective, and innovations flowing from this perspective are considered to be the ultimate drivers of strategic outcomes. Nevertheless, such initiatives still require an initial kick, which, in the case of the SBSC, comes from an understanding of the value propositions contained within the knowledge strategies of customer intimacy, product innovation, and operational excellence.

The evolution from BSC to SBSC results from a desire to achieve a revitalised strategic focus and alignment. This process is supported by five common principles: (1) translate the strategy to operational terms, (2) align the organisation to the strategy, (3) make strategy everyone's everyday job, (4) make strategy a continual process and (5) mobilise change through executive leadership (Kaplan and Norton, 2001b). The strategic balanced between the scorecard is depicted in Figure 3.

[Insert Figure 3]

4. Discussion

Reviewing the arguments made to this point, it would appear that there are significant relationships structure of the SBSC model as portrayed by Kaplan and Norton (1996a) and the dynamic structure of Maruyama's (1963, 1978) cybernetic model of modern macroeconomic policy. Both have four primary "drivers" of system performance which reinforce a desired "balance" within the system. In structure and intent, then, the SBSC, as with the majority of the models and methods comprising management control systems in organisations, appears to be well-grounded in cybernetic theory.

The linkage of the systems theory approach, through the "second" cybernetics, and the practical application of the SBSC is visible at additional levels of analysis. Conceptually, Maruyama's (1963, 1978) theory construct supporting his second cybernetics considered deviation-amplifying and deviation-counteracting mutual causal relationships at the biological, social and business levels. The reconciliation of the practical aspects of the "second" cybernetics (Maruyama, 1980) to a practical organisational/business situation compared the biological/social theory to American business attitudes, which, in Maruyama's (1979) view, were manifested as a pervasive malaise. This, he contended, was due to reciprocal causal change-amplifying loops acting upon a set of fallacious assumptions, specifically: (1) the zero sum game assumption; (2) the assumption of the desirability of homogeneity and standardisation; and (3) the belief that equilibrium is desirable.

The cause-and-effect relationships in the strategic balanced scorecard are visible in Figure 4. By considering the effect of the linkages among outcomes in different scorecard perspectives, Kaplan and Norton (1998b, p. 207) found:

Significant correlations between employees' morale, a measure in the learning and growth perspective, and customer satisfaction, an important customer perspective measure....this, in turn, was... correlated with faster payment of invoices – a relationship that led to a substantial reduction in accounts receivable, and hence a higher return on capital employed.

The study also found:

...correlations between employees' morale and the number of suggestions made by employees (two learning-and-growth measures)... as well as between an increased number of suggestions and lower rework (an internal-business-process measure).

Kaplan and Norton's (1998b) diagram also shows a correlation between lower rework and a reduction in operating expenses, which, through increased profit, leads to a greater return on capital employed. This increased return of capital employed provides additional resources to invest in improvements in the other perspectives.

[Insert Figure 4]

To further illustrate the linkages between the SBSC and Maruyama's second cybernetics, Kaplan and Norton's (1996a) SBSC can be re-conceptualised as a series of deviation-amplifying and deviation-counteracting mutual causality loops (see Figure 5).

Specifically, Kaplan and Norton's structure would correspond to Maruyama's (1980) morphogenetic (negative or positive) causal loop model, in which probabilistic or deterministic causal loops can increase heterogeneity, generate patterns of mutually beneficial relations among heterogeneous elements, and raise the level of sophistication of the system.

The conceptual and practical aspects of the "second" cybernetics can be drawn together to produce an application to a business environment by the inclusion of a new set of characteristics. These elements include acknowledged cultural, social and political factors, technological innovations that facilitate de-standardisation of production, ecological problems, and a new generation of labour with a new philosophy about work (Maruyama, 1982). This extension of the "second" cybernetics theory results in the positive/negative feedback model. These interrelationships are shown in Figure 5, which illustrates a balanced relationship between business and societal goals—a SBSC for society.

[Insert Figure 5 here.]

Examining Maruyama's "SBSC for society," common patterns of relationships with the Kaplan and Norton model can be observed. For instance, a government's decision to run a deficit could generate an increase in the level of inflation, which in turn, might lead to higher levels of unemployment as industry reduces its staff to conserve resources. This has the effect of reducing productivity. At the same time the decision to run a deficit may lead to higher rates of interest, which also affect productivity. The long-term impact is a position of "business goallessness" followed by "government goallessness" (Maruyama,

1982, p. 618). This will, in time, cause the government to rethink (or reverse) its fiscal strategy.

The SBSC, then, appears to be an application of Maruyama's second cybernetics theory, suggesting that is not atheoretical, but rather a sound extension of prior theoretical work into the management accounting discipline. This suggestion is underscored by similarities in structure, the presence of mutual causality, linked patterns of performance and measurements, and the presence of change-amplifying and dampening cycles between the SBSC and Maruyama's societal models.

The concepts of double-loop learning systems and mutual causal feedback relationships are common to both Kaplan and Norton's practical model and Maruyama's theoretical construct. Their similarities, though, do not stop at this level. In fact, the concept of the need for an initial kick, or innovation, to motivate learning is the compelling feature that connects these two models of cybernetic control.

In both the practical model developed by Kaplan and Norton [2001b] and the theoretical model created by Maruyama [1963], the interaction between the positive and negative amplifying loops is through an initial kick that amplifies the deviations, resulting in the system diverging from its initial condition. In earlier incarnations of the first cybernetics this result was seen as a process of natural selection. In his development of the "second" cybernetics, though, Maruyama (1963) proposed the notion of "cultural selection", where

the kick could be applied by a person—the selection would be processed through an “artificial” rather than natural environment.

In the SBSC (Kaplan and Norton, 2001b) the kick, or impetus for change, is also applied by a person, although this time through innovation. This new conceptualisation of the kick is the vital link between Maruyama’s (1963) “cultural selection” and Kaplan and Norton’s (2001b) “innovative inputs”. Unlike the “natural selection”, where the kick is always accidental and required at the initial developmental stage, the “cultural selection” provides a mechanism to insert a kick at any stage and in any of the perspectives.

The fundamental characteristics of Maruyama’s extension of cybernetic theory as they relate to the *praxis* of the SBSC are summarised in Figure 6. As suggested, there are three key features of Maruyama’s model: causal relationships, communication, and change. Both the SBSC and the “second” cybernetics build upon a system of mutual cause-and-effect relationships. In Maruyama’s model these relationships are amplified by both positive and negative deviations which are measured by their significance. For Kaplan and Norton, these mutual relationships are validated by measuring their correlation. This implicitly suggests that both positive and negative deviations “ripple” through the SBSC, impacting the performance of the organisation on multiple dimensions.

[Insert Figure 6]

Communication is the second key dimension of commonality between Maruyama’s model and the SBSC. Specifically, Maruyama suggests that learning occurs through the “double loop” structure, resulting in a self-correcting system. In a similar way, Kaplan

and Norton suggest that the SBSC is double-looped in nature and self-correcting in part. They argue that managerial intervention results in the forming, testing and modification of strategies, which serve to “kick” the system into a new mode of being.

Kaplan and Norton capture the system’s ability to change through the concept of innovation. In Maruyama, cultural selection is argued to be the basis for change. If we compare the two arguments, their apparent differences become, in reality, a vital similarity. In the economic world, “cultural” selection is embodied in the iron laws of competition where only those firms that can constantly change to meet new customer and market demands can survive. It is an economic law of survival of the fittest that forces changes in the economic environment—the culture—on to organisations. The strategic focus of the SBSC, then, is to identify where change is needed and provide a mechanism for implementing these changes.

The SBSC and Maruyama’s second cybernetics are compatible models that emphasize the ability of a system to learn as the basis for sustainable growth. While the development of the SBSC may have not explicitly incorporated this theory, cybernetic theory is implicit in any model that operates as a form of management control.

5. Conclusion

This purpose of this paper was to develop a conceptual model that would align the theoretical aspects of Maruyama’s second cybernetics to the practices of Kaplan and Norton’s SBSC, thus providing a theoretical underpinning for a practical application of

cybernetic theory. In this way the challenges of Zimmerman (2001), and to a lesser degree, Ittner and Larcker (2001), were addressed. Specifically, this paper argues that the theory of the “second” cybernetics explains the development of practitioner-oriented techniques such as the SBSC.

The first step in developing the linkages between Maruyama work and the SBSC was to translate the practitioner technology used to describe, implement and measure strategy in the SBSC into the concepts and language of cybernetics theory. This provided a framework for organising the insights derived from practice, thereby integrating the concepts of the SBSC and the “second” cybernetics.

The second step of the analysis was to construct a conceptual model that would provide the theoretical rigor required by the critics. This involved considering the notion of “theory” and the definitional constructs used by various authors to posit cybernetic theory within the “theoretical” landscape. Bennett’s (1991) explanatory research model, which attempts to make sense of observations by explaining observed relationships and attributing causality based on an appropriate theory, provided a vehicle for the comparison.

Jary and Jary (1991) and Mautner (1997) describe theory as the logical reasoning underlying a statement of a belief that is accepted when: (1) it explains and predicts reality, (2) it provides a proposition which is advanced to explain a type of phenomenon, and (3) it provides principles of analysis or explanation. This view supports the work of

Llewelyn (2003, p. 674), whose notion of concepts theory is that it provides a base that “creates meaning and significance through linking the subjective and objective realms of experience”.

Both of these steps provided a basis for the translation of the practitioner-oriented SBSC technique into the concepts and language of cybernetics and the construction of a compatible conceptual framework. Whether this analysis addresses the concerns of Ittner and Larcker (2001), specifically whether the SBSC represents solutions to real problems or is simply a fad promulgated by consultants is up to the reader. Regardless of the sustainability of the SBSC as management practice, the *praxis* of the SBSC appears to be embedded within a broader theoretical context.

The challenge of embedding management accounting within a theoretical structure, though, does not mean that new forms of theory are needed. By definition, management accounting is a practical discipline, one where the researcher uses inquiry to understand both a phenomenon and its impact on organisational performance. It is a discipline that *applies* theory, whether explicitly or implicitly. That being said, there is ample challenge ahead as the search continues for a unifying, integrative theory that will help make sense of evolving practice. This paper represents but one small step in that journey.

References

- Argyris, C. (1974). *Behind the Front Page*, San Francisco: Jossey Bass.
- Argyris, C. (1982). *Reasoning, Learning, and Action: Individual and Organizational*, San Francisco: Jossey Bass.
- Argyris, C. and Schon, D. (1974). *Theory in Practice: Increasing Professional Effectiveness*, San Francisco: Jossey Bass.
- Argyris, C. and Schon, D. (1978). *Organizational Learning: A Theory of Action Perspective*, Reading, MA: Addison Wesley.
- Baxter, J. and Chua, W.F. (2003). Alternative Management Accounting Research – Whence and Whither, *Accounting, Organizations & Society*, 28(2-3), 97-126.
- Bennett, R. (1991). How is Management Research Carried Out? in Smith, N.C. and Dainty, P. (Eds), *The Management Research Handbook*, London: Routledge.
- Chenhall, R. (2003). Management Control Systems Design Within its Organizational Context: Findings from Contingency-Based Research and Directions for the Future, *Accounting, Organizations & Society*, 28(2-3), 127-168.
- Forrester, J.W. (1968). *Principles of Systems*, Cambridge, MA: Wright-Allen.
- Huang, C.D. and Hu, Q. (2004). Integrating Web Services with Competitive Strategies: The Balanced Scorecard Approach, *Communications of the Association for Information Systems*, 13, 57-80.
- Ittner, C.D. and Larcker, D.F. (2001). Assessing Empirical Research in Managerial Accounting: A Value-Based Management Perspective, *Journal of Accounting and Economics*, 32(1-3), 349-410.
- Jary, D. and Jary, J. (1991). *Collins Dictionary of Sociology*, London: HarperCollins.
- Kaplan, R.S. and Norton, D.P. (1992). The Balanced Scorecard – Measures That Drive Performance, *Harvard Business Review*, (Jan-Feb), 70(1), 71-79.
- Kaplan, R.S. and Norton, D.P. (1996a). *The Balanced Scorecard: Translating Strategy into Action*, Boston, MA: The Harvard Business School Press.
- Kaplan, R.S. and Norton, D.P. (1996b) Linking the Balanced Scorecard to Strategy, *California Management Review*, (Fall) 39(1), 53-80.

- Kaplan, R.S. and Norton, D.P. (1998a). Putting the Balanced Scorecard to Work, in *Harvard Business Review: On Measuring Corporate Performance*, Boston, MA: Harvard Business School Press, 147-181.
- Kaplan, R.S. and Norton, D.P. (1998b). Using the Balanced Scorecard as a Strategic Management System, in *Harvard Business Review: On Measuring Corporate Performance*, Boston, MA: Harvard Business School Press, 183-211.
- Kaplan, R.S. and Norton, D.P. (2001a). Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part 1, *Accounting Horizons*, 15(1), 87-104.
- Kaplan, R.S. and Norton, D.P. (2001b). *The Strategy-Focused Organization*, Boston, MA: The Harvard Business School Press.
- Lipe, M.G. and Salterio, S.E. (2000). The Balanced Scorecard: Judgmental Effects of Common and Unique Performance, *The Accounting Review*, 75(3), 283-298.
- Llewelyn, S. (2003). What Counts as “Theory” in Qualitative Management and Accounting Research? *Accounting Auditing & Accountability Journal*, 16(4), 662-708.
- Luft, J. and Shields, M.D. (2003). Mapping Management Accounting: Graphics and Guidelines for Theory-Consistent Empirical Research, *Accounting Organizations & Society*, 28(2-3), 169-249.
- Maruyama, M. (1963). The Second Cybernetics: Deviation–Amplifying Mutual Causal Processes. *American Scientist*, 51, 164-179.
- Maruyama, M. (1978). Heterogenetics and Morphogenetics: Towards a New Concept of the Science. *Theory and Society*, 5(1), 75-96.
- Maruyama, M. (1979). Goal Moratorium Syndrome: A New Vicious Circle and How to Break It. *Technological Forecasting and Social Change*, 15, 1-9.
- Maruyama, M. (1980). Mindscapes and Science Theories. *Current Anthropology*, 21(5), 589-608.
- Maruyama, M. (1982). Mindscapes, Management, Business Policy and Public Policy. *Academy of Management Review*, 7(4), 612-619.
- Marx, N. (Ed.) (1970). *Learning: Theories*, London: Collier-Macmillan Ltd.
- Mautner, T. (Ed.), (1997). *The Penguin Dictionary of Philosophy*, London: Penguin Books.
- Morgan, G. (1986). *Images of Organizations*, Beverly Hills CA: Sage Publications.

- Nørreklit, H. (2003). The Balanced Scorecard: What is the Score? A Rhetorical Analysis of the Balanced Scorecard, *Accounting Organizations & Society*, 28(6), 591-619.
- Senge, P.M. (1991). Learning Organizations, *Executive Excellence*, 8(9), 7-8.
- Smith, M. (2003). *Research Methods in Accounting*, London: Sage Publications.
- Von Bertalanffy, L. (1968). *General Systems Theory*, New York: George Braziller.
- Wiener, N. (1948). *Cybernetics: Or Control and Communication in the Animal and the Machine*, New York: Wiley.
- Zimmerman, J.L. (2001). Conjectures Regarding Empirical Managerial Accounting Research. *Journal of Accounting and Economics*, 32(1-3), 411-427.

Figure 1

Linking Theory and Praxis through Concepts Theories

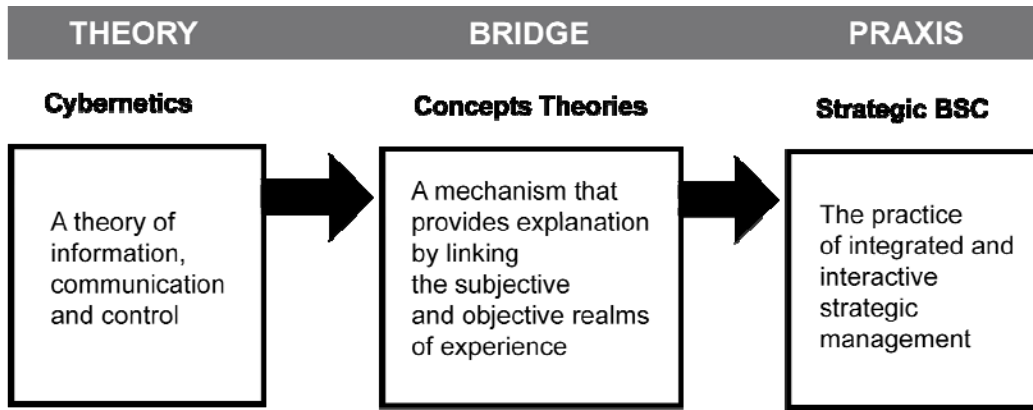


Figure 2

Maruyama's Characteristics of the Second Cybernetics Model

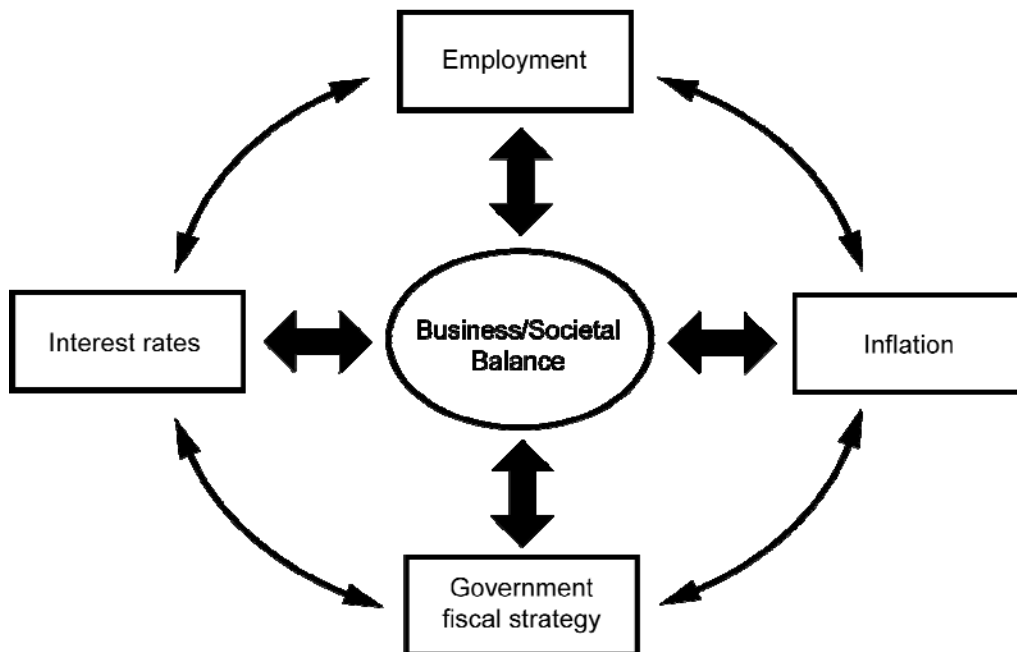


Figure 3

Kaplan and Norton's Strategic Balanced scorecard

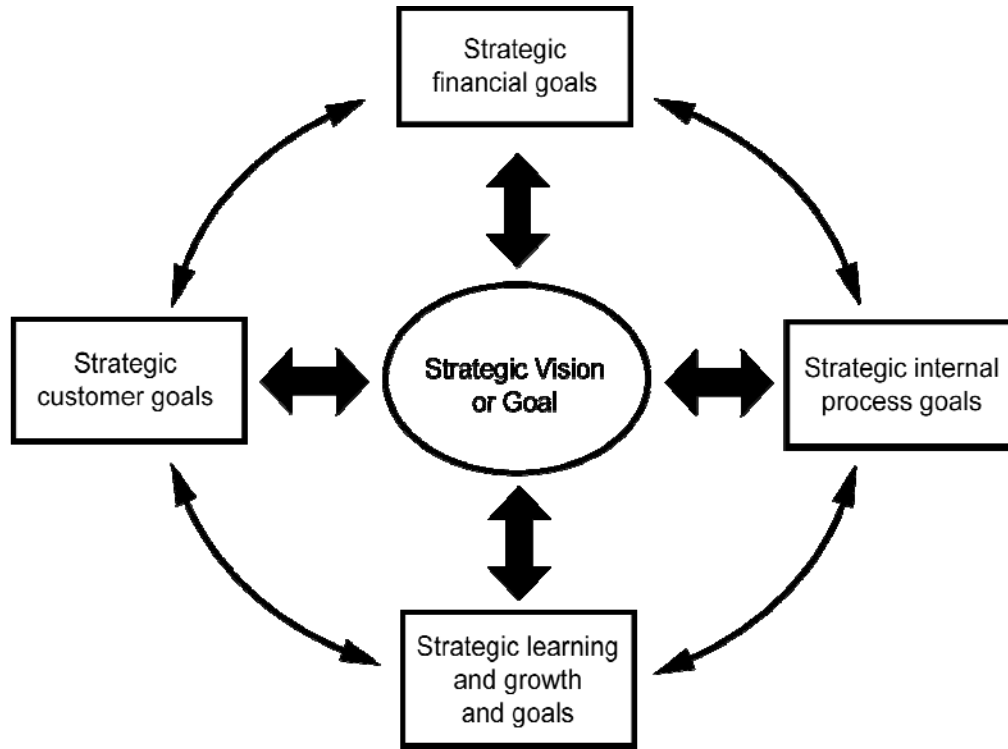
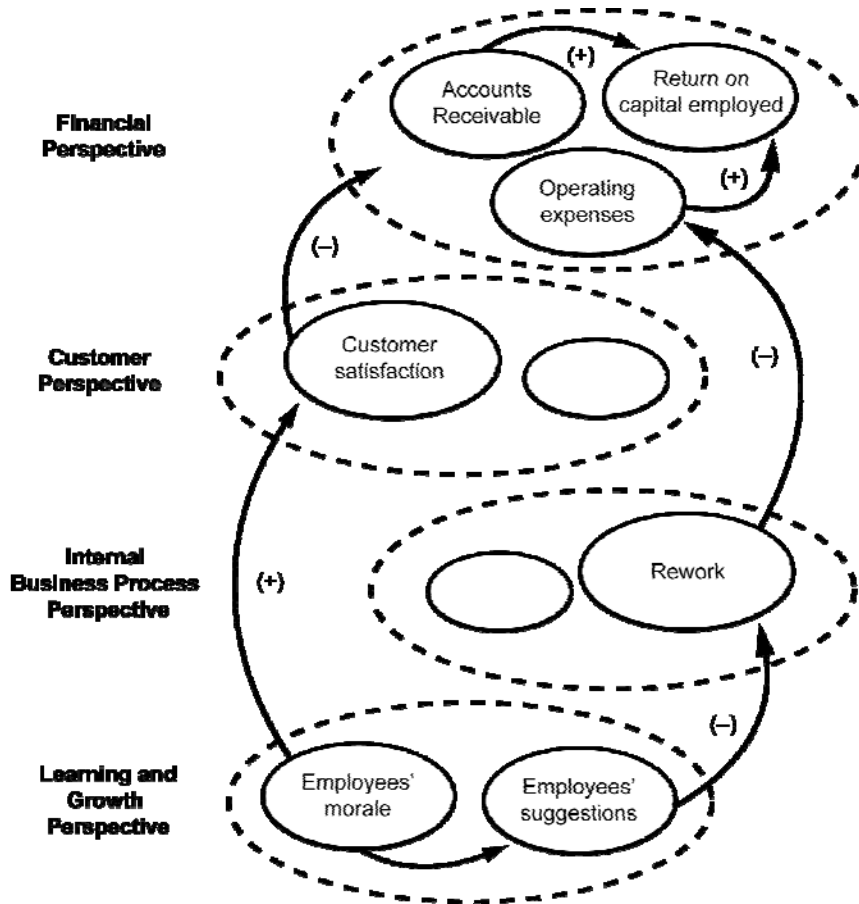


Figure 4

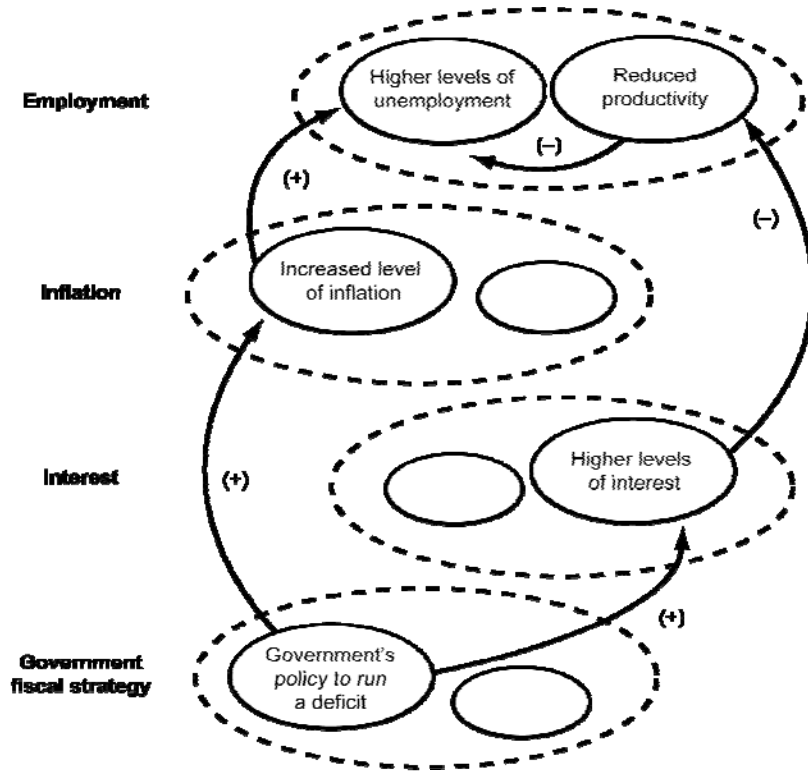
The Strategic Balanced Scorecard showing Deviation-amplifying and Deviation-counteracting Mutual Causality Loops



Source: Kaplan and Norton, (1998b, p. 208)

Figure 5

Maruyama's SBSC showing Deviation-amplifying and Deviation-counteracting Mutual Causality Loops



Source: Modified from Maruyama, (1982. p. 618).

Figure 6

Summary of Fundamental Characteristics

	Theory Cybernetics	Practice Balanced Scorecard
Characteristic	Displayed as	Displayed as
Causal relationships	Mutual relationships with positive and negative amplifying deviations measured by significance	Mutual cause and effect relationships validated by correlation measurement
Communication	Learning through double loop systems – primarily considered to be self correcting	Learning through double loop systems – self correcting in part, but relying on forming, testing and modification of strategies
Change	Cultural selection	Innovation