

2009

# Achieving better stewardship of major infrastructure assets through configuration of governance arrangements utilising Stewardship Theory

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## Publication details

Mills, DE & Keast, RL 2009, 'Achieving better stewardship of major infrastructure assets through configuration of governance arrangements utilising Stewardship Theory', *3th International Research Society for Public Management Conference (IRSPM XIII)*, Fredericksberg, Denmark, 6-8 April, IRSPM.

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**Achieving better stewardship of major infrastructure assets through  
configuration of governance arrangements utilising Stewardship Theory**

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**Paper to be presented to Doctoral Panel, IRSPM XIII Conference, Copenhagen Business School,  
Fredericksberg, Denmark 6 – 8 April 2009.**

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## **Achieving better stewardship of major infrastructure assets through configuration of governance arrangements utilising Stewardship Theory**

*Abstract*—Major infrastructure assets are often governed by a mix of public and private organizations, each fulfilling a specific and separate role i.e. policy, ownership, operation or maintenance. This mix of entities is a legacy of Public Choice Theory influenced NPM reforms of the late 20th century. The privatization of the public sector has resulted in agency theory based ‘self-interest’ relationships and governance arrangements for major infrastructure assets which emphasize economic efficiency but which do not do not advance non-economic public values and the collective Public Interest. The community is now requiring that governments fulfill their stewardship role of also satisfying non-economic public values such as sustainability and intergenerational responsibility.

In the 21<sup>st</sup> century governance arrangements which minimize individual self-interest alone and look to also pursue the interests of other stakeholders have emerged. Relational contracts, Public-Private Partnerships (PPP’s) and hybrid mixes of organizations from the state, market and network modes (Keast et al 2006) provide options for governance which better meet the interests of contractors, government and the community there is emerging a body of research which extends the consideration of the immediate governance configuration to the metagovernance environment constituted by hierarchy, regulation, industry standards, trust, culture and values. Stewardship theory has reemerged as a valuable aid in the understanding of the features of governance configurations which establish relationships between principal and agent which maximize the agent acting in the interests of the principal, even to the detriment of the agent.

This body of literature suggests that an improved stewardship outcome from infrastructure governance configurations can be achieved by the application of the emerging options as to the immediate governance configuration, and the surrounding metagovernance environment. Stewardship theory provides a framework for the design of the relationships within that total governance environment, focusing on the achievement of a better, complete stewardship outcome.

This paper explores the directions future research might take in seeking to improve the understanding of the design of the governance of major, critical infrastructure assets.

## I. INTRODUCTION

STEWARDSHIP THEORY offers a lens through which to examine the demands upon governments to improve the performance of the asset, not only against economic measures but to meet developing public values of sustainability of use and intergenerational responsibility.

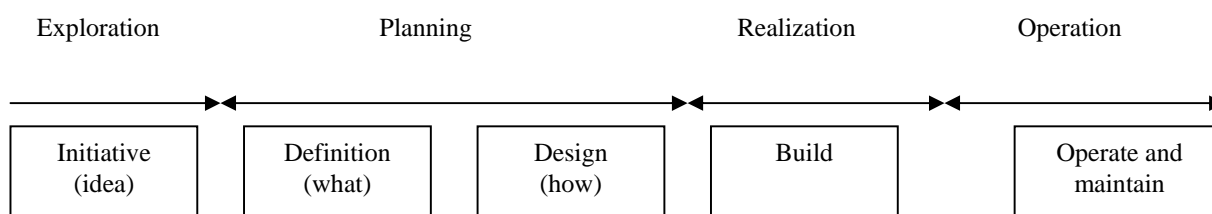
Major infrastructure assets are now governed by a mix of public and private organization types, each fulfilling a specific and separate role i.e. policy, ownership, operation and/or maintenance. The mix of organizational types reflects the late 20th century heritage of economic rationalist reforms labeled New Public Management (NPM) and includes government departments, statutory corporations, government companies and private companies. NPM reforms brought efficiency to infrastructure service provision but through their focus on the self-interest of the individual organization (Denhardt & Denhardt 2007) have resulted in governance arrangements, organizational forms and contractual arrangements which do not advance non-economic public values and the collective 'Public Interest'. Agency theory is key to that focus on the self-interest of the individual (Hood 1991, Waterman & Meier 1998) underpinning both the relationships between the organizations and the formal contractual arrangements, typically between a government entity and a private sector service provider.

The public environment of the 21<sup>st</sup> century has reconsidered the benefits of private sector delivery of services expressing concern that NPM reforms have injected 'managerialism', private sector values, responsibilities and actions into the management of public sector delivery that are detrimental to public good (Grimshaw et al 2002). Governance arrangements which eschew individual self-interest alone and look to also pursue the interests of other stakeholders have emerged. Relational contracts have been introduced for infrastructure construction projects (Waterhouse et al 2002, Grimshaw et al 2002, Keast et al 2005) and hybrid mixes of organizations from the state, market and network modes (Keast et al 2006) have demonstrated the capacity to both meet economic objectives and to provide a decision-making process which includes non-economic public values (Denhardt & Denhardt 2007).

To respond to this shift in community orientation, different approaches to conceptualizing the operation of new organizational and structural arrangements for the provision of public goods and services are required. Research has begun to consider the use of new governance arrangements in solving ‘wicked’ social issues (Keast et al 2006), but the scope of the literature is limited in that the specific area of governance arrangements for large infrastructure assets is not well covered. Much of the literature concentrates on the asset at the stage of development with particular attention being given to efficiency and innovation by way of relational contracts (Waterhouse et al 2002, Keast et al 2005) and Public Private Partnerships (PPP’s) (Hodge & Greve 2007) which were configured to provide for all phases of the project, from Exploration to Operation as described in the continuum described by Koppenjan (2005) in Figure 1.

**Figure 1 Koppenjan (2005)**

**The phases of project development**



Yet the considerable majority of major infrastructure assets are no longer projects but rather are in the “operate and maintain” phase of their life-cycle. The challenge of achieving stewardship outcomes during this maintenance phase is made more difficult by heightening risk and increasing accountability requirements, conditional government funding and reducing maintenance funding (Cagle 2003). To increase the benefit gained by the proposed research into the governance of infrastructure assets particular focus will be given to governance configuration for major infrastructure assets in the operation and maintenance phase.

Stewardship theory is different from the agency model of both the principal and the agent pursuing rational self-interested utility maximization by purporting that in certain circumstances the agent acts in the interests of the principal, even to the detriment of the agent (Donaldson & Davis 1991, Davis et al 1997 and Van Slyke 2007). Stewardship theory highlights the limitations of the strict agency model and through the framework of psychological and situational factors identified by Davis et al (1997) provides a medium through which the features of current infrastructure asset governance arrangements can be considered and offers the possibility of achieving a better stewardship outcome.

Public values offer a suitable framework for defining the stewardship role of governments and for consideration of the relative success of governance configurations in achieving the economic and non-economic stewardship outcome. The framework of public values applying to selected major infrastructure assets in the Netherlands developed by Van Gestel et al (2008) offers a base for further research.

This paper will firstly discuss the modern public environment, the effect of NPM based ‘privatisation’ of the public sector, the role of public values, and the contribution of both the immediate principal-agent governance configuration and surrounding metagovernance environment. Secondly, the general concept of stewardship and the tenets of stewardship theory are explored, particularly the potential of stewardship theory to go beyond the understandings offered by agency theory. Thirdly opportunities for research which may lead to a more precise understanding of the emerging stewardship responsibilities of governments and the features of governance and metagovernance arrangements which optimise the complete stewardship outcome will be identified.

## II. MODERN PUBLIC ENVIRONMENT

Governance arrangements in the modern public environment have been formed through decades of reform to the roles of public sector and private sector actors. The NPM reforms of the 1980's and 1990's were heavily influenced by Public Choice theory which criticized public sectors as being monopolistic, bureaucratic and inefficient (Hood 1991, Osborne & Gaebler 1992, Grimshaw et. al 2002). The NPM solution was the opening up to competition of previous public monopolies through activities such as privatization, commercialization and contracting out as well as the wide application of neo-liberal economic models and the adoption of private sector management principles. Such economic models and private sector management practices were not only applied to genuine market situations but also to non-market circumstances (Denhardt & Denhardt 2000) and market based remedies were applied to public infrastructure notwithstanding infrastructure typically being natural monopolies (Cannadi & Dollery 2005) and notwithstanding the satisfactory economic performance of infrastructure assets being only one of the prevailing public values.

The NPM reforms have meant that 'managerialism' has prevailed with many of the values of private sector management becoming values of the public sector (Denhardt & Denhardt 2000, Grimshaw et. al 2002). Yet governments or their entities are not simply required to maximize profits but rather are subject to political influence and are often required to meet other objectives, such as the 'public interest' (Hughes 1998). For the UK government the public interest translates to the need to have regard to other, shared or collective values requiring collaborative rather than competitive organizational forms (Entwistle & Martin 2005). More directly Beck-Jorgensen & Bozeman (2002) argue that privatization and contracting out often have the effect of eroding public values.



These criticisms of NPM evoke the question as to whether current governance arrangements for infrastructure assets have the capacity to perform a stewardship role that considers the shared values of the community and the ‘public interest’. Redford (1954) defines the ‘public interest’ as being the best response to a situation in terms of all the interests and the concepts of value which are generally accepted by a society. Stone (1988) builds on that definition adding the dimension of active pursuit of shared, collective values. This pursuit of collective values contrasts with the market-based (NPM) concept of the public interest being the sum of the self-interest of individuals. That active pursuit of the public interest is seen by Denhardt & Denhardt (2007) as the responsibility of government. Denhardt & Denhardt (2007) assert that governments need to ensure that the public interest predominates through meeting democratic norms and values by devising solutions to public problems, and devising the processes by which such solutions are implemented. Satisfying both those non-economic ‘public interest’ values and economic values without unintended dominance of any one public value is a key challenge for infrastructure asset governance.

*But what are these public values?*

Simply put, public values at the highest conceptual level are those values held by democracies and societies e.g. democracy, efficiency, sustainability, which are the standards for people and organizations as to how to behave in society (Van Gestel et al 2007). Yet the task of governments in meeting public values is not simple. Public values are relative and may even be ambiguous and conflicting, requiring a trade-off through judgment which often tends to be subjective (De Bruijn & Dicke 2006). Public values will be subject to tensions and conflicts between values (e.g. efficiency versus accessibility). A public value will not be held constant over time by the community but rather, the relative importance of the public value may change over time (Van Gestel et al 2008). This ambiguity, and conflict and flux in relative importance of values poses a considerable risk when actors seek to operationalize the public values (De Bruijn et. al. 2008). Public values become frozen by hierarchical devices such as

specification, regulation and oversight (all elements of governance and metagovernance), which Van Gestel et al (2008) observe lead to the dominance of a particular rationality or value, to the exclusion of others.

*How then are these public values met when governments pursue their stewardship responsibilities?.*

These public values, serve both the role of constituting the stewardship responsibilities and as a major expression of the culture of the wider environment within which the immediate governance configuration of principal and agent entities operates. The relationship between organizations which constitute the governance configuration immediate to the infrastructure asset, is the subject of the major part of the literature yet this immediate environment is contained in the larger environment which provides safeguarding mechanisms which can be configured into governance mechanisms. The configuration of a set of institutional arrangements, encompassing conventional contracts, relational contracts and the creation of a separate entity, in a way that would enable government to devolve its obligations and objectives as the political principal was conceptualized by Baker et al (2008) as metagovernance. Whilst this view of “metagovernance” is in effect limited to the immediate principal/agent relationship an alternative conceptualization is offered by Koppenjan & Ryan (2007) as a structure of mechanisms to safeguard public values which is much broader and which acknowledges the contribution of various behaviors and relationships which underpin stewardship theory. Koppenjan & Ryan (2007) saw safeguarding mechanisms as encompassing the choice of organizations, laws (including regulations and policies), the market, negotiations, interdependencies and trust between actors in “networks” plus the culture with its dimension of consensus around common values and norms.

The availability of this broad range of safeguarding mechanisms together with the underlying concept of managing the issues surrounding public values (ambiguity, conflict between values and flux in the relative importance of values) redirects research beyond the principal-agent, department-private contractor paradigm of immediate governance arrangements towards the wider *metagovernance*

environment as an area of research which will add to our knowledge of the variables which influence the achievement of stewardship.

### III. STEWARDSHIP

Within the overall metagovernance environment governments and their public sector entities together with private sector entities are said to be stewards for infrastructure assets. *What is this stewardship role? Do they as agents in a principal/agent contractual role display the self-interested, opportunistic behaviors portrayed as typical by agency theory? Do they behave differently from the agency model? Is there a theory which explains their behavior?*

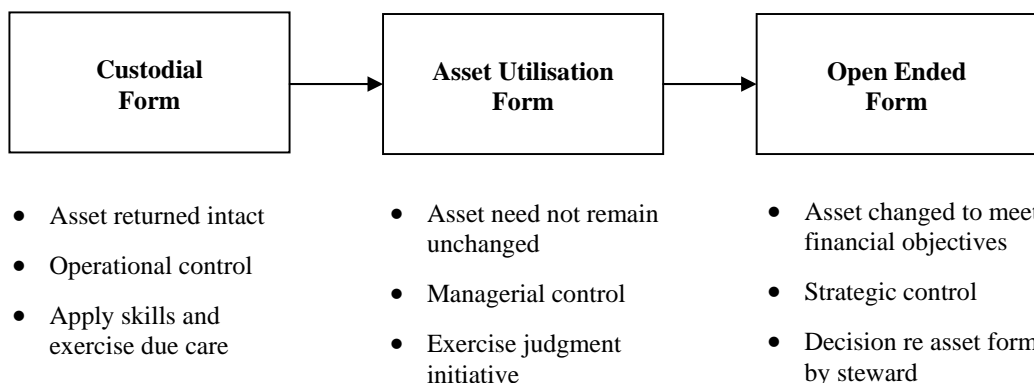
In this section of the paper the general concept of stewardship is first examined together with consideration of examples of industries which are acknowledged for their focus upon stewardship responsibilities. Then the reemerging Stewardship theory is explored both for its potential to understand the limitations of Agency theory-based traditional principal/agent relationships and to understand how to enhance the stewardship outcome by configuration of relationships.

Stewardship has a long history dating back many centuries. Saltman & Ferroussier-Davis (2000) acknowledge the Biblical reference of the parable of the talents where stewardship is portrayed as entrusting the steward with something of value and the steward being obligated to improve the asset. In a public sector context the concept of stewardship of assets for the public good was a mainstay of its operation but this underpinning principle was supplanted in the NPM reforms of the 1980s with the drive to implement private sector management values as a public sector value. More recently stewardship as a guiding principle or public value has re-emerged as a response to calls to take into account the long-term effects of a broader range of issues such as managerialism, environmental sustainability and intergenerational responsibilities. An understanding of the variation in the concepts of stewardship can be gained from the work of Birnberg (1980) who sought to define the objectives of the modern financial accounting relationships between the custodian and the owner. Birnberg (1980) used the levels of

control in managerial systems (operational, managerial and strategic) to describe the range of forms of stewardship. Birnberg (1980) identified a traditional custodial form, an asset utilization orientation form and an open ended form. The traditional custodial form requires the steward to take care of the item and return it to the owner with the corpus intact and reflects the characteristics of operational control. The asset utilization form has the steward's role set in terms of goals and targets rather than with reference to the specific assets and the manner of utilization. The differentiation between the custodial stewardship and asset utilization stewardship is in the judgment allowed to, and required of the servant. The asset utilizing steward is expected to provide initiative and insight and the owner of the asset has only a general idea of the course of action contemplated when the relationship was initiated with the steward-owner relationship being similar to managerial control. The "open ended" form is so named as the owner has assets such as money or real estate for which the steward is entrusted to chart the course of asset utilization and determine the critical point of time when the assets are converted. The steward has an "open ended" charge to meet objectives which are most often set as financial, monetary returns on the value of the asset with the stewardship relationship being similar to strategic control eg. shareholders of modern corporations requiring executives as stewards to generate a specified level of profit. The nature of these stewardship relationships and a comparison with levels of managerial control are set out in Figure 2 below.

**Figure 2 Birnberg (1908)**

**Forms of stewardship**



This distinction between these forms of stewardship brings under focus assertions that stewardship is needed or that stewardship responsibilities are being met evoking the questions:

*What form of stewardship of a particular asset is required of the government by the community?*

*What is the extent of the stewardship currently being provided?*

The work of Birnberg (1980) contributes a key element of a framework which can be created to better examine the link between the requirements of the community, its public values, and the governance arrangements and to understand the extent to which stewardship responsibilities are being met.

Stewardship responsibilities have been formally established across industries eg. the North American forest wood industry, and across whole areas of concern to the community eg. stewardship of the physical environment. The North American forest wood sector has a focus on sustainability utilizing the Forest Stewardship Council (FSC) as a key element of governance contributing a market-based certification and labeling scheme which adds value to the wood product from a marketing perspective. The FSC provides a governance mechanism at the metagovernance level and as a multi-stakeholder NGO with members from civil society, environmental groups and the industry supply chain offers an alternative to traditional government solutions such as legislation, regulation or standards. Caution in

adopting this form might be exercised as the FSC belongs to the Corporate Social Responsibility (CSR) model of governance systems which Verdonk et al (2007) note requires active, conscious consumers. Yet infrastructure assets such as roads and energy supply do not have active, conscious consumers but often are monopoly services, there being no active market forces in play to allow for consumer choice. In the context of the physical environment environmental stewardship has progressively developed into a form of governance (Gray & Hatchard 2007) comprised of all forces driving the environment related agenda forward, including government regulations, economic incentives and social pressures and reflects values shared throughout the community.

The emergence of these governance arrangements which do not rely solely on the configuration of organizational entities evokes the questions:

*Are similar shared values emerging around infrastructure assets?*

*Can shared public values around infrastructure be utilized as a component of a governance configuration which promotes stewardship?*

Stewardship theory offers a means to help explain the emergent view that relationships between individuals and between organizations are something more than those of self-interested actors. It extends agency theory beyond its economic interpretation to include non-economic influences including the psychological (such as e.g. identification and power) and the situational (management philosophy and power) (Davis, et al. 1997). The key assumption of Stewardship theory is that directors (Donaldson & Davis 1991), managers and staff (Davis, et al. 1997 and Van Slyke 2007) are trustworthy and are inherently motivated to act in the interests of the principal, even if this is to the detriment of the agent. The steward seeks to attain the objectives of the organization to such and extent that there is potential for the goals of the agent and principal to be perfectly aligned (Davis, et al. 1997).

Agency theory is often utilized in a highly normative way to describe the conflicts of interest that can arise between principals and agents not allowing for the inter-organizational and interpersonal

relationships which invariably are more complex (Davis, et al. 1997, Van Slyke 2007). In contrast Stewardship theory has the capacity to identify aspects of long term contractual relations such as trust, reputation, collective goals, and relational reciprocity (Van Slyke 2007) and the monitor and control relationship inherent in the agency model. The main themes, tenets of Agency theory and Stewardship theory as summarized by Van Slyke (2007) are set out in Table 1.

**Table 1 Van Slyke (2007)**

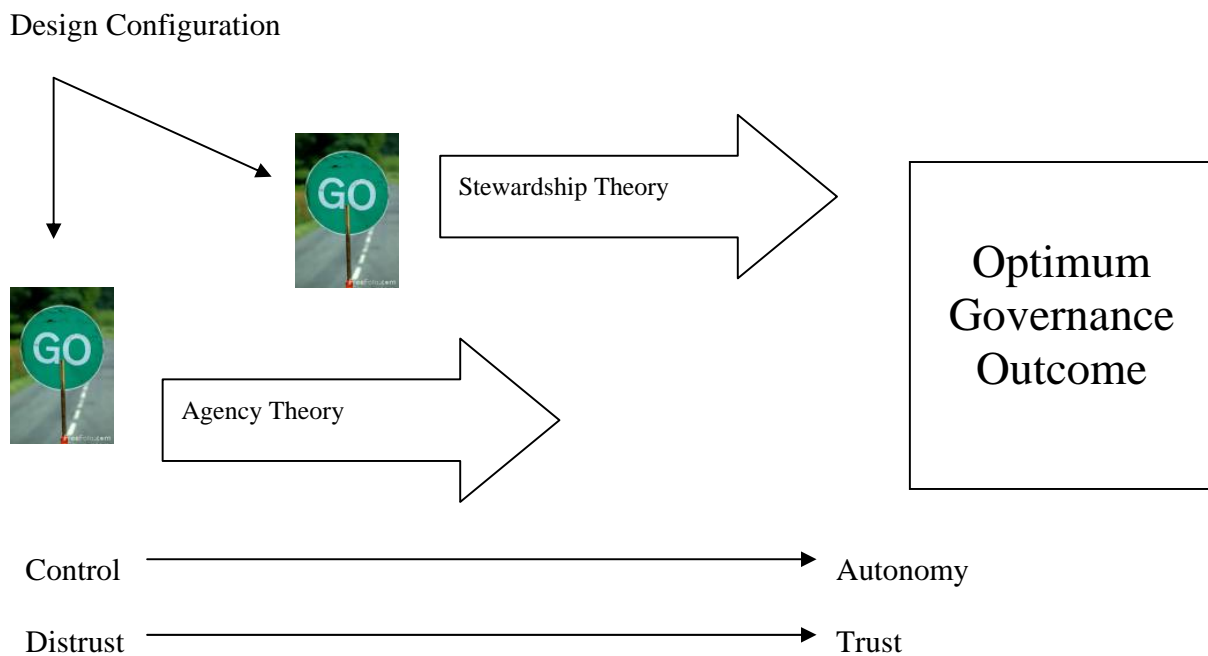
**Agency theory and stewardship theory**

	<b>Agency Theory</b>	<b>Stewardship Theory</b>
Themes	<p>Goal incongruence:</p> <ul style="list-style-type: none"> <li>• Assumes goal divergence based on self-interested rational actors.</li> <li>• Initial disposition is to distrust.</li> <li>• Control-oriented management philosophy.</li> <li>• Theoretical assumptions are derived from economics.</li> </ul>	<p>Goal alignment:</p> <ul style="list-style-type: none"> <li>• Mutual goals and objectives achieved through initial trust disposition.</li> <li>• Involvement-oriented management philosophy.</li> <li>• Theoretical assumptions derived from organizational behavior, psychology, and sociology.</li> </ul>
Theoretical tenets	<p>Use of incentives and sanctions to foster goal alignment:</p> <ul style="list-style-type: none"> <li>• Assign risk to the agent to ensure goal compliance</li> <li>• Monitoring</li> <li>• Reward systems</li> <li>• Use of bonding threat to reputation</li> </ul>	<p>Empowers workers through:</p> <ul style="list-style-type: none"> <li>• Responsibility</li> <li>• Autonomy</li> <li>• Share culture and norms</li> <li>• Personal power and trust</li> <li>• Other governance mechanisms</li> </ul>
Applications	<ul style="list-style-type: none"> <li>✓ Eliminate opportunistic behavior</li> <li>✓ Provide the level of incentives and sanctions which reduce the threat of information asymmetry</li> <li>✓ Correct, through specific contract requirements, for asset specificity and moral hazard</li> <li>✓ Uses reputation as an incentive and sanction</li> <li>✓ Ensure goal alignment</li> </ul>	<ul style="list-style-type: none"> <li>✓ Goal alignment based on shared goals and trust</li> <li>✓ Reward workers through non-pecuniary mechanisms</li> <li>✓ Reduces the threat of opportunistic behavior through responsibility and autonomy</li> <li>✓ Reduces the threat to the organization of information asymmetries, moral hazard, and asset specificity</li> <li>✓ Reduces dependence on legal contracts to enforce behavior</li> <li>✓ Uses reputation as an incentive and sanction</li> </ul>

In summary stewardship theory asserts that if the governance mechanisms are configured to maximize the features identified with stewardship theory such as trust and autonomy then there is greater likelihood of the steward achieving the best interests of the principal. This positive correlation between the application of stewardship theory when configuring the governance and metagovernance mechanisms and the achievement of an optimum governance outcome (the interests of the principal, for infrastructure the government as surrogate for the community) is described in Figure 3 below.

**Figure 3**

**Relationship between design configuration and governance outcome**



*If these benefits are available by configuration of relationships, why aren't all relational arrangements configured according to stewardship theory?*

Some understanding is offered by the research of Van Slyke (2007) who examined relationships between New York City and State social service agencies (principals) and nonprofits (agents) finding a positive correlation between the extent of the risk perceived by either principals or agents and the extent of adoption of agency theory behaviors. The initial disposition of public managers was consistent with



agency theory but the initial disposition of nonprofit executive directors was consistent with stewardship theory. Yet in suburban counties nonprofits identified the existence of a legitimate risk of contract termination and public managers cited limited administrative capacity and their perception that they lacked the capacity to internalize services presently being put to contract. This resulted in both principals and agents adopting behaviors consistent with agency theory (Van Slyke 2007). In contrast urban and non-urban counties (Van Slyke 2007) found relationships which strongly utilized trust and reputation in a manner clearly consistent with the tenets of stewardship theory. An Agency theory approach might be chosen if the principal (especially risk adverse bureaucrats) do not have the appetite for the risk inherent in moving from the agency-model, controlling environment to the trusting, empowering stewardship environment (Davis, et al. 1997). Alternatively the agent may not trust the principal (Davis, et al. 1997).

Van Slyke (2007) offers further understanding as to why agency theory or stewardship theory is chosen observing that the contextual characteristics (the type of service, the lack of market competitiveness, and management capacity constraints) had a significant impact on how contract relationships were managed in the context of the various New York nonprofit service providers but are not well accounted for in either theory. For these theories to assist in developing better infrastructure governance configurations methods for taking into consideration the contextual characteristics applying to the particular infrastructure asset must be developed.

Stewardship theory may therefore provide a means to help explain the emergent view that the relationships between individuals and organizations are something more than reflections of the agency model self-interest of actors and help extend agency theory beyond its economic interpretation to include non-economic influences including the psychological (such as identification and power) and the situational (management philosophy and power) (Davis, et al. 1997).

#### IV. INFRASTRUCTURE GOVERNANCE

The stewardship of infrastructure assets is currently performed through governance arrangements involving a mix of public and private organizations, each fulfilling a specific and separate role i.e. policy, ownership, operation or maintenance. This section seeks firstly to understand the features of the key organizational elements i.e. the various entities used to form the immediate governance configuration. Secondly the options as to contractual relationships and Private Public Partnerships (PPP's) which are a specific combination of the public and private entities and contracts configured to meet needs for the provision of infrastructure. Thirdly the role of public values in determining expectations as to the outcome of governance of infrastructure assets will be examined.

The traditional department in Australia originates from the mid 19<sup>th</sup> century British experience. However, the newly formed Australian states found departments to be inappropriate for railway systems, development programs and commercial activities (Wettenhall 2003). For these purposes statutory authorities were utilized and strengthened with the status of corporate body (Wettenhall 2005). In the 1980s and 1990s the use of statutory corporations for infrastructure was often replaced by government owned companies utilizing corporations law passed primarily for use in the private sector (Hood 1991, Thynne 1994, Wettenhall 2003). The intention was to facilitate participation in level playing field arrangements for the conduct of government activities and contracting within the public sector (Hood 1997).

Contractual or market relationships have been utilized between the public and private sectors to provide infrastructure services with the public sector normally retaining ownership of specific-purpose assets and operational responsibility for the provision of core services (Quiggan 2005). The traditional private sector style contracts allowed government to 'steer' by precisely specifying the outputs required and terms of payment, allocation of risk and penalties (Hood 1997). Contracts have been considered key

to the achievement of efficiency and accountability (Hood 1997) but that accountability is often limited to quantified economic measures.

Traditional contracts are underpinned by agency theory (Muth & Donaldson 1998) which is premised on both the principal and the agent being motivated by self-interest utility maximization (Hood 1991, Waterman & Meier 1998). Agents seek to maximize their utility at the expense of the utility of the principal, creating a conflict of goals between the principal and the agent resulting in an agency cost to the principal (Jensen & Meckling 1976).

Agency cost for infrastructure projects typically comes from the selection of the contractor and the monitoring of the contract and legal disputation (even between private consortium partners) (Hodge 2004) which all reduce the economic efficiency of the contracting out model and undermine the policy goal (Baker et al 2008). A recurrent, major contributor to that agency cost of tightly specified, traditional adversarial contracts is the prevalence of disputes and litigation over the performance of the contracted work and associated allegations of opportunism on the part of the private sector service providers (Keast et al 2005). These persistent significant problems with the traditional contract led to questions about the extent to which the needs of the public were being met and resulted in some cases in the introduction of 'relational contracts' (Grimshaw et al 2002), particularly in infrastructure construction projects (Waterhouse et al 2002, Grimshaw et al 2002, Keast et al 2005). These relational contracts placed an emphasis on permeable organizing practices intended to yield mutually beneficial outcomes in major infrastructure projects (Waterhouse et al 2002). Inherent in this view is that market structure and the organizing principles of the quasi-market are less important than the form of contractual relationship and the nature of organizational form (Grimshaw et al 2002).

The PPP is an alternative to contracting out and privatization of infrastructure is the PPP. These are used world-wide and are long-term contracts between government and private business for a combination of services, construction or financing in return for some combination of public funds, public

assets or user fees (Brown 2007). The private element of a PPP may be an alliance or joint owned company which is entirely private sector owned, bringing complexity to PPPs and additional risk to the public partner (Hodge 2004). The more common form of the PPP is that introduced through the UK Private Finance Initiative (PFI) (Brown 2007) the aims of which were to move public sector debt to the private sector and later to achieve value for money objectives such as on-time, on-budget completion or accessing scarce design expertise and construction skills (Hodge & Greve (2007). A learning from PPP's is the focus on mutual achievement of business objectives based on cooperation around respective competitive strengths, replacing the antagonistic public versus private dualism with harmonious, synergistic duality of partnership (Grimshaw et. al (2002).

The expectation as to the outcome of the governance of infrastructure assets is heavily influenced by public values. Assistance in understanding the role of public values in determining expectations as to the stewardship of infrastructure assets is offered by the experience of the Netherlands with the interplay of public values in the operation of public infrastructure by both public and private organizations (De Bruijn & Dicke 2006, De Bruijn et. al. 2008, Van Gestel et al 2007, Van Gestel et al 2008) and public organizations (Van Thiel 2008).

Van Gestel et al (2008) had regard to theoretical perspectives as to public values and to the opinions of a broad range of stakeholders and the stakeholder's own definition of the appropriate public values at play throughout the stages of six infrastructure projects and developed the taxonomy set out below in Public Values – Netherlands public infrastructure projects, Table 2.

**Table 2 Van Gestel et al (2008)****Public Values – Netherlands public infrastructure projects**

<b>Public values with respect to:</b>	<b>Examples</b>
<b>Government</b> – Public values which govern the relationship between government and society in general.	Democracy, legitimacy Reliability Efficient use of public resources
<b>Employers</b> – Public values involved in the relationship between employers, employees and clients in the sector or project.	Quality of services Safety of employees, customers Reliability of employers
<b>Infrastructure(target groups)</b> – The suitability of infrastructure and services to specific target groups such as low-income groups, or the handicapped.	Universal access Low prices Specific tools for handicapped people
<b>Infrastructure(regional economy)</b> – The contribution of infrastructure to regional economic development.	Economic development Mobility Environmental quality
<b>Infrastructure(general social effects)</b> – Public values in the relationship between the infrastructure and the direct social environment.	Safety Health Sustainability

Van Gestel et al (2008) then used this multi level framework of values to analyze the data from each case study, firstly for tensions and conflicts between various public values throughout each project; secondly to identify the trade-offs between conflicting public values; and thirdly, to understand the role of culture, contracts and hierarchy in the management of public/private networks. Key findings were; firstly that

the public values considered most important at the start of all projects e.g. economic development and environmental quality were not the values that received the most attention in the later stages of those same projects (efficiency, transparency and democracy); and secondly that the management of public values was based mainly on shared culture, whilst contracts and hierarchy were less important instruments for management of public values (Van Gestel et al 2008).

*How then are governance and metagovernance arrangements configured to provide the flexibility to accommodate the ambiguity inherent in public values?*

*How can stewardship theory inform the configuration of infrastructure governance?*

## **V. RECOMMENDATIONS FOR FUTURE RESEARCH**

21<sup>st</sup> century governance arrangements which minimize individual self-interest and promote the interests of the principal (the government or the community) have emerged and have demonstrated both the capacity to meet economic objectives and provide a decision-making process which includes non-economic public values. Stewardship theory has emerged as a device to identify relationships between organizations and individuals which eschew the agency model and focus on the shared objective. Community expectations that such non-economic values also be satisfied require that governments carry out a complete stewardship role. The emerging questions are:

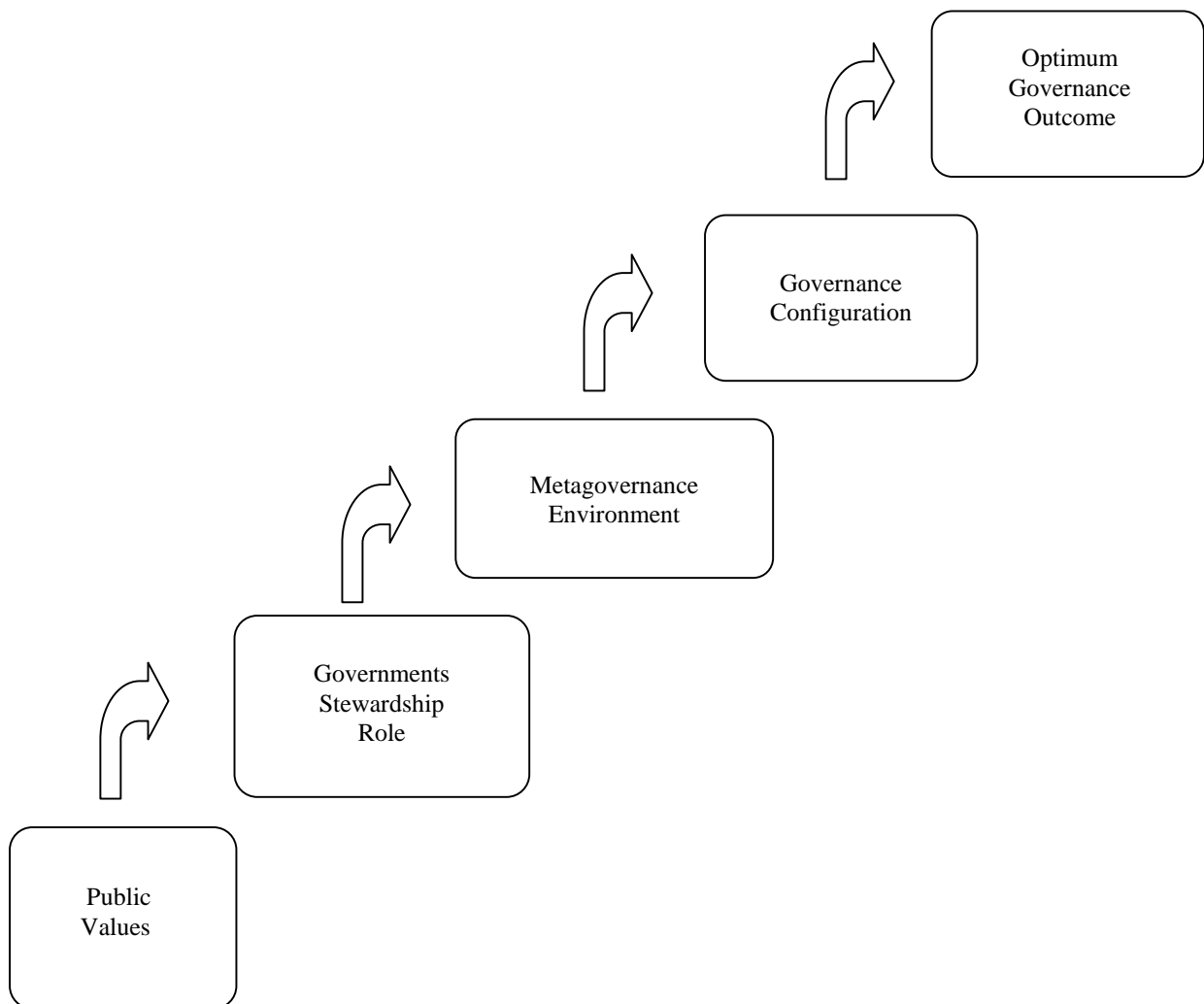
1. *How can the knowledge of these emerging forms of governance and Stewardship theory be brought together to conceptualize the operation of new organizational and structural arrangements for the provision of public goods and services?*
2. *What are the principles to be applied in the design of infrastructure governance arrangements which promote achievement of the complete stewardship outcome?*

The proposed research will build on the framework of public values applying to infrastructure assets established by Van Gestel et al 2008. The values held by a particular community can then be confirmed and their current relative importance established. This understanding of the particular prevailing public values and their relative importance will allow the identification of the dimensions of the stewardship

role of the government. With that Government stewardship role established consideration can then be given to the application of stewardship theory to the design of the metagovernance environment and in turn the immediate governance configuration applying to the particular infrastructure asset. That design is directed to the objective of optimizing the stewardship outcome. The links between these key elements, together with the ideal sequence of their determination is set out in Figure 4 “Aligning the key elements of the Infrastructure Stewardship Environment”.

**Figure 4**

**Aligning key elements of the infrastructure stewardship environment**



That alignment can be advanced by developing the body of knowledge through further research focusing on two areas, the public values which define the infrastructure stewardship role of the government, and the contribution of stewardship theory to infrastructure metagovernance and governance configuration.

Public values surrounding major infrastructure assets might be examined to test the relevance of the framework of public values established by Van Gestel et al 2008 in another environment and to establish the suite of public values, and their current relative importance, applying to particular infrastructure assets or classes of assets e.g. an electricity generator or electricity generators across Australia. This understanding of the particular prevailing public values and their relative importance will allow the definition of the stewardship role of the government.

Stewardship theory can be developed beyond the work of Van Slyke (2007) to understand why agency theory or stewardship theory models are chosen having particular regard to the contextual characteristics (the type of service, the extent of market competitiveness, and management capacity constraints). The current immediate governance configurations and surrounding metagovernance arrangements of major infrastructure assets for two distinct groupings of case studies might be examined, those of NPM configurations i.e. departments contracting out, traditional contracts, and emerging configurations i.e. relational contracts, networks and PPP's. This will allow identification of any correlation between stewardship theory based inter-organizational relationships and categories of configurations and in turn stewardship outcomes as measured by satisfaction of public values. Criteria to be examined may be drawn from Stewardship theory, addressing dimensions such as trust, focus on outputs or outcomes and the perceptions of actors as to responsibility for the interests of others utilizing the models of stewardship developed by Birnberg (1980).

This proposed research, with its focus upon the public values which define the infrastructure stewardship role of the government, and the contribution of stewardship theory to infrastructure governance will provide academics and management practitioners with knowledge which will assist in the



better configuration of governance arrangements and in turn an improved stewardship outcome for each major infrastructure asset.

## VI. CONCLUSION

This paper has re-positioned stewardship theory to provide an emergent model for understanding the requirements for the design of effective governance arrangements for major, critical infrastructure assets.

The emerging new public environment provides a counterpoint to the economic model, achieving an acknowledgement of a need for organizations or individuals to act in the 'public interest'. The concept of stewardship in this context is argued to offer insights as to how the economic model of governance with its reliance on agency theory might be extended to provide a model of governance that facilitates the achievement of economic and non-economic stewardship responsibilities. Public values offer a means to define the complete, economic and non-economic suite of stewardship responsibilities.

This paper presented the emerging stewardship responsibilities of governments and private providers of infrastructure. The paper also considered whether new collaborative arrangements are capable of providing a better (stewardship) outcome than other models such as a single departmental agency carrying out all associated stewardship roles or the contracting out of the entire operation and maintenance of the asset. It is argued there is potential for models to be developed that mix the emerging organizational and contractual forms of governance.

The contribution of these models will be important as the research into infrastructure governance is not advanced with there being a clear need for greater understanding of the relationships which are in play in such a wide range of infrastructure governance arrangements. Stewardship theory emerges as a powerful tool to apply to the examination of case studies of typical and atypical infrastructure governance arrangements.

The further development of stewardship theory, the definition of the stewardship in terms of public values and the proposed research of the current infrastructure governance arrangements will provide data

and information to be used by those interested in the outcomes of infrastructure assets. Stewardship theory is concluded to offer insights into arrangements for the ‘good’ governance of infrastructure assets.

#### **ACKNOWLEDGMENT**

This project is supported by the Cooperative Research Centre for Integrated Engineering Asset Management (CIEAM).

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