Exploring the usefulness of structural–functional approaches to analyse governance of planning systems

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Abstract

Existing planning theories tend to be limited in their analytical scope and often fail to account for the impact of many interactions between the multitudes of stakeholders involved in strategic planning processes. Although many theorists rejected structural–functional approaches from the 1970s, this article argues that many of structural–functional concepts remain relevant and useful to planning practitioners. In fact, structural–functional approaches are highly useful and practical when used as a foundation for systemic analysis of real-world, multi-layered, complex planning systems to support evidence-based governance reform. Such approaches provide a logical and systematic approach to the analysis of the wider governance of strategic planning systems that is grounded in systems theory and complementary to existing theories of complexity and planning. While we do not propose its use as a grand theory of planning, this article discusses how structural–functional concepts and approaches might be applied to underpin a practical analysis of the complex decision-making arrangements that drive planning practice, and to provide the evidence needed to target reform of poorly performing arrangements.

Introduction

There is a significant body of empirical and theoretical work in the planning literature looking at how to conceptualise decision-making processes, the individual planner's role

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and influence on outcomes, the role of planners in wider governance processes, how power is exercised and the degree to which the public and their interests should be involved (Faludi, 1973; Forester, 1989, 2013; Friedmann, 1987, 1996; Healey, 1992, 1993; Hillier, 1993; Innes and Booher, 2003). Few theorists, however, have explored the cumulative impacts of the interactions and relationships between the multiple institutions involved in developing, implementing and reviewing strategic-level planning over time. Public choice theory and complexity theory offer an excellent starting point for planners to understand dynamic and multi-layered nature of the governance of planning systems. However, neither theory currently provides a practical (i.e. cheap, easy for practitioners to apply with limited training or theoretical understanding, accurate and able to feed into real-life decision-making) framework or method to provide strategic planners with a better understanding of the strength and overarching functionality of the entire system within which they are working (Buchanan and Tollison, 1984; Chettiparamb, 2014).

Without suggesting its application as a grand theory of society and planning, this article explores whether structural–functional approaches can be used to support planners and those interested in the reform of planning systems to practically assess the health of governance driving complex planning systems. These approaches proposed include the idea that complex planning systems consist of many component parts that contribute towards the overall functionality of the system, and that these parts can be identified as being either structures or functions. This article also argues that structural–functional approaches provide a highly practical foundation for an analysis of the governance of complex planning systems because it encourages planners to consider the context in which planning occurs, how the governance system is structured and organised, and the way in which those structures interact and contribute to the system's overall functionality.

Conceptualising planning
The evolution of planning thought

Planning theorists have progressively embraced epistemic pluralism and ideas of complexity as planning theory and practice have evolved. Friedmann (1996) classifies the evolution of planning thought between the 1780s and the present day into four distinct traditions, including *social reform*, *policy analysis*, *social learning* and *social mobilisation* traditions.

The *social reform* and *policy analysis* traditions include relatively positivistic approaches to planning that emphasise a rational, scientific approach to planning and decision-making (Friedmann, 1996). Planning approaches that fall within the *social reform* tradition are described by Mannheim (1929), Banfield (1955), Lindblom (1959) and Etzioni (1968). The *policy analysis* tradition is evident more widely in the works of political science theorists (Friedmann, 1996). For example, Althaus et al. (2007) recognise decision-making as a series of typical and identifiable steps beginning with establishing goals and objectives and concluding with feedback and assessment to inform future decision-making

By itself, the positivistic rational planning paradigm is problematic because it presents an idealistic, simplistic and linear model of decision-making. It also fails to address issues of representation and the plurality of public interests, and inaccurately suggests that the planner has control over the decision-making situation (Alexander, 2000;

Altschuler, 1965; Baum, 1996; Dalton, 1986; Davidoff, 1965; Etzioni, 1968). Despite these criticisms, Baum (1977) and B. Harris (1967) argue that planners need not reject or glorify the rational planning paradigm, but should recognise the value of its reasoning and its usefulness to theory and practice. There is a wide recognition amongst theorists and practitioners that planning systems are more complex than the rational planning paradigm suggests and the role of the planner much more diverse (Dalton, 1986; Dorcey, 1986; Healey, 1992, 1993, 2003; Mazziotti, 1982; Muller, 1992). Hence, strong elements of the rational planning paradigm continue to persist in planning education and practice (Dalton, 1986).

Planning approaches in the *social learning* and *social mobilisation* traditions depart radically from the positivistic *social reform* and *political analysis* planning approaches in favour of more empirical and post-positivistic approaches to understanding the realities of local and strategic planning practices (Friedmann, 1996). The *social learning* approaches move away from the rational planning paradigm, and towards ideas of pragmatism and Marxism (Friedmann, 1996). Alternately, planning approaches in the *social mobilisation* tradition tend to eschew rationalism but support a bottom-up approach to planning involving direct collective action to affect change, emerging often in response to oppression or dissatisfaction with existing power dynamics (Arnstein, 1969; Mazziotti, 1982).

Social learning and *social mobilisation* planning approaches described in the literature include transactive planning (Friedmann, 1973), advocacy planning (Mazziotti, 1982), bargaining-oriented planning (Dorcey, 1986; McDonald, 1989) and communicative planning (Forester, 1989; Healey, 1992, 1993). These approaches differ from those within the *social reform* and *policy analysis* traditions because they recognise that planning practice is shaped largely by the ebb and flow of power and agency, and that the planner is not the omnipotent gatekeeper of the planning system. Supported by theorists such as Arnstein (1969) and Cornwall (1995), *social learning* and *social mobilisation* tradition planning approaches tend to assume that more public involvement is 'good', while less public participation in the planning process is 'bad'. However, Buchy and Race (2001) argue that public participation is not about empowering stakeholders as much as it is about challenging existing power structures. Moreover, stakeholder's ability to participate is often 'pre-determined by the type of process used and the degree to which rationality drives it, supporting the maxim that he/she "who initiates the process, controls the process"' (Buchy and Race, 2001: 295).

The increasing popularity of planning approaches within the *social learning* and *social mobilisation* traditions from the 1980s to present day emphasises the rejection of early positivistic approaches to planning and a move towards largely post-positivist, but also post-modern, post-structuralist and neo-pragmatic planning approaches (Allmendinger, 2002; Allmendinger and Tewdwr-Jones, 2002). More recent developments in planning theory have focussed on further developing these 'post' perspectives by drawing on the ideas and concepts of philosophers such as Lacan (Gunder, 2010; Gunder and Hillier, 2009), Foucault (Harris, 2011) and Deleuze and Guattari (Hillier, 2011; Purcell, 2013). Parallel to these explorations, there has also been an emerging discussion surrounding ideas of complexity theory (Chettiparamb, 2014), critical pragmatism (Forester, 2013), actor network theory (Rydin, 2012) and institutional theory (Neuman, 2012). Although these discussions have provided greater insight into the contextual complexity of planning practice and decision-making, the gap

between planning theory and practice is yet to be fully bridged by the adoption of complexity-rich but practically implementable approaches (Lord, 2014).

The above illustrates that there is a plurality of theoretically and empirically founded approaches to conceptualise and analyse complex planning systems. While there is some dissent regarding how planning systems function, there is relative consensus amongst many planning/policy theorists and practitioners that in practice:

- Planning and policy making are not always linear activities (Althaus et al., 2007; Chettiparamb, 2006; Pahl-Wostl et al., 2012; Sabatier, 1999).
- The planner or policy maker is often only one of many semi-autonomous stakeholders in the system (Even-Zohar, 1979; Innes and Booher, 2003; McLoughlin, 1969).
- Planning systems are often highly dynamic rather than static (Althaus et al., 2007; Chettiparamb, 2006; McLoughlin, 1969; Ostrom, 1990);
- Planning and policy making may be operationalised across a number of interconnected institutions across multiple scales (Almond and Powell, 1966; Chettiparamb, 2006, 2014; Forester, 2012; McLoughlin, 1969; Ostrom, 1995).

Structural-functionalism

Development of structural-functionalism

Structural-functionalism is an early form of systems thinking that emerged in the 1800s out of the works of French and British sociological philosophers Comte, Spencer and Durkheim who explored and developed the application of the biological metaphor to understand society (Barton et al., 2004; Spencer, 1899; Urry, 2000). Their work was particularly focussed on explaining order and stability of social systems, emphasising concepts of systemic needs, interdependency and socialisation (Harper, 2011). In the early 1900s, British anthropologists Radcliffe-Brown (1935) and Malinowski (1922) further developed and applied the sociological construct of structural-functionalism in anthropology as a means of framing ethnography and overcoming the limitations of diachronic approaches to understanding change. During this time period, similar to theorists in structural-functionalism, theorists at the Chicago School of sociology were also suggesting that social life cannot be understood without first understanding the interactions of actors within temporal and spatial contexts (Abbott, 1997).

American sociologist Talcott Parsons and his students were particularly influential in the development of structural-functionalism in sociology during the 1950s and 1960s, and based on their work structural-functionalism became the dominant sociological paradigm of the time. Parsons supported the biological metaphor put forward by early sociologists and perhaps boldly argued that structural-functionalism was a grand theory of sociology that could be applied to understand any system (Parsons, 1939, 1951). Parsons developed a structural-functional framework based on his Weberian belief that shared norms and values within systems are the keystone to systemic survival and deviation from those norms and values can jeopardize the survival of that system (Smith and Hamon, 2012). In this framework, Parsons identifies four functions that social systems are generally seeking to achieve to maintain stability, including: adaptation, goal attainment, influence (on outcomes) and latent pattern maintenance (AGIL) (Parsons, 1951).

Parsons' student Robert Merton challenged the core principles of structural-functionalism, and modernised structural-functionalism with his recognition that not all functions are necessary to systemic survival or relevant to a system's needs (Merton, 1949). Rather, he argued that functions can influence the health of social systems by reinforcing or reducing the system's stability (Merton, 1949), recognising that maintaining the status quo can itself sometimes imperil the health of a social system. Merton also developed the notion that by themselves, functions can be either manifest (intended), latent (unintended) or dysfunctional (having unintended negative affects; Helm, 1971), which differs from Parsons' structural-functionalism, which predominantly emphasises manifest functions.

Political scientists also introduced structural-functionalism into the policy sciences in the 1960s as a means of comparing different political systems (Almond and Powell, 1966). Almond and Powell (1966) describe their approach as probabilistic functionalism and emphasise that structures within political systems are highly interdependent but not necessarily intended to exist at equilibrium as purported by early structural-functionalists. The political science approach to structural-functionalism is probabilistic because it assumes that if one structure within the system changes, then there is a high probability that other structures in the system will also adjust to accommodate for that change (Almond and Powell, 1966).

The political science application of structural-functionalism, however, provides particularly good insight into how structural-functionalism might be applied to describe the structures and functions of complex planning systems. Although structural-functionalism has been used in the policy sciences to analyse and compare political systems, and systems theory has been applied in planning theory, the principles behind structural–functional approaches are yet to be applied by planning practitioners to support a real-world, practical analysis or evaluation of the functionality or health governance arrangements for planning.

The ongoing relevancy and usefulness of structural–functional approaches to understand complex systems is recognised by theorists such as Even-Zohar (1979), or Luhmann (1995) who drew on Parsonian structural-functionalism and sociological phenomenology to develop systems theory (Arnoldi, 2001). Systems theory, however, departed from structural-functionalism in its perhaps flawed recognition that social systems are systems of communication rather than systems of action (Arnoldi, 2001). Following these criticisms of structural-functionalism, later theoretical conceptualisations of systems moved entirely away from the structural–functional approach, exemplified by the work by Wallerstein (1979), and drawing on concepts from dependency theory, Marxism and the Annales school (Gregory et al., 2009).

The use of complexity theory to understand planning practice (Byrne, 2003; Chettiparamb, 2014; McLoughlin, 1969), emerged following its inception in the natural sciences (Gleick, 1987; Gribbin, 2004), and later applications in the social sciences (Byrne, 1998; Gribbin, 2004; Luhmann, 1995). More recent discussions of planning systems in the literature are both implicit and explicit in their use of systems theory to conceptualise and understand planning practice. Few of these revivals of systems theory, however, including complexity theory, have retained or emphasise some of the most useful characteristics of structural–functional approaches suggested by theorists in the 1950s–1970s (Chettiparamb, 2006, 2014). In fact, these approaches draw on ideas from old and new systems theories, and are often hybrids of modernist and post-modernist approaches to conceptualising or analysing planning processes and governance

arrangements (E. Alexander, 2000; Chettiparamb, 2006; Cilliers, 2000; Howlett and Ramesh, 2003).

Key concepts of structural-functionalism

Structural-functionalism conceptualises society as a system of interacting parts that promote stability or transformation through their interactions. This conceptual approach suggests that, to understand social systems, we must look at the parts of the system that substantiate particular activities and their interrelations (Chilcott, 1998). Hence, some of the overarching core (and most useful) assumptions underpinning structural-functionalism include the following:

- Society consists of both structures and functions that are interconnected and interdependent, and ultimately focused on maintaining or mediating societal equilibrium (Radcliffe-Brown, 1935) and or necessary transformation (Dale et al., 2013b);
- Social systems consist of both structures and functions that are necessary for the ongoing health or survival of that system (Chilcott, 1998);
- Structures exist to meet the functional needs of a system (Merton, 1949);
- Systemic functionality (i.e. how parts of the system work) across and within structures serves to reinforce and maintain the stability of the system's structures in the context of an ever-changing, complex and unpredictable system.

The key concepts of defined structures and their functionality are at the heart of structural-functionalism, and are discussed further below.

Structures. Structures are the more 'static' elements of a system (Sewell, 1992). That is not to say that structures are immobile, rather they change at a slower rate than the functions, which tend to be more dynamic and less robust than structures. Structures are identifiable as they are usually organised or institutionalised in a specific manner and consist of many interrelated, interdependent, but also autonomous parts, including alliances of different actors (Sewell, 1992). Examples of structures in a policy system include the institutional alliances that run processes or are involved in goal setting in the policy cycle (such as government agencies, industry groups, non-government organisations, community groups and individuals). The functionality of structures is evidenced by their expressed contribution towards achieving a goal of the system as a whole (Kalu, 2011).

Structures in planning systems may include the social and institutional networks that carry out typical roles within the strategic policy or planning system being analysed. While structures are largely responsible for running particular processes, they also produce outputs (e.g. formal documents such as legislation, policies, strategies, plans) and outcomes. In a governance system, structures focussed on setting strategic priorities for planning may deliver plans or policies intended to guide action to achieve desired planning outcomes. Alternatively, structures focussed on the implementation of policies or plans may include legislation writers and other institutions with local decision-making authority.

Functions. Functions are the traits that describe how structural aspects of a particular governance system work or how the system is stabilised (Eisenstadt, 1990). Within governance systems, certain functions must be present for the system to persist (Almond and Coleman, 1960). Functions connect the structures in a system but also represent the relationships between them.

There have been significant discussions involved in identifying functions relevant in sociological terms (Parsons, 1951) and in the political sciences (Almond and Coleman, 1960). Parsons proposed that functional traits describe the social outcomes of the interplay between structures and functions, rather than the actual functions of a system. Similarly, Almond and Coleman's functions are highly specific to government or hierarchy models of governance and are inappropriate for application in governance systems that do not fit the hierarchy-driven 'government model', a condition true of many planning systems. Looking at governance systems more generally, however, Dale and Bellamy (1998) identify three cornerstone functional elements of healthy planning governance systems; these include knowledge application to improve governance systems, the connection of effort within governance systems and the decision-making capacity of players within the system.

Criticisms of structural-functionalism

Structural-functionalism (and particularly Parsonian structural-functionalism) has been extensively criticised in the literature (J. Alexander and Colomy, 1990; Giddens, 1979, 1984). Critics, perhaps unfairly, argue that structural-functionalism:

- Uses an ecological model to understand society (Chilcott, 1998; Craib, 2011);
- Only presents a simplistic and static model of society/systems focussed on order and equilibrium, rendering it unable to adequately account for transformation and change (Chilcott, 1998; Colomy, 1986);
- Is excessively abstract and cannot be applied empirically (Colomy, 1986);
- Overemphasises the importance of integration within the system, while downplaying the role of the individual and agency in the system (Giddens, 1979);
- Does not adequately (if at all) address issues of self-reference, complexity or conflict (J. Alexander and Colomy, 1990; Clark, 1972; Luhmann, 1982).

Giddens (1979) is particularly critical of structural-functionalism on the grounds that it does not account for any degree of individual agency within systems, and this is somewhat true for Spencer and Durkheim's structural-functionalism. Spencer and Durkheim were responsible for developing the broad principles of structural-functionalism. Parsons (1951) and Merton (1949) further reified the generalised structural-functional approach in an attempt to respond to critics. Parsons (1951) considered agency in the 'decision-making process for individual actors' in his framework, arguing that actors are guided in decision-making by their environment and moral constraints. However, for many critics, Parsons and Merton failed gain headway in making the abstract ideas of structural-functionalism applicable to the wider study of society.

Although structural-functionalism was largely abandoned by the 1980s, several theorists recognised both the value and limitations of the structural–functional approach, and developed new models that drew in varying degrees on some core conceptual ideas. Some of the more well-known approaches that emerged include neofunctionalism (J.

Alexander and Colomy, 1990), systems theory (Luhmann, 1982) and structuration (Giddens, 1979). In line with the theoretical and empirical developments at the time, these approaches moved towards a greater recognition of epistemic pluralism, rather than seeking a grand or unifying theory of society.

Dissatisfied with the normative and rational planning models of the 1960s, and structural-functionalism in the 1970s, Healey (2007) drew inspiration from Giddens (1984) in her study of planning practice using sociological institutionalism. Healey (2007) uses Giddens' arguments on the interrelations of structure and agency in her work on understanding complexity in planning practice. Indeed, Healey's (2007) rejection of classic structural-functionalism is one of the few examples where structural-functionalism has been considered for use in the planning discipline.

In developing her approach, Healey (2007) correctly addresses issues of cross-scale complexity, network connectivity, governance and the significance of context in planning. Healey's work, however, focuses on the interrelations of structures and agency and subsequently fails to recognise the significant influence of functions within the system. Despite this, Healey's (2007) work emphasises and supports the key argument of this article that concepts of structural-functionalism (and its varied evolutions) are highly relevant to understanding and analysing planning governance systems. While Healey's (2007) framework is theoretically robust and well argued, it does not provide planning practitioners or institutions interested in reform with a practical tool or approach to inform evidence-based decision-making for systemic governance reform in practice. It seems more oriented to an academic audience.

Chilcott (1998) and Goldschmidt (1966) argue that despite the many criticisms of the theory, structural-functionalism remains a particularly strong practical device for studying and interpreting complex systems. This is further supported by Jarvie (1964) who suggests that the criticisms of structural-functionalism are overcome if it is used as a 'modus operandi' for analysing systems, rather than as a grand or unifying theory. Such an approach enables analysts to focus their attention on the description and explanatory elements of functionality, while disregarding the meta-theoretical and more problematic aspects of structural-functionalism (Chilcott, 1998). Based on this logic, and following its preliminary but successful empirical application (see Dale et al., 2013c), this article suggests the use of structural-functional thinking as a practical analytical device, rather than as a broad theoretical or empirical approach to conceptualising society or complex systems.

The static nature of structural–functional interpretations of systems is less problematic when using it as a practical device than as a grand theory of social systems (Goldschmidt, 1966). This is because an assessment or benchmark-oriented assessment of a complex system presents a static picture initially, but, when managed adaptively, repeated assessments provide a narrative of how the system changes over time. Because of this, criticisms of structural-functionalism's overemphasis on equilibrium can also be disregarded when using it as a practical analytical device. A practical structural–functional analysis of a system does not need to question whether the system is going to maintain equilibrium or the status quo; rather the analysis can focus on what the system is currently doing and how it is currently working or delivering its intended outcomes. Applications of this kind are not about maintaining the status quo but about adapting systems to societal needs.

A practical structural–functional framework can also act as a tool for self-reference (individuals and institutions within a system are capable of reflecting on their system and how

it works) and identifying the impact of both internal and external conflict and required changes to both structures within and the functionality of the system. Using structural-functionalism pragmatically moves it from just being an abstract theory to its application as a highly empirical and useful analytical tool, as demonstrated by Chilcott (1998).

Structural-functionalism in planning

Not all of the elements of the different models of structural–functional are appropriate to use when analysing a planning system. The sociological interpretation of structural-functionalism has been heavily criticised (as discussed above). Although the political science interpretation of structural-functionalism overcame many of its shortcomings, in its theoretical form, it remained inappropriate to apply directly to analyse planning systems. Despite these criticisms, many of structural-functionalism's principles remain relevant and useful to planning practitioners as a theoretical grounding for systemic analysis of real-world, multi-layered, complex planning systems.

Planning practitioners can consider institutions and their interactions or alliances of institutions as the 'parts' that contribute to the overall structure of the planning system. In line with complexity theory, this approach also recognises that institutions can exist at multiple scales and are interconnected, interdependent and autonomous decision-makers. Planning systems are likely to be poorly understood if practitioners or theorists only look at how an individual institution/institutions is organised, or the role and activities of an individual institution within the system. Rather, in order to fully understand planning systems, practitioners and theorists must consider the system as a whole and the cumulative influences of

- The broad political, social, economic and cultural contexts of the system;
- The configuration of institutions around key planning tasks (e.g. goal setting);
- The internal organisation of institutions;
- The way in which institutions interact;
- The role of institutions in the planning process.

Table 1. Typical descriptors of key structural characteristics of planning governance systems.

Key structural characteristics	Typical descriptors of structural characteristics	Typical structural outputs
Vision and objective setting	Are there single or multiple institutions/individuals involved in system vision and objective setting? Which other institutions and individuals in the system need to be involved and what are their visions and objectives for the system? What are the policy and legal frameworks underpinning vision and objective setting?	High-level vision and objective statements for the system that set the scene for strategy development and implementation
Analysis (research and assessment)	Is research and development linked to the operation of the system?	Strategic research programmes well

	Are there single or multiple institutions and individuals involved and what are their research and assessment priorities? Which other organisations and institutions need to be involved in research and development? What are the policy and legal frameworks underpinning analysis?	engaged across the system Strategic link between research programmes and system monitoring
Strategy development	Are there single or multiple institutions and individuals involved in strategy development and what are their priorities? Which other organisations and individuals need to be involved? What are the policy and legal frameworks underpinning strategy development What is the solutions mix? Is it developed to achieve high level visions and objectives (i.e. the balance between regulatory, suasive, market-based, education and capacity building or collaborative approaches)?	High-level strategic plans that drive cohesive programme development and implementation A balanced mix of strategic solutions that inform implementation programmes
Implementation	Are there single or multiple institutions involved in a strategic spread of implementation programmes and projects and what are their priorities? Which other organisations and individuals need to be involved in implementation? What are the policy and legal frameworks underpinning implementation?	Strategic implementation of programmes/projects An appropriate solutions mix of regulatory, voluntary, suasive and market-based arrangements
Monitoring, evaluation and review	Are there single or multiple institutions involved in system monitoring, evaluation and review and what are their monitoring/evaluation/review priorities for the system? Which other organisations and individuals need to be involved in monitoring and evaluation? What are the policy and legal frameworks underpinning monitoring, evaluation and review within the system?	Regularised state of the system's monitoring and reporting frameworks Strategic/periodic evaluations of key parts of the system

Table 2. Typical descriptors of key functional characteristics of planning governance systems.

Key functional characteristics	Typical descriptors of functional characteristics
Participant decision-making capacity	Understanding of system issues of relevance amongst all system participants (organisations and key individuals) The strength and genuine nature of the motivations of key participants to engage well in the governance system Access to relevant system information across all system participants

	Technical, skill and financial resources available to support the involvement of all participants in the system
	Mandates participant organisations and leaders have from their constituents and representational feedback and communication mechanisms
	Ability of all system participants to be involved in structured collaboration and negotiation arrangements
	Negotiation capacity of key participants in the system, particularly those with most responsibility for making the system work
	Leadership capacities of organisations and individuals within the system
Connectivity	Existence of formal structured arrangements for collaboration and negotiation within and between key structural arrangements in the system
	Relationships (including trust) within institutions and individuals involved in different structural components of the system
	Alignment of efforts and relationships between different structural components within the system
	Alignment between the governance system and other most relevant governance themes, domains and subdomains
	Alignment between the governance system and the most relevant governance domains and subdomains within the same theme
	Alignment between spatial and time scales involved in the system
Knowledge-use	Use of strategic analysis (research, assessment, monitoring and evaluative work) spread across all structural components of the system
	Spread of knowledge across key system participants
	Use of a spread of knowledge types, including social, economic and environmental, traditional and historic knowledge sets across the system
	Use of technologies/soft systems to support knowledge integration and decision support within the system
	Existence of knowledge retention and management systems
	Existence of knowledge brokerage systems across the system

Institutions are likely to fulfil more than one role and multiple institutions may have the capacity to fulfil the same role. An example of this is the implementation of riparian zone management strategies along waterways, whereby local councils, community catchment groups, landholders and traditional owner groups are all able to do the on-ground works. Institutions in practice are created, shift, change and can be destroyed based on external and internal influences. This dynamism means that other institutions are able to adjust to the structural need at hand and any changes in the institutional and policy landscape as required. However, such structural changes are often not seamless, nor are they 'harmonious'; rather there may be periods in which core roles are not being fulfilled, while the system's institutions adjust, reorganise and self-regulate.

Table 3. Sample structural–functional matrix to analyse complex planning governance systems.

	Decision-making capacity	Connectivity	Knowledge use
Vision and objective setting	Do capacities exist to set higher level aspirational or condition targets?	Are relevant stakeholders actively	Are all forms of social, economic and environmental

	Do the relevant stakeholders have the knowledge, financial, human and infrastructure resources required? Do key institutions involved have strong corporate governance/continuous improvement systems?	connected to decision-making? Are visions and objectives aligned to higher and lower scale visions and objectives? Are collaborative frameworks for setting visions and objectives well designed? Are there structured frameworks for bargaining and negotiation over setting visions and objectives?	information available for vision and objective setting? Are traditional and historical knowledge sets being applied? Are appropriate decision-support tools in place to support scenario analysis?
Research and assessment	Are there strong research and analysis capacities in place to inform other structural components of the system? Are there strong environmental, economic, and social research and analysis capacities in the system?	Are there strong collaborative linkages between different research institutions? Are there effective brokerage and communication arrangements between research provider and end user stakeholders? Are collaborative arrangements in place to integrate social, economic and physical research?	Are there systems in place for long-term research synthesis and knowledge retention? Are there broad research priority setting exercises that need to be refined? Are all forms of social, economic and environmental information available for systems decision-making?
Strategy development	Do capacities exist to set clear strategic targets? Do the relevant stakeholders have the knowledge, financial, human and infrastructure resources available to make the decisions required? Do the key institutions involved have strong corporate governance and improvement systems?	Are all relevant stakeholders connected to strategy decision-making? Are strategies aligned to visions and objectives? Are strategies aligned to higher/lower scale strategy development	Is there social, economic and environmental knowledge relating to the assessment of the efficacy of key strategies? Are decision support tools available to scenario test alternative strategies?

		Are collaborative frameworks for setting objectives well designed? Do strategies integrate an appropriate solutions mix?	
Implementation	Are there capacities to implement a broad mix of strategic solutions? Do the implementation players have the financial, human and infrastructure resources to implement? Do the key institutions involved have strong corporate governance and improvement systems?	Are there effective partnership and integration arrangements between policy and delivery systems? Do different components of the solution mix collaboration? Are there effective research brokerage arrangements to support implementation?	Are there research efforts to inform continuous improvement in implementation? Are local and traditional knowledge sets informing implementation? Are effective data sets concerning implementation being managed and retained?
Monitoring, evaluation and review	Are there effective monitoring and evaluation capacities in the system? Are there collective monitoring alliances in place? Are there defined and independent evaluation capacities in the system? Are there reporting capacities to enable high levels of accountability?	Are there integration arrangements between objective setting and monitoring systems? Are evaluative and review mechanisms linked to long-term monitoring? Are monitoring and reporting strategic processes able to influence strategic processes and the allocation of resources?	Are social, economic and environmental outcomes from the system being monitored? Are monitoring and evaluation data being retained in the long-term?

The typical structural characteristics of planning governance systems are described in Table 1, while the typical functional characteristics of planning governance systems are outlined in Table 2. Functions in planning systems are not discrete; rather they are often interrelated. Consequently, the boundaries between the functions are often blurred, as they influence and interact with each other. For example, the capacity of a planning system can be strengthened or weakened by the presence, or lack thereof, of connections between key decision-makers or implementers. Similarly, connections between

structures are likely to be weak if the structures lack sufficient resources to survive individually, let alone support a systemic agenda.

Power, agency and the interactions of individuals and institutions inherently drive functional connectivity within planning systems and it is difficult to understand the dynamics of planning without considering them (Forester, 1989). Despite this, how to conceptualise power and agency in a way that accurately reflects planning practice remains contested. This is in part explained by the plurality of both planning theory and practice, and it is unlikely that theorists and practitioners will find or agree on a one-size-fits-all approach to solve this problem. Rather, each situation should be considered contextually before applying an appropriate model to describe or analyse its dynamics.

When using a structural–functional approach to understand planning and power relations, power is considered dynamic and can be defined as the ability of an individual or institution to draw on the functional elements of a governance system to influence action and decision-making. For example, in the development of a regional growth management plan, a developer with a particular agenda may use their connections to government agencies or influential individuals (such as councillors, funding bodies or local government employees) to manipulate decision-making or funding allocation for specific projects in a way that suits their agenda. Individuals or institutions have access to different forms of capital that constitute their functional capacity and their ability to use and communicate different forms of knowledge. Furthermore, the more knowledge they have enhances their power or influence in the planning system compared to those with less access to capacity and connectivity.

Based on the concepts discussed above and Dale et al. (2013a), Table 3 provides an example of a structural-functionally derived framework that can be applied by planning practitioners to systemically describe and analyse the core structures and functions of the planning system, while also considering the underlying complexities that are influencing the governance system. Table 3 uses the steps of policy analysis as the structures of the strategic planning process, which can then be discussed with stakeholders in the system to gain insight into the degree to which functional elements (decision-making capacity, connectivity and knowledge use) are present and applied in the system.

This framework is practical for several reasons:

1. The policy analysis steps (representing structures) are widely recognised in planning practice and rational planning theories.
2. The framework does not require special skills or theoretical knowledge to apply; rather it can be applied by non-academic and general analysts within the system.
3. The framework can be applied as a rapid assessment or comprehensive assessment based on the needs of the system and stakeholders within it.
4. The framework is also relatively cheap and quick to apply.
5. The framework provides a benchmark of functionality that is relevant to more than one organisation, policy or programme and can be monitored over time.

Why is structural-functionalism relevant to planners?

Existing planning theories are currently limited in their analytical and conceptual scope and often fail to see the cumulative impacts of the interactions between the multitudes of stakeholders involved in strategic planning processes on the wider governance system. This section draws on structural-functionalism and applies it to planning systems. Based

on this, planning systems can be understood to consist of interconnected structures and functions, and the interactions of those structures and functions contribute to the overall functionality of the system. This perspective can be used to inform a practical analysis of complex and strategic planning systems. Any analysis of governance underpinning complex planning systems must consider how the system is structured and organised, but also the way in which the structures in the system function. Analysing both the structures and functions enables planners to take a more systemic view of decision-making, while still accounting (in a non-linear way) for the numerous dynamic interactions of multiple structures across scales and policy spheres.

The rational policy analysis model can be relevant and useful as a practical approach for discussing and analysing the planning process, provided the underlying complexities, uncertainties and non-linear nature of planning are recognised. Dalton (1986) argues that although in practice planners recognise the limitations and shortcomings of the rational paradigm, the rationally based policy analysis planning process remains the aspirational ideal for many practitioners. Dalton (1986) and Althaus et al. (2007) argue that public planning practitioners and policy makers often unwittingly take a more general rather than precise approach anyway to the steps suggested by the *policy analysis* tradition and adapt their approach based on context.

For example, in Australia regional natural resource management (NRM) groups engage with multiple Local, State and Federal Government agencies, industry groups, community actions groups, traditional owners, farmers and other landholders throughout the planning process (Gooch and Warburton, 2009; SEWPaC, 2008). Regional NRM groups tend to use less linear and more iterative and adaptive planning approaches in order to respond to their particular regional political, social and institutional and resourcing contexts and constraints (Vella et al., 2011). This means that they are likely to be simultaneously involved in a number of rational planning steps such as implementation and monitoring, or strategy development, research and analysis and evaluation.

Moreover, there is a strong recognition that complex planning systems need more adaptive and resilient planning approaches, rather than traditional, linear and static models (Dale et al., 2013a). This means that the planning process is often not focussed on just developing a static plan, but rather is designed as an ongoing process capable of responding to changes within the system. In practice, however, this form of adaptive strategic planning still relies on planners asking questions about the following:

- Their goals for the region (visioning and objective setting);
- What information is needed to support decision-makers (research);
- How they should go about achieving their desired outcomes (strategy development);
- How to implement strategies (implementation);
- Whether their activities actually made a difference towards achieving desired outcomes (monitoring/evaluation).

This demonstrates that despite the rejection of rational planning by many theorists, its core tenets remain useful and relevant as the recognisable structures of strategic planning practice. Consequently, to begin to bridge the gap between theory and practice, we must develop tools and theories that are complementary to the processes that are actually used by practitioners in their day-to-day work. Theorists and practitioners both need to work

together to develop analytical tools to support planning decision-makers and that look beyond government hierarchies and recognise the interplay between structures in social systems, the environment and the feedback loops that connect them.

Structural-functionalism provides a logical and systematic approach to the analysis of strategic planning systems that is grounded in systems theory and complementary to existing theories of systems, complexity and planning. The steps drawn from the policy analysis planning tradition provide recognisable and practical markers for practitioners when applying the analysis framework. Finally, the systems view of the planning process recognises the inherent complexity of planning systems (e.g. consider approaches identified by Friedmann (1996) in the *social learning* and *social mobilisation* traditions) and allows analysts to consider a plethora of interactions and other factors influencing planning processes and outcomes across scales.

We reiterate, however, that this article is not suggesting that structural-functionalism is a grand or unifying theory of planning. Rather, we suggest that it can inform an approach to analysing strategic planning systems that can be complementary to existing planning theories and also highly practical and useful to planners and planning system reformers. The practical structural–functional approach is an additional analytical tool in the practitioner's 'toolbox' to support more evidence-based decision-making and more targeted effort and financial investment to reform areas of the system that are currently falling short of delivering their desired strategic outcomes.

This provides an alternative to continuously creating new plans, policies, programmes, which fall short of delivering expected outcomes because decision-makers lack an understanding of the impact of the wider governance system on planning outcomes. Rather, planners and policy makers can recognise which components in that system are limiting the success of planning and focus their attention on improving and redeveloping those areas. This also enables planners and policy makers to progressively increase the functionality of the whole system using a systematic, evidence-based approach. An evidence-based approach to planning system reform is also likely to reduce losses of goodwill, capacity and partnerships that can occur when policies are drastically and regularly reformed without due consideration of their existing strengths and weaknesses.

Applying structural–functional in a complex planning system: NRM planning in Australia's wet tropics

Planning and managing for natural resources is often highly complex, political and contentious, especially in the Wet Tropics region in North Queensland, Australia. The Wet Tropics region is famous for its internationally recognised natural resources, including the Great Barrier Reef, Daintree rainforest and the Wet Tropics World Heritage Area (DAFF and SEWPaC, 2011; Maclean and Chappell, 2013). NRM planning involves a diverse array of institutions, and interests interacting across temporal and spatial scales (Gruber, 2010; Ostrom, 1990, 2000, 2009), and is an apposite example of a complex planning governance system.

In Australia, 56 regional groups have been designated across the country to manage NRM at the regional scale. In Queensland, the non-statutory regional groups responsible for NRM planning engage with numerous community, industry, non-government and government institutions in order to develop and implement plans and strategies. The formal and informal governance arrangements that exist between such institutions are

particularly influential on the success of NRM planning and management activities (Dale, 2013; Lockwood et al., 2010).

There are currently numerous empirically- and theoretically grounded frameworks available to NRM practitioners to analyse and evaluate individual NRM plans, programmes, strategies and institutions (Althaus et al., 2007; Bellamy et al., 2001; Connick and Innes, 2003; Curtis et al., 1998; Hajkowicz, 2009; Vogel, 2011; WalterTurnbull, 2005). While these existing frameworks are highly useful for identifying problems at the plan or programme scale, they all fail to convincingly consider the impacts of broader governance arrangements on the functionality of the system and its individual plans, policies or strategies. This means that changes to governance arrangements are currently not based on systematic or ground-truthed evidence, leading to potentially unnecessary, poorly informed or misdirected decision-making and governance reforms. The following sections describe a complex NRM planning governance system using a practical structural–functional approach.

NRM planning structures

The steps described by the planning *policy analysis* tradition and policy scientists such as Althaus et al. (2007) can be used to represent the core structures of a strategic NRM planning or policy-making process, and include the following:

- 'Vision and objective setting;
- Strengths, weaknesses, opportunities and threats (SWOT) analysis and research;
- Strategy development (within various structural elements of the system);
- Implementation;
- Monitoring, evaluation and review' (Dale et al., 2013b: 6).

In NRM planning systems, structural activities occur across multiple scales and involve numerous institutions and individual actors. While one organisation is designated as the institution responsible for developing and implementing the region's NRM plan, there are in fact several other key institutions directly engaged in NRM decision-making, planning and implementation activities for the region. These include government authorities that plan for and manage the region's World Heritage Areas, a number of Local Government, State Government and Federal Government departments and agencies, a plethora of voluntary community institutions, traditional owner groups and landholders (DAFF and SEWPaC, 2011; SEWPaC, 2008).

Institutions in the Wet Tropics vary in that some fulfil only one role, while others have several roles in the NRM planning and management processes. The institutions are variously policy-makers, funding bodies, implementers, facilitators, mediators, researchers and other roles. For example, catchment groups are largely involved in implementation activities such as tree planting and habitat management, while government authorities may be involved in garnering and distributing funds for NRM activities, in addition to developing plans and policies (Wet Tropics Management Authority (WTMA), 2010, 2011). The functions that connect NRM institutions (and subsequently the NRM planning governance system's structures) are critical to the
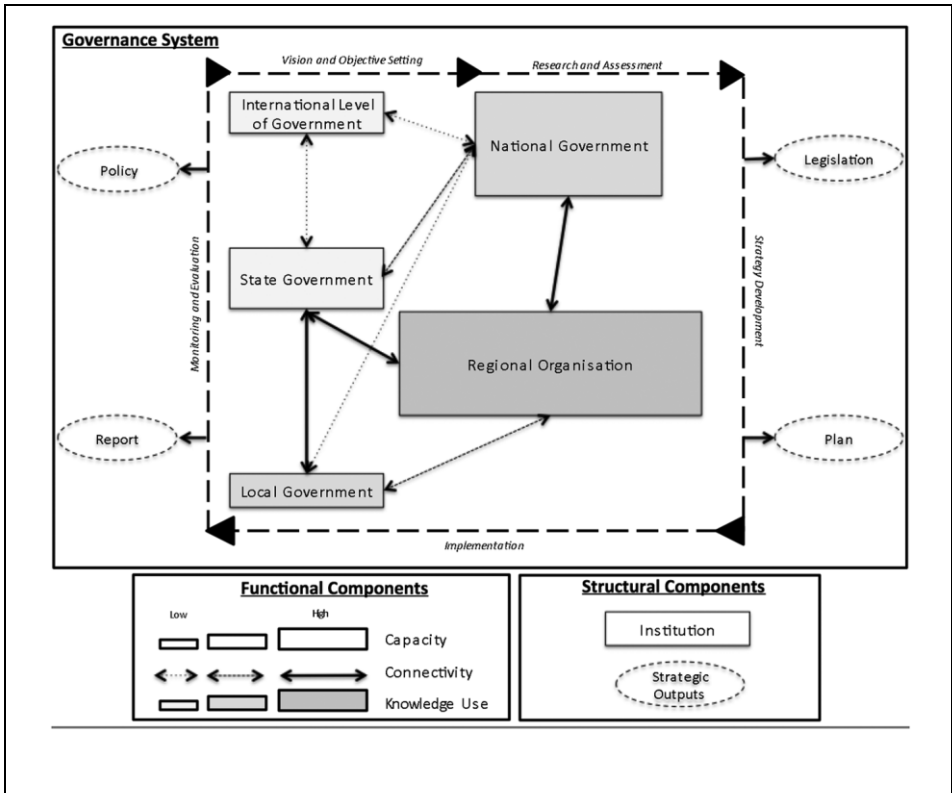
Figure 1. A simplified example of the interactions between structures and functions in a governance system.

system's stability and capacity to successfully achieve its intended and desired outcomes. The interactions between NRM planning structures and functions in the Wet Tropics are simplified and illustrated in Figure 1.

Functions in NRM planning systems

This section defines and discusses NRM planning governance functions, as identified by Dale and Bellamy (1998), and describes examples of functions in a Wet Tropics NRM planning context.

Knowledge use. The importance of applying relevant social, economic, environmental, traditional and historical knowledge, to enable better-informed (and thus better functioning) planning and governance systems, has been discussed at length (Campbell, 2012; Cash et al., 2003; Failing et al., 2007; Robinson al., 2010). Coordinating and integrating knowledge from multiple sources of knowledge can provide NRM planners and policy makers with specific insight into the source or potential solutions to often-complex problems (Leys and Vanclay, 2011). For example, NRM institution's approaches to managing invasive flora and fauna species in the Wet Tropics often draw on traditional, scientific and historic knowledge leading to strategies that involve multiple management methods (e.g. fire landscape management, chemical

controls/baiting, aerial shooting, manual removal, education and awareness, etc.). The result of this is a more effective multi-directional approach to mitigating the spread of invasive species than a management approach that only draws on one set of knowledge or method.

Knowledge is highly dynamic, and consequently planning system structures need to be flexible and connected to ensure emerging knowledge in continuously fed into planning and decision-making (Raymond et al., 2010). For example, NRM institutions in the Wet Tropics are able to make more informed decisions regarding the efficacy and appropriateness of their water quality management activities if they have access to new research or information regarding different management approaches and conditions of the rivers and Great Barrier Reef lagoon as they emerge. Planning systems that draw on numerous relevant knowledge sources in an integrated and coordinated fashion are likely to be better functioning than systems that ignore the pluralism of knowledge available or fail to link knowledge to decision-making through governance structures.

Connectivity. Strong connectivity between system structures, such as institutions engaged in strategy development and institutions engaged in implementation activities, provides systemic stability and enhances the overall capacity of the governance system. Alternately, fragmentation of institutions can significantly impede the success and effectiveness of planning (Lane and Robinson, 2009). For example, poor connectivity between Australian Government NRM funding bodies and regional NRM groups has led to low levels of alignment of national and regional priorities (Robins and Kanowski, 2011). The result of this is that regional NRM groups are only allocated funding to address national priorities and may not have sufficient funds to address region-specific NRM problems that do not fall under national priority areas.

Integrated institutional arrangements promote 'more efficient and responsive management approaches that are needed to achieve environmental sustainability' (Lane and Robinson, 2009: 16). The primary benefit of an integrated approach to planning governance is that it better focuses stakeholders and institutions on the need for the holistic management of natural resources because they operate and exist as a whole system, rather than as a series of subcomponents (Bellamy et al., 1999; Margerum and Born, 1995).

The Reef Rescue programme in the Wet Tropics and surrounding regions reiterates the value of integrated approaches to planning and managing NRM issues. The programme is focussed on improving the water quality of the Great Barrier Reef lagoon through enhanced land management practices, and involves a significant number of partner institutions and individuals, developing, implementing and monitoring on-ground projects and their impacts (Agforce, 2013; Department of Agriculture, 2013; Great Barrier Reef Marine Park Authority (GBRMPA), 2010). The Reef Rescue programme is considered highly successful, in part because it encourages a highly-integrated, adaptive and collaborative approach to planning and management between institutions with a mandate or interest in land management and/or the health of the Great Barrier Reef (GBRMPA, 2011).
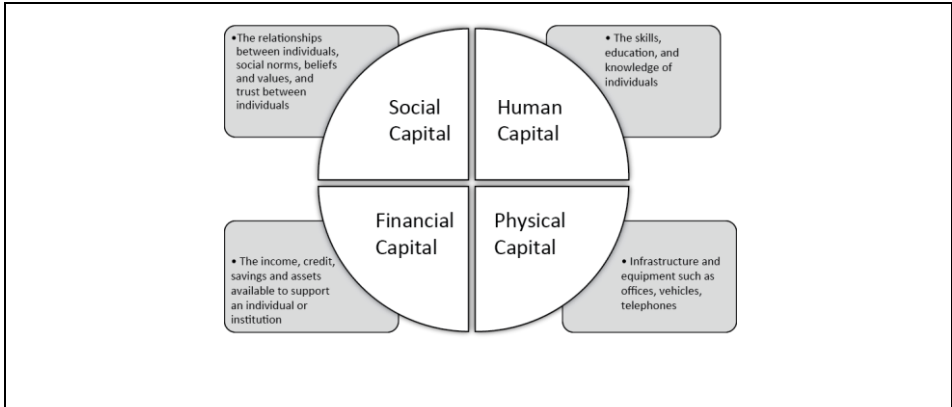
Figure 2. Types of capital defined.

Capacity. The capacity (including the agency) of the institutions and individuals within NRM planning governance systems is a key driver of the system's overall functionality. Capacity refers to the power or capability of an institution/institutions or individual to achieve outcomes (Willems and Baumert, 2003). The capacity of any institution is dependent on the amount and types of capital that they have accrued or access and may include human, social, financial and physical capital (Jacobs et al., 2010; Lin, 1999). The different forms of capital are described in Figure 2.

Capacity building can have multiple positive effects on institutional arrangements. For example, expanding stakeholder engagement and participation can increase consensus, and build stronger community and institutional networks (The Aspen Institute (TAI), 1996). There is a strong correlation between the capacity of individuals, communities and organisations and planning behaviours and improved outcomes (Cavaye, 2005; Jacobs et al., 2010). For example, if the Wet Tropics regional NRM body has not garnered adequate financial resources to fund the implementation of their strategies, community support and volunteers for on ground implementation activities, trained staff and appropriate infrastructure (office space, telecommunications and technical equipment), they will be unlikely to achieve their desired outcomes. Alternately, other institutions in the same region that have better access to adequate resources or capital are more likely to achieve good outcomes. The regional NRM group in the Wet Tropics currently has sufficient resources to support their core planning and management activities. However, smaller institutions such as community groups or catchment groups in the region often struggle to survive or achieve their desired management outcomes due to lack of financial and infrastructure resources.

Acquiring sufficient capital is only a part of building capacity. Institutions also require leadership and agency (Cavaye, 2005). Although a regional NRM body may have access to adequate capital to take an action, they may fail to do so because they are unable to act due to legal or political constraints, lack adequate motivation (incentives or disincentives) or are opposed to the action strategically or philosophically. Agency plays a significant role in NRM institutional arrangements and provides leaders within the system 'the ability to consider alternatives, the ability to make economic transitions, and the ability to work cooperatively' (Cavaye, 2005).

Discussion

In Australia, funding for NRM groups and their management activities is highly competitive and limited, but also strongly influenced by shifts in the political climate (Robins and Kanowski, 2011). Funding is a key determinant of the type and duration of planning, management and monitoring activities. Existing evaluative frameworks and approaches are often resource intensive in their application and require significant time, finances and specific training or skills to apply (Burns, 2006). Unfortunately, NRM institutions are often resource-poor and subsequently limited in their capacity to apply monitoring, evaluative or analytical frameworks despite the value of such assessments to decision-makers.

The practical structural–functional approach to analysing complex planning systems described in this article is particularly useful because it can be used by planners, analysts, community organisations and any other stakeholders based on their needs, time frames and available funding. In applying the framework, practitioners should aim to draw on multiple qualitative and quantitative data sources representing a wide range of perspectives and knowledge types. This ensures that the complexity of the system is captured in the description of the structural and functional components of the governance system, whilst also engaging system participants in a self-referential analytical process through interviews, surveys and/or observations. The results of a rapid appraisal or more comprehensive structural–functional assessment of a planning system provide planners and policy makers with an evidence base on which to argue for greater resourcing, better aligning institutional priorities, securing partners and making strategic changes to the existing decision-making arrangements. The assessment process can be used as a catalyst for discussion and reform of governance arrangements between stakeholders and/or institutions within the system.

The structural–functional approach to analysing planning systems described in this article is highly practical. This approach recognises the influence of the interactions between institutions and individuals on policy making and outcomes. It is also useful because it can direct planners to where the governance system requires greater investment and attention. The structural–functional approach to analysing complex systems is in line with systems and complexity theories, while also considering the foundations of the four traditions of planning. Although the specific principles of structural-functionalism discussed in this article have yet to be regularly applied in practice by NRM or other planning practitioners, the proposed framework in this article presents practitioners with a practical way to analyse complex governance arrangements that surround planning processes and make more informed and strategic decisions regarding reforms to that system.

Funding

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