The Viable Governance Model – A Theoretical Model for the Governance of IT

Edward Lewis
University of New South Wales
Australian Defence Force Academy
Canberra
e.lewis@adfa.edu.au

Gary Millar
University of NSW
Australian Defence Force Academy
Canberra
g.millar@adfa.edu.au

Abstract

The academic and professional literature offer many different definitions and models of IT governance (ITG). Considerable advancements have been made in identifying the components and mechanisms of ITG. However, much of the research to date has followed an empirical approach, using case studies to examine how contemporary organizations are implementing effective governance arrangements. This paper seeks to propose a theoretical model of the corporate governance of IT using the principles of cybernetics as embodied in Stafford Beer’s Viable System Model (VSM) As this paper is primarily concerned with corporate governance of IT, only System 5 of the VSM is examined in detail.

1. Introduction

“We look at the pieces and do not see the whole.”

Shaw [1]

Many organizations are increasingly dependent on information technology (IT) for their survival and success [2]. A rough measure of the growing importance of IT is the finding that many organizations now spend more than 50 percent of their total capital expenditure on IT [3]. As the importance and the pervasiveness of IT increases, the imperative for organizations to effectively govern this critical resource intensifies too.

However, until quite recently interest in IT governance was mainly confined to a few academic researchers exploring the functions and structures of the IT department, and professional bodies, such as ISACA, attempting to provide guidance to Boards or to practitioners about how to bring their burgeoning IT activities under control. With the recent failure of the governance systems of some high profile companies such as Enron and WorldCom in the United States, and HIH and OneTel in Australia, governance has become a topic of considerable interest.

Since governance is a relatively new area of research, there is still considerable debate as to its definition, purpose and components. Vitale [4] notes that perceptions of governance vary considerably and that it is still an “unsettled concept”. Peterson [5] writes that governance has been “the subject of much debate, yet remains an ephemeral and ‘messy’ phenomenon, emerging in ever-new forms with increasing complexity”. Governance is a complex, dynamic system involving multiple disciplines [6] and multiple stakeholders [5]. As different researchers focus on different dimensions of that system, they “may fail to encapsulate the true nature of IT governance” [6]. Thus, depending on the perspective adopted by the interested observer, the purpose and form of governance transforms.

Whilst examining IT governance through these different lenses provides researchers and practitioners with important insights into the many different facets of this complex, evolving phenomenon, there is a pressing need to integrate these disparate views into a coherent whole [5, 7-9].

Much of the earlier research [e.g., 19, 20, 21] focused on the structural aspects of IT governance; that is, the allocation of decision rights regarding IT-related issues. However, Peterson et al [10] building on the work of Lawrence and Lorsch [11] in organization design theory, recognized that the allocation of specific decision rights to different organizational units (i.e. differentiation) required the coordination of those decisions across those units (i.e. integration). Ribbers et al [9] also noted that earlier studies focused primarily on decision-making structures, and that as a result only “a partial and limited understanding of IT governance” was possible. However, unlike Peterson’s study which focused on integration mechanisms, Ribbers et al explored IT governance processes. The authors [9] found that effective IT governance processes were associated with “a bricolage of methodological comprehensiveness and social interventions”.

Advancing his earlier work, Peterson [5] sought to develop a “holistic view” of IT governance. Based on empirical studies, his IT governance framework
They provide organizations with practical guidelines to enact their systems of IT governance and mechanisms used by contemporary studies identified the various structural configurations for designing their IT governance systems, but they do not present a holistic theory or model of IT governance. The formulation of a holistic model of IT governance that guides organizations in how to put together the expanding collection of IT governance “jigsaw pieces” is a worthy challenge and one that is attempted by this paper.

2. A Formal Definition of IT Governance

Within the literature there are two dominant perspectives for studying IT governance. One school of thought holds the view that ITG is about how IT decisions are made. A leading proponent of this perspective is Peter Weill who defines ITG as “specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT.”

An alternative view considers IT governance as being primarily concerned with controls and risk management. The ITGI [15] defines IT governance as a “structure of relationships and processes to direct and control the enterprise in order to achieve the enterprise's goals by adding value while balancing risk versus return over IT and its processes”. The Australian and New Zealand Standard AS/NZS 8015: 2005, and now ISO/IEC 38500: 2008 Corporate governance of IT, adopt a similar perspective to the ITGI. The standards define the corporate governance of IT as:

the system by which the current and future use of IT is directed and controlled. It involves evaluating and directing the plans for the use of IT to support the organization and monitoring this use to achieve plans. It includes the strategy and policies for using IT within an organization.

This definition expands upon the ITGI definition by explicitly identifying processes essential for directing and controlling the use of IT at the corporate level.

A closer inspection of the two schools of thought indicates that, despite their different foci, they share more similarities than differences. According to Weill and Ross [3] governance arrangements are implemented through three different types of governance mechanisms: structures, processes and communications. These mechanisms are encapsulated in ITGI’s use of the phrase “a structure of relationships and processes”. ITGI’s definition refers to mechanisms to “direct and control”, as does ISO 38500, which implicitly encompasses decision-making – one cannot direct unless a course of action has been decided upon or evaluated. Furthermore, the outcomes comprised three components: structural capabilities, process capabilities, and relational capabilities. The addition of relational mechanisms is an important contribution to our evolving understanding of IT governance, since it highlights the need to utilize informal mechanisms to promote shared understanding and collaboration between organizational units (particularly business and IT units).

Despite providing an invaluable source of information concerning the range of IT governance mechanisms that organizations may consider when formulating their system of IT governance, Peterson [5] does not present a unifying theory or model. Meyer’s work [7] also suggests that Peterson’s IT governance framework may not fully capture all the key facets of IT governance. In particular, Peterson does not explicitly identify culture as a key element of governance. In supporting his claim for culture to be considered a component of governance, Meyer [7] writes that an organization’s culture is an “ever-present force that guides people as they decide how to react to events around them”.

A significant contribution to the field of IT governance has been made by the empirical studies conducted by Peter Weill and various collaborators [3, 12, 13]. The culmination of their research to date is the book “IT Governance” [3]. In this book, Weill and Ross identified three types of governance mechanisms for enacting IT decisions: decision-making structures, alignment processes, and communication approaches. Not surprisingly, these mechanisms share many common aspects with the capabilities identified by Peterson [5]: structural capabilities, process capabilities, and relational capabilities. A comprehensive discussion of these three basic building blocks of IT governance models (structures, processes, and relational mechanisms) is provided by Van Grembergen and De Haes [14].

In the last few years significant progress has been made in elaborating the various components that comprise a system of IT governance. Whilst often taking different research paths, researchers are discovering a similar collection of component types (although their terminology may be somewhat different). Recalling the fable of the blind men and the elephant, we may say that the elephant is beginning to emerge from the collection of its anatomical parts. However, most of the research to date has been based on empirical studies rather than derived from a theoretical foundation.

In the case of Weill and Ross [3], their extensive studies identified the various structural configurations and governance mechanisms used by contemporary organizations to enact their systems of IT governance. They provide organizations with practical guidelines for designing their IT governance systems, but they do not present a holistic theory or model of IT governance. The formulation of a holistic model of IT governance that guides organizations in how to put together the expanding collection of IT governance “jigsaw pieces” is a worthy challenge and one that is attempted by this paper.
embodied in the two competing definitions are compatible: Weill and Ross refer broadly to “desirable behavior”; whereas ISACA refers more narrowly to value creation and value protection (risk management).

For the purposes of this paper a slightly modified form of the ITGI’s definition of IT governance is used:

A system of organizational structures, processes and relationships to direct and control the current and future use of ICT in order to achieve the enterprise’s goals by adding value while balancing risk versus return.

The modifications are subtle, but important. This definition uses “system” rather than framework, since this paper seeks to propose a holistic model of ITG based on the principles of systems thinking and cybernetics. To guide the development of a comprehensive model, this definition makes the three types of ITG mechanisms more explicit (structural, procedural and relational). The remaining elements of the ISACA definition are unchanged.

The definition adopted by this paper is based on the ITGI’s definition of IT governance, rather than ISO’s definition of the corporate governance of IT. Although this paper primarily examines IT governance at the corporate level, it forms part of a wider research program that is developing a comprehensive model of IT governance that encompasses all layers of governance, not just the corporate level.

3. Genesis of the Model

The word ‘governance’ is derived from the Greek word ‘kybernan’, which means to steer or to be at the helm. Another English word that shares the same etymology as governance is the word ‘cybernetics’. Norbert Weiner defined cybernetics as the study of control and communication in animals and machines. However, cybernetics is used more broadly today to encompass the study of control and communication in any system, including sociotechnical systems such as organizations.

Given that the definition of governance adopted by this paper and cybernetics both concern ‘control’, an examination of a theoretical model developed within the field of cybernetics may prove a useful starting point for formulating a comprehensive model of IT governance.

Stafford Beer formulated the Viable System Model (VSM) as a blueprint for designing the control and communication aspects of a viable system. Beer fully described the VSM in his trilogy: Brain of the Firm [16, 17], Heart of the Enterprise [18] and Diagnosing the System for Organizations [19]. In developing the VSM, Beer sought to identify and codify the scientific laws that underpinned the viability of any system, biological or social. Espejo [20] writes that “Beer has developed a most comprehensive set of principles and laws of organization; as a whole they permit the establishment of the mechanisms necessary for effective control and communications in organizations”.

The VSM has been used as a basis for understanding governance before. Davies [21] used the VSM as a method for evaluating competing models of corporate governance, but did not propose a model of governance based on the VSM. Gokhale and Banks [22] used the VSM as a “lens” to examine organizational information security. Dowse and Lewis [23] referred to the VSM when discussing theories for IT governance and service management. However, none of these studies considered the adaptation of the VSM for the corporate governance of IT.

4. The VSM – Components

To achieve viability, an organization must be constructed around five main management functions: operations, co-ordination, control, intelligence, and policy. Beer labelled these management functions Systems 1 to 5 respectively. These functions (or systems) are interconnected through a series of communication channels or information flows. The five functions together with their interconnecting links constitute the major components of the VSM. An overview of the VSM is depicted in Figure 1.

The symbols in Figure 1 have specific meanings. The large ellipse to the left represents the environment in which the organization (system) is embedded1. The two circles and the attached squares represent operations and their local management functions respectively. System 1 of the system-in-focus is the collection of these operational elements (embedded viable systems). The small ellipses represent the “local” environments relevant to the operational elements. The remaining squares and triangles represent Systems 2 to 5 as indicated by the labels on the figure. The lines between the symbols indicate information flows. The figure also indicates a sub-system of System 3 labelled System 3*, which is the Audit/Monitor function.

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1 The conventional symbol for the environment is a “cloud” of irregular shape. However, to simplify the diagram an ellipse has been used.
System 1 - Operations. System 1 is the collection of embedded operational units that performs the activities necessary to achieve the purpose of the organization-in-focus. System 1 units are viable systems in their own right and therefore contain all the elements of the VSM. The capacity to self-organise and self-regulate must be matched with the freedom to be able to do so. By ceding operational units the autonomy to deal with disturbances in their local environments, the amount of variety that the metasystem (i.e., systems 3, 4 and 5) needs to manage is attenuated.

System 2 - Coordination. System 1 units must be granted the maximum degree of autonomy consistent with the constraint of maintaining organizational cohesion [20]. However, as the operational units use their independence to maximise their performance, they may adversely impact each other. System 2 provides the operational units with a mechanism for coordinating coupled interactions through mutual self-adjustment.

System 3 – Cohesion (nee Control). System 3 is responsible for the overall control of System 1 elements. As part of its control function, System 3 must integrate the operational elements into a cohesive whole [20]. In the VSM, the word “integration” has a specific meaning – it refers to “the minimal metasystemic intervention that is consistent with cohesiveness within the purposes of the viable system” [18]. One purpose that is, or should be, inherent in any viable system is that the total system performs better than the sum of its parts acting independently.

System 3* - Monitor (nee Audit). System 3’s scrutiny of operational activities is severely constrained by the highly filtered channels (e.g. summarised performance reports) that directly link it with System 1. System 3* provides System 3 with a high-variety channel that penetrates directly into operations, by-passing their local management units. Its purpose is to provide System 3 with assurance that the highly filtered information transmitted by operational management accurately reflects their true states.

System 4 – Intelligence. System 3 is responsible for regulating the “day-to-day” activities of the organization’s internal operations. That is, System 3 is concerned with the “here-and-now” [19]. However, a viable system must have the capacity to adapt to shifts in its external environment that threaten its viability. Therefore, the VSM must include an additional system that scans the environment and contemplates its future. Named “intelligence”, System 4 is charged with managing the “outside-and-then”. Typical intelligence activities include: strategic planning, market research, economic forecasting, research and development (R&D), and technology forecasting.

System 5 – Policy. Systems 3 and 4 are dedicated to functions that are concerned with different environments (internal vs. external) and different times (present vs. future). To “arbitrate in the debates and discussions between Systems 3 and 4 and ultimately to determine which of the various futures for the organization will be enacted” [24], a fifth, and final system must be conceived. Above and beyond System 5 lies only the next level of recursion: the system-in-focus is now complete, self-sufficient – it is closed. With closure comes identity. System 5 must establish the purpose (“why do we exist”) and the persona (“who are we”) of the organization.

The VSM provides the blueprint for an effective organization, one that is able to learn, adapt and survive in a turbulent environment. The model integrates into a coherent framework a vast array of
systems concepts, including: feedback, control, communications, variety, hierarchy, recursion, viability, autonomy, autopoiesis, self-regulation, self-organization, and learning [25]. Integrated together these concepts provide the template for designing an organization that is able to realise the benefits of functional decentralisation whilst maintaining the cohesion of the whole [26].

The VSM is used as the base model for a proposed theoretical model of governance, called the Viable Governance Model (VGM). Building on the principles of cybernetics, the VGM also incorporates principles and concepts arising from complexity theory and organization design theory.

5. The VSM - Key Concepts

Before examining the elements of the VGM it is necessary to briefly examine five key concepts that underpin the VSM: viability, variety, recursion, autonomy, and transduction.

5.1 Viability

Beer defines a viable system as one that is capable of maintaining separate existence, of surviving on its own [18]. However, “survival” should not be interpreted in the limited sense of merely existing. In an increasingly competitive, complex world, survival can only be aspired for by learning, adapting and growing. De Gues [27] captures this notion best: “Like all organisms, the living company exists primarily for its own survival and improvement: to fulfill its potential and become as great as it can be”. The ITGI [28] also notes the centrality of survival: “continuous growth and survival in the highly competitive global environment are the ultimate goals of value creation”. Thus surviving should be understood more broadly as “surviving and thriving”.

5.2 Variety

The concept of variety, or complexity, is fundamental to the VSM. Beer [19] writes that organizations are fundamentally concerned with the “management of complexity”: complexity in the environment and complexity within the organization itself. Central to our understanding of how to manage variety is Ashby’s law of requisite variety which states that only variety can destroy variety [29]. When applied to a control system, the law states that only variety in the control mechanism can deal with variety in the system being regulated. In an organizational context, the law stipulates that an organization must possess sufficient variety (in the form of organizational capabilities) to match the potential environmental states that may impact its purpose.

5.3 Recursion

Viable systems are recursive; that is, a viable system contains, and is contained in, viable systems [18]. For example, a large company is typically composed of strategic business units which are viable systems in their own rights, and the company is also embedded within an industry which is also a viable system. Using the terminology of complexity science, a viable system is fractal in nature – the elements of the VSM are invariant at different levels of the organizational hierarchy (i.e. at different scales).

5.4 Autonomy

To be viable an embedded system must possess all five management functions of the VSM; that is, it must be granted the autonomy to create, regulate and implement its own policies. However, embedded systems cannot be given absolute independence since the overall cohesion of the containing system may be lost if its component parts spin off in different directions in response to local environmental pressures [26]. Therefore, the metasystem limits autonomy when the cohesiveness of the whole is endangered. Applied to governance, the VSM distributes the authority for decision-making throughout organizational levels, subject only to the constraints imposed by the need for organizational cohesion.

5.5 Transduction

Whenever a communication link in the VSM crosses a boundary the information that it transmits must be “translated” into the “language” of the receiving subsystem. All five systems that comprise the VSM “have their own languages, their own criteria, their own figures-of-speech – and their own satisfactions” [19]. For example, when reports pertaining to IT are presented to the Board for deliberation, the reports must be presented in a language that the Board uses in the performance of its duties.
6. The Viable Governance Model (VGM) – System 5

There is insufficient room in this paper to describe and discuss all of the components of the VGM. We will concentrate upon System 5 in this paper since it is the most relevant to the corporate governance of IT.

The most relevant system to be considered is System 5, the Policy function. System 5 is responsible for setting the overall direction for the enterprise.

**Structure.** Beer [16] conceived System 5 as being implemented as an “elaborately interactive assemblage of elements”, which he called a “multimode”. The purpose of the multimode is to achieve reliable results out of “unreliable components”. Individuals are subject to bounded rationality and prone to cognitive flaws which impair their decision making abilities [30]. In most large organizations, the role of the multimode is performed by a senior management team or a board of directors. Another reason for having decisions made by a coalition of individuals, rather than a single individual, is to achieve the necessary requisite variety to comprehend and deal with the range of issues faced by the organization. Many senior management teams include members who have expertise in areas such as finance, accounting, law and so [31]. If an enterprise is heavily dependent on IT, the law of requisite variety would suggest that the senior management team include representatives with a background in IT otherwise there will be some aspects of their operations and environment which they may not fully comprehend.

The policy function provides closure to the information processing loops within the organization. That is, System 5 is the ultimate decision-maker within the enterprise. The use of a multimode as the final arbitrator is supported by agency theory. In many organizations ownership and management are separated. If the enterprise is capped by an autocrat who monitors subordinates, who monitors the autocrat? Bainbridge [30] argues “putting a group at the apex of the corporate hierarchy turns out to be a highly effective alternative solution to the problem of an otherwise unending chain of monitors”. Mutual monitoring and peer pressure within the group tend to suppress opportunistic behaviour amongst its members. Although the failure of corporate governance arrangements in companies such as Enron and HIH clearly attest to the fact that groups are also prone to cognitive flaws such as group think.

**Processes/Functions.** The primary function of System 5 is to pursue the ongoing survival of the organization, since it is only through survival that the organization is able to fulfil its purpose. In terms of VSM, System 5 needs to ensure that the elements of a viable organization are established and effective. In terms of corporate governance, the Board needs to ensure that the mechanisms for governance are established and operational. Effective governance arrangements minimise the amount of variety that the variety-constrained Board needs to deal with.

In the corporate world, survival is achieved through providing value or reducing the risks to value; value that someone else is willing to pay for. Thus the board needs a theory of how it can create value that is meaningful to other entities in its ecosystem. Peter Drucker refers to this theory or set of propositions as the “theory of the business” [32]. This theory, whether explicit or implicit, is used by System 5 to direct the organization. However, value creation is necessary, but not sufficient to ensure survival. Value preservation, typically enacted through risk management activities, is also required. The Board must ensure that the organization as it strives to realise its value proposition does not place its viability in jeopardy through the assumption of unacceptable risks. When directing an organization, the board should explicitly state what it seeks to achieve and also what it seeks to avoid. Doing so provides the Board with greater control over the execution of its strategic direction. Measures of success and measures of failure should be formulated to monitor the execution of the strategy. Failure is not just the absence of success. Unintended consequences stalk every action in a world that is complex and unpredictable.

Setting and monitoring the strategic direction of the organization is not the only function of System 5. System 5 must also establish the identity of the organization. Senge [33] advocates that organizations need to formulate three “governing ideas”: vision (“what future do we want to create”), purpose (“why do we exist”), and core values (“how do we want to behave”). Establishing a vision, which is part of directing, is obviously an important mechanism of governance. However, establishing purpose and core values are also important governance mechanisms because they help to form the context in which decisions are made throughout the organization. By establishing a code of ethical behaviour, the variety that managers need to deal with when making decisions is significantly attenuated because many of the possible options would no longer be contemplated because they do not comply with the organization’s core values. Weick [34] discusses three forms of control: first-order (direct supervision), second-order (standardization), and third-order (culture or ideology). He writes (p 77):

“the ways in which third-order controls affect behaviour are subtle and easily overlooked
by the designer who finds it easier to see the material controls represented by tangible orders, rules, surveillance, standardization, specialization, and hierarchy. Third order controls are more subtle but no less forceful ...”

As discussed previously, the Committee of Sponsoring Organizations (COSO) places the “control environment”, comprising integrity and ethical values, at the centre of its control framework.

System 5 is also ascribed an additional role according to the VSM. The organization-in-focus exists within a recursive chain of viable systems. Therefore, the organization is required to comply with the constraints and obligations imposed upon by its containing system. These constraints include the regulatory and legal requirements set by the industry in which the organization exists. In addition, there is a growing acceptance that organizations must also be aware of the constraints imposed by its social and natural environments. System 5 is responsible for ensuring that the organization is aware of and comply with all the relevant constraints imposed by its containing system(s).

Relationships. A casual examination of the VSM may lead to the mistaken view that the VSM is a simply a hierarchical model. However, the VSM is imbued with numerous networks and relationships that enhance the information processing and decision-making capabilities of the organization. As previously mentioned, Stafford Beer conceived System 5 as a “multimode” - a network of decision-makers.

Individual board members may be selected on the basis of their expertise (e.g., legal expertise) since this helps provide the Board with the requisite variety to deal with the range of issues that contemporary organizations face. Board members may also be selected on the basis of the relationships that they have with external organizations. These relationships enable the organization to acquire resources from external sources and gain influence with political bodies or stakeholders. [31]. These external relationships also enable the organization to establish the requisite connections to its containing ecosystems (e.g., industrial, social, and political).

However, Board members cannot maintain the requisite variety to govern a complex organization if they rely on highly summarised reports received on an episodic basis. In addition to the vertical command and control information flows between System 5 and Systems 3 and 4, the VSM also provides a mechanism (the “S5-S4-S3 Homeostat”) for promoting an ongoing engagement between the members of the board and management.

Another important information flow connecting System 5 to the other elements of the VSM is the “algedonic” channel. The channel flows directly from System 1 to System 5 with the sole purpose of alerting System 5 to a potential crisis within operations. In response to this signal, System 5 should convene a crisis management team comprising people with the requisite expertise and knowledge to deal with the crisis. Thus in addition to its others roles, the Board also serves an important role in managing crises that may adversely impact the organization’s reputation or its ability to achieve its purpose.

7. Corporate Governance and IT Governance

Before applying the VSM to the domain of IT governance, it is necessary to consider the role played by the IT department within an organization. One possible approach for incorporating the IT department into the model would be to assert that it is a viable system in its own right and therefore should be represented as one of the operational units with System 1. However, Stafford Beer is adamant that this should not be done. Beer [18] notes the most common mistake made when applying the VSM is to simply identify the departments (e.g., IT, Sales, Engineering, etc) listed on the organizational chart as the operational units. Although the IT department of a manufacturing firm may provide an essential service, it does not implement the purpose of the organization. The purpose of a manufacturer is to manufacture products, not operate information systems. The IT department facilitates operations; it does not “do” them. Given that the IT department is not an operational unit (except in information factories or IT service providers), it cannot be a viable system in its own right [19]. As a general rule, common services that contribute to the synergy of operational units are always representative of System 3 functions [18].

If the IT function in the manufacturing firm (say) had sought viability in its own right it would lead to the condition known as “pathological autopoiesis” [18]. Only viable systems should exhibit autopoiesis:

“Danger arises when any of Systems 2-5 takes on a life of its own (becomes pathologically autopoietic!) and starts to get in the way of what System 1 needs to achieve as the operational arm of the organization’s identity. Systems 2-5 must not become viable systems in their own right.” [25]

Thus, the purpose of the IT department is to provide a service to the organization. The IT department is not viable in its own right and therefore its regulation falls under the ambit of the corporate regulator. The governance of IT is a part of, and
8. Implications for the Corporate Governance of IT

This paper has sought to outline a theoretical model of the corporate governance of IT using the principles of cybernetics as embodied in Stafford Beer’s Viable System Model (VSM). Unfortunately space has limited that analysis primarily to one of five systems, System 5 – Policy.

Within a complex organization comprising multiple divisions or business units, the function of System 5 is typically performed by the Board of Directors sitting atop the corporate hierarchy. The assertion that the most effective form of the ultimate governing structure is a “multimode”, or a network of individuals, may not appear to be very significant given that it is widely practiced. However, this assertion is not derived from empirical observations or a study of best practice, it is based on the principles of cybernetics and needs to achieve reliable results from unreliable components. That is, the VSM provides a theoretical foundation for developing a comprehensive model for the corporate governance of IT. Insights from the application of the VSM to IT governance that are consistent with current practice should be viewed as supportive of the model, rather than of limited practical value.

The VSM also leads to new ways of thinking about governance. Section 6 of this paper summarised several of the key concepts that underpin the VSM. The implications of these concepts to the corporate governance of IT is summarised in Table 1. Included in this table are references to the main focus areas of IT governance identified by the ITGI [35].

Table 1 – Implications of VSM Concepts for ITG

<table>
<thead>
<tr>
<th>VSM/VGM Concepts</th>
<th>ITG (Board)</th>
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<tbody>
<tr>
<td>Viability</td>
<td>Value Creation. (ITGI: Value Delivery)</td>
</tr>
<tr>
<td>Requisite Variety (RV)</td>
<td>Design Principle: the ITG framework must possess the RV to enable sound IT decision-making (at all levels).</td>
</tr>
<tr>
<td>Recursion (Contained Systems) / Autonomy</td>
<td>Distribute IT decision-making (subject to the need for cohesion).</td>
</tr>
<tr>
<td>Transduction</td>
<td>Monitoring – IT reports must be expressed in the “language” of the Board.</td>
</tr>
<tr>
<td>IT is a Service (from Section 8)</td>
<td>Design Principle: at the Board-level, ITG is inseparable from corporate governance. (ITGI: Strategic Alignment)</td>
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The definition of IT governance adopted by this paper explicitly refers to the three key mechanisms for establishing a system of governance: structures, processes and relationships. Section 6 of this paper examined System 5 of the VSM/VGM in terms of these three building blocks of governance. Table 2 provides a summary of the implications this examination to the corporate governance of IT.

Table 2 – Implications of the VSM (System 5) for ITG

<table>
<thead>
<tr>
<th>VSM/VGM</th>
<th>ITG (Board)</th>
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<tbody>
<tr>
<td>Structural Aspects:</td>
<td></td>
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<tr>
<td>Multinode</td>
<td>A Board (or senior management team) sits at the apex of the system of governance.</td>
</tr>
<tr>
<td>Closure (Information Processing / Decision-Making)</td>
<td>The Board is ultimately responsible for the current and future use of IT.</td>
</tr>
<tr>
<td>Requisite Variety (Applied to System 5)</td>
<td>Board members must possess the RV to govern the many different facets of the organization (including IT).</td>
</tr>
<tr>
<td>Process Aspects:</td>
<td></td>
</tr>
<tr>
<td>Viability</td>
<td>The Board is responsible for establishing and maintaining an effective governance framework (to ensure viability).</td>
</tr>
<tr>
<td>Viability (Value Creation)</td>
<td>Performance. The Board is responsible for ensuring that...</td>
</tr>
</tbody>
</table>
Preservation) IT delivers and preserves value.

Identity (vision) The Board is responsible for setting the overall direction of the organization (including its use of IT).

Identity (purpose, core values) The Board is responsible for establishing and maintaining the organizational identity. (Purpose and core values are potent forms of organizational control.)

Recursion (Board) Compliance. The Board must ensure compliance with the constraints imposed by the containing systems (legal, social, and environmental).

Relational Aspects:

Algedonic Signal The Board must be immediately informed of, and act on, issues related to IT that may impact its reputation or viability (e.g. significant IT security breach).

These implications lead to the need for the Board to be able to evaluate proposals for strategic initiatives or enterprise-wide policies, direct that action be taken to implement the proposals, and monitor that the proposed actions do add value or remedy risk. This set of tasks is used in ISO/IEC 38500 Corporate governance of information technology [36].

One important insight from the application of the VSM to governance is that the Board is responsible for establishing the identity (vision, purpose and core values) of the organization. There is a tendency for empirical studies to focus on the visible elements of governance (e.g., committees, planning processes, etc). However, core values play a critical part in establishing the context within which important decisions are made. Many failures of governance can be attributed to the failure of the corporate culture to deter unethical or risky behaviour.

One final observation, Van Grembergen and De Haes [14] note that IT governance is situated at multiple layers within an organization: at the strategic level where the Board is involved, at the management level within the C-suite layer; and finally at the operational level with IT and business management. IT governance at the executive layer may also be referred to as the corporate governance of IT, since it involves the Board as part of its wider role of providing corporate governance to the whole organization.

This lack of awareness of the recursive nature of governance, through such levels, leads to confusion in the various definitions or treatments of governance of IT in the literature. For example, the work by Weill and Ross [3] covers the second level of governance, that undertaken by senior executives, not corporate governance.

Given that this paper has primarily focussed on System 5, which is enacted as the Board within most corporations, this paper has been primarily concerned with the corporate governance of IT, in contrast to the broader topic of IT governance which encompasses all three layers.

9. Future Research

This paper is part of a more comprehensive research project that is investigating the applications of all the elements of the VSM to the IT governance. The Board (System 5) does not stand in splendid isolation from the organization that it seeks to direct and control. It is reliant upon the other systems to provide it with the information and feedback needed for its decision-making activities.

Future papers will show the application of the VGM to other aspects or levels of governance. They will explore how System 4 (Intelligence) provides the Board with information about how the organization can exploit IT in the future and how System 3 (Cohesion) provides the Board with information about the current performance of its IT assets. They will bring out how System 3 is in turn supported by Systems 3* (Monitor) and System 2 (Coordination), with the algedonic channel providing the mechanism to alert the Board to potential crises emerging in the operational units of the organization.

These papers will show that, conversely, the Board having established the organization’s compliance requirements, organizational identity, and strategic direction must possess the means to transmit these to the other organizational systems and monitor their realisation.

10. Conclusion

Beer’s Viable System Model (VSM) has been applied to the corporate governance of IT. This application has led to the analysis of one system (System 5, Policy) of the evolving Viable Governance Model (VGM). The VGM provides insights into the mechanisms for implementing corporate governance, rather than establishing the definitive governance model. It is generally accepted, that “one size does not fit all”, and that the final form of any implemented
governance framework is dependent on numerous contingent factors.
Later papers will show how the remaining components of the VSM can be adapted for establishing an IT governance framework.

11. References