Managing the South African Public Administration: A Complex Systems Approach

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Abstract: This paper aims to discuss the use of the complex systems theory in public administration. The researcher has seen in South Africa how public institutions fail to understand their role and influence in other public institutions. It is important to note that public administration is very diverse and has various stake holders and therefore, this makes it a complex environment. These stakeholders are interrelated and are part of a bigger system and with the application of systems theory the complexity will be managed. This paper is qualitative in nature and reflects elements of description. The concept of systems theory and its relationship to public administration and management practice is explored. Regarding the research methods, a literature study of appropriate primary and secondary sources containing authoritative publications, books, journals, the internet and official documents, such as departmental policies, was conducted to gather information. Towards the end of the study the researcher reflects systems theory within the South African public administration. Public Administration can be regarded as an open system, which is influenced by the environment within which it operates. The understanding of the disciplines of complexity can progress people's understanding of the complexities of public administration.

Keywords: Complexity theory, Public administration, Reductionism systems theory, Systems thinking

1. Introduction

Complex systems theory of organisation was first established for physics in the structure of a molecule where it was discovered that atoms of an element are combined together systematically or similar to a system to build a molecule of that element (Newell & Meek, 1997). This concept was later used in the social sciences such as public administration, political science, and management among others as a modern method to understand administration. This theory was introduced by David Easton and Chester Barnard in the social sciences. They analysed administrative and political systems thoroughly and how they are organised and function.

The sciences of complexity are grounded heavily on the systems thinking approach, which is a theoretical framework employed in the social and the natural science. Public administration also uses systems theories. One can think of public administration as a closed or open system and this will be explained later in the paper. This means that public administration is not self-sufficient or self-contained. It exchanges resources with and it is dependent upon the external environment in which it operates. Until public servants understand the complexity of public administration, they will not be able to manage it effectively.

This complexity is brought by a number of interrelated elements and having to manage a variety of stakeholders. There have been a number of studies of the applicability of the complex systems theory in the field of social sciences and of most interest to the public administration. As a point of departure, public administration will be defined. Many government departments and spheres in South Africa seem to work independently. There is lack of interaction network of institutions at national, provincial and local levels. It appears that even employees do not understand the concept of intergovernmental relations and this principle is closely related to systems theory. It is a constitutional requirement that departments work together to achieve governmental objectives.

2. Defining Public Administration

In this paper, public administration will be defined as a practice. Schoeman and Fourie (2008) defined public administration as an expression of governmental power that has profound implications for the effectiveness and efficiency of government as it defines the conduct of democracy and shapes the relationship between government and its citizens. Public administration functions in the political environment and legal parameters. Therefore, public

administration cannot exist outside of its political context. It is this context that makes it public - that makes it different from private and business administration (Shafrit, Russel & Borick, 2009). Public administration is what government does. It is the president's chefs preparing a meal for the visiting head of state, the Department of Agriculture's inspector examining beef in the butchery, police officers responding to a public unrest, and fire-fighter rescuing a child from fire in Knysna among others. Many public administration definitions, relates to the state and government and that public administration takes place within government institutions. For the purpose of this paper, public administration as a practice is defined as public servants implementing a specified policy within the confines of a government executive framework. Public administration facilitates the proper utilisation of resources for public good and towards achieving public value. From the systems perspective public administration is a system of interacting elements each having a special function or relation to each other and work together in coordination and as a whole to achieve their intended objective (Newell & Meek, 1997). Public administration is a system that operates in a specific environment and it is influence by the environment.

3. Systems Defined

A system can be defined as a set of interrelated elements (sub-system) functioning as a whole (Wilson, 1984). The key features of systems thinking is focus on the whole system or organism rather than just the part (Nicholas & Steyn, 2012). It means being able to perceive the system in a situation, to take a seemingly confused, chaotic situation and perceive some degree of order or harmony in it. As such, it is a useful way of dealing with complex phenomena, especially human created systems (Nicholas & Steyn, 2012).

Individuals, depending on their environment will define system differently. For someone in the information technology industry a system means a computer, for the mechanic it means an engine or a car and for a government employee a system means bureaucracy. In terms of public administration, system is comprised of structure, subsystem, people, action and interaction that enable it to function in a certain way. System influences the sub-systems and the subsystem influence the system. The system approach to public administration rejects

the closed system approach or the Classical theory of organisation which states the independence or organisations from the environment and it is not connected to it. In the early 20th century, reductionism took a centre stage.

4. Systems Thinking vs Reductionism

The literature proves that reductionism became the dominant mode in the scientific thinking in the early 20th century. According to Bar-Yam (2000) reductionism is an approach to building descriptions of systems out of the descriptions of the subsystems that a system is composed of, and ignoring the relationships between them. Systems thinking view the world as systemic and emergence and interrelatedness are major properties of systems thinking. In the 1920s the research into the living things encountered challenges and as a result systems thinking became an alternative. An Australian biologist, Ludwig Von Bertalanffy proved that the notion of reductionism could not appreciate organisational dynamics (McDermott, and O'Connor 1997). Flood (2007) reasons that the existence of an organism cannot be merely understood in terms of the behaviour of some basic parts. It is in this instance where Von Bertalanffy came up with the open system theory.

When explaining the systems theory and presenting the public administration as an independent system, four basic concepts will be used: an open system, closed system, sub-system and entropy. According to Smit, Cronje, Brevis & Vrba (2014) a system is closed when it is self-supporting and can exist independently of a particular environment. The system is open if, it is dependent on the environment in which it operates, the environment is dependent on the system, and there is a specific interaction between the system the environment.

An open system theory uses functional and relational criteria to study the whole, rather that the reductionism principle to study the simple element (Jackson, 2000). The different parts of the public administration system exist together as a whole and they coexist in relation to the environment. Systems thinking can help avoid the silo effect, where a lack of organisational communication can cause a change in one area of a system to adversely affect another area of the system. An example of this is the President's removal of both the Minister and deputy Minister of Finance. This move affected other departments and the Country negatively.

As alluded to earlier that the theory of open system was developed by von Bertalanffy (1950). Open-system theory employs functional and relational criteria to study the whole, rather than principles of reductionism to study simple element. Public administration as a whole co-exists in relation to an environment. Open systems take inputs from their environments, transform them and then return them as some sort of product back to the environment (Jackson, 2003). In order for them to exist they depend on the environment and adapt to the environmental change. Synergy is another concept of system theory that can be applied to public administration. It means that the whole is greater than the sum of its parts, or the individual subsystems are simultaneously applied in such a way that the results of their simultaneous application are greater than the sum of their individual effort (Smit *et al.*, 2014). One last concept of the system is called entropy which is the process of systems disintegration and is the opposite of synergy. When the system does not make the necessary adjustments to enable it to continue its existence in a particular environment, it is doomed to disintegrate and fail (Jackson, 2005). The South African Public Administration is influenced by many external factors and in order for it to survive it needs to make the necessary adjustment to cope with the changing environment.

If one follows a recipe of baking cakes in a step-by step manner, then one is being systematic. The student of public administration in class take a systematic approach to their study and same with the mechanics' students - but at the end of their study they may have very little understanding of the organisation as a whole because the whole is different to the sum of the parts, i.e. the whole has emergent properties. Many people either implicitly or explicitly refer to things that are interconnected when they use the word 'system'. A common example is the use of 'transport system' or 'computer system' in everyday speech. As well as a set of interconnected 'things' (elements), a 'system' can also be seen as a way of thinking about the connections (relationships) between things – hence a process (Ison, 2008). In view of the above one can say that the machinery of government is a systems and it must be managed as such. It seems as if systems theory turned into something very strange and exciting than can bring together various specialists, being physicists, meteorologists and mathematicians among others. It is appropriate to ask how public administration will benefit from these academic developments, called complex systems theory, to the human behaviour and human institution behaviour.

Various authors highlighted a considerable difference about the relationship between chaos and complexity. For most authors such as Chambel, (1993) chaos focus of attention with complexity as one of its characteristics (thought they would acknowledge that a number of complex systems display chaos within narrow defined parameters). Public administration is best served by focusing its attention on complex systems and considering chaos as one probable characteristic.

5. The Machinery of Government in South Africa: A Complex System

The machinery of government in South Africa consists of all structural arrangements adopted by the national, provincial and local government to deliver their legally mandated service (Shafrit, Russel & Borick, 2009). The South African machinery of government is a very complex system. There are three levels (machinery) of government in South Africa. Section 40 of the Constitution of the Republic of South Africa, 1996 (hereafter the Constitution) states that the government of the Republic of South Africa is constituted as national, provincial and local sphere of government which are distinctive, interdependent and interrelated. These spheres of government must observe and adhere to the principles of cooperative government; ensure the wellbeing of the people of the Republic; provide effective, transparent, accountable and coherent government; and must not assume any power or function except those conferred on them in terms of the Constitution. The first level is the National Government.

5.1 The National Government

In terms of separation of powers principle, the cabinet and its public servants are charged with the responsibility of executing the decisions (laws) of parliament. There are 35 government departments, 35 ministers, 38 deputy ministers and 130 state owned enterprises in South Africa (South Africa Government, n.d.). It is always customary to define complexity according to the number of elements comprising a system and numbers of interacting elements; the more the number of elements the greater the complexity (Gell-Man, 1995). The

number of departments and parastatals indicates the complexity of the South African public administration within one sphere of government. The complexity is brought by various role players in the system. The role players and stakeholders include among others the public, the public service, the cabinet, government departments, and statutory commissions as well as the Constitution (Venter, 2011). There are numerous dynamic relationships between the role players. The importance of the relationships between role players can be seen in the nature and quality of service rendered. The complexity here is for government departments to understand their interrelationship and how their work impacts each other. By understanding systems theory, a Home Affairs employee will understand the implications of selling a birth certificate on the Departments of Social Development, Police Services, Defence, Treasury, and Education among others. The Home Affairs Department must understand how its decision on visas will impact the Department of Tourism. Having 35 government departments and 130 State Owned Enterprises to work together in delivering services to the people requires a thorough understanding of systems theory and complexity theory. The Constitution states that South Africa is a constitutional democracy. It protects the right of citizens; protect the democratic principles; and set out the systems of government. There are other machinery of government such as the legislative, the executive and the judiciary.

5.2 The Legislative Machinery

The Legislature occupies an important position in the machinery of government. The Legislature approves public policies, authorise laws and monitors the work of the departments and other organs of State (Mphaisha, 2014). The Legislative machinery is divided into two houses, the National Assembly and the National Council of Provinces. The two houses differ in duties, powers and the methods used for the selection of members (Mphaisha, 2014). The two houses function autonomously and cooperatively within the Constitutional framework. They are invested with formal law-making powers and also act as national debating chambers, i.e. public forums in which government policies and the major issues of the day can be discussed and analysed (Heywood, 2007). This provides them with a significant capacity to shape and influence the public policy process.

5.3 The Executive Machinery

The Executive machinery is responsible to develop and implement State policies. The head of the Executive is the President - deputy President and Ministers, jointly form the Cabinet. The responsibility of Cabinet is to decide how to allocate funds between various State departments, and is accountable to Parliament for the implementation of the national budget approved by Parliament (Hicks, Daniel, Buccus & Venter, 2011). Ministers are political heads of their departments and they must provide political leadership. Cabinet is the link between the public interests of the country at large, the public service and parliament, where policy and administration are coordinated to improve the living condition of the people (Hicks, Daniel, Buccus & Venter, 2011). The Executive implement laws and the Judiciary interpret laws.

5.4 The Judicial Machinery

There will always be a dispute in the interpretation of the law and this is where the third branch of the *trias politica,* the Judiciary, commonly called the courts come into play. The Judiciary therefore resolve these disputes by determining what the law is and how it should be applied to disputes (Shetreet, 1988). The courts are responsible to determine which rule of law applied to dispute, interpret it and applied it to resolve a dispute. According to Shapiro, (1975) Judiciary is the official referee of society. Section 165(1) of the Constitution provides that the judicial authority of the Republic is vested in the courts.

5.5 The Provincial Government

The Constitution changed the political setting of South Africa by integrating the former homelands and created the nine provinces (Van der Waldt & du Toit, 2007). According to section C of the White Paper on Local Government (2000) provincial governments must play various roles such as:

- Developing a vision and framework for integrated social and economic development.

- Ensure that municipal planning and budgetary processes give priority to the basic needs.

- National and provincial government have the legislative and executive authority to see to the effective performance of municipalities (Section 155(7) of the Constitution).

- Promote the development of local government capacity (Section 155(7) of the Constitution).

- Monitoring the financial status of municipalities.

- Ensure that municipalities provide an acceptable standard of public service and good governance are maintained.

The provincial government's role is very complex and requires a good working relationship with other spheres of government.

5.6 The Local Government

The Constitution divides municipalities in three categories. There are 278 municipalities in South Africa, comprising eight metropolitans, 44 district and 226 local municipalities (SALGA, n.d.). Local government is the only sphere of government closer to the people. Section 152 of the Constitution set out the object of local government as:

- Providing democratic and accountable government for local communities.

- Ensuring the provision of services to communities in a sustainable manner.

- Promoting social and economic development.

- Promoting a safe and healthy environment.

- Encouraging the involvement of communities and community organisations in the matters of local government.

- Achieving objectives within financial and administrative capacity.

6. Conceptualising Public Administration Through Metaphor

A number of definitions of public administration have emerged through the perceptions and interests of different authors. For the purpose of this paper, public administration and organisation will be used interchangeably. According to Morgan (1986), there are eight types of images of public administration, which are:

- Public administration as machines.

- Public administration as organisms.

- Public administration as brains.

- Public administration as cultures.

- Public administration as political systems.

- Public administration as psychic prisons.

- Public administration as flux and transformation.

- Public administration as instruments of domination.

The foundation of public administration as machines' is found in Pepper's arguments on the metaphor of machines. The foundation of public administration as flux and transformation, public administration as organism and as brains are found in the organicism metaphor. In contrast, public administration as cultures, political systems, instrument of domination and psychic prisons resemble the metaphor of social system (Ackoff, 1994).

6.1 Public Administration as Machines: The Theory of Bureaucracy

This metaphor of the machine can be attributed to the German sociologist, Max Weber theory of bureaucracy. Max Weber was concerned about how organisations are structured to deal with a number of employees. Webber developed the theory of bureaucratic management that brought the need for a strict defined hierarchy, governed by clearly defined rules (Smit, Botha & Vrba, 2016). The ideal of bureaucracy is based on legal authority which stems from rules and other controls that govern an organisation. The delineation on bureaucracy indicates that standard operating procedure, impersonal relationship and hierarchical structure are the basic elements of bureaucratic organisation (Smit, Botha & Vrba, 2016). The decision making and policy making are centralised in a bureaucratic organisation. In this type of organisations the power is centralised and the real power is in the hands of the owner of the machine.

The mechanism theory is also revealed in the scientific management approach of F.W. Taylor. Taylor was interested in improving the productivity of workers and studied the work of individual workers to discover how they perform their work (Sheldrake,

1996). He analysed each aspect of each task and measure everything measurable.

The work of Frank Gilbreth on motion study is also imbedded in the mechanistic concept. Gilbreth studied the movement of bricklayers and found that many of their movements (bending, reaching, and stooping among others) could be eliminated or combined. He changed 18 steps process to five step process and increased productivity by 200 per cent (Sheldrake, 1996). The five steps manifest the imprint of mechanistic standardisation and reduction.

Since the industrial revolution, the mechanistic approach dominated organisation design. The mechanistic organisation functions very well in an invariant circumstance. However, it is clear that the environment in which public administration operates is becoming more and more complex and dynamic. This unstable environment makes the conventional theory vulnerable. This tendency entails the germinating of organic ideas.

6.2 Public Administration as Organism

Public administration as organism is conceived as an open system which utilises resources. The different parts of the system (e.g. spheres of government, government departments and state owned enterprises among others) are interrelated. Change in one part of the system may directly or indirectly influence the other part of the system. For example, failure for the Department of Defence to protect the boarders will influence the Departments of Health, Home Affairs, Social Development and Treasury among others. Moreover, the system adapts to the changing environment.

6.3 The Social System Metaphor of Public Administration

The previous sections dealt with the two metaphorical conceptualisation of public administration – mechanistic and organic. Both metaphorical are concerned with the structural aspect of public administration. Public administration is constituted and controlled by people rather than organisms. Although human and other organisms possess similar structural characteristics, there is a difference between them. Human has perception, norms, values, and ethics, all which have a role to play in purposeful behaviour while organisms or animals have only self-awareness which is purposefulness (Tuan, 2002).

6.4 Public Administration as Political Systems

Public administration has its roots in Political Science. The literature revealed that Public Administration gradually developed from Political Science into a discipline in its own right (Cloete, 1988). Realising the contributions of political scientists, such as Woodrow Wilson, to Public Administration, the relationship between the two disciplines becomes very clear. Since there are close relations between these two fields of study, a knowledge of Political Science can only contribute positively towards a better understanding of Public Administration and the practice of public administration. Therefore, the literature agrees that public administration operates and function in a political environment. Hanekom and Thornhill (1983:156) state that a clear distinction between "pure politics" and "pure administration" is nearly impossible. The interaction between political office bearers and appointed public officials has become intertwined.

Public administration cannot be separated from politics. Politics consists of a game which has many players and these players influence organisation through their interests, conceptions and perceptions. In South Africa one has seen the change in political landscape in 1994 and the changes it brought in the public administration arena. Another example is the Africa National Congress conference in Polokwane in 2007 which led to the recall of the former President Thabo Mbeki.

The mechanism and organicism focus on organisational structure. Mechanisms' emphasis is on hierarchical order while the organicism focus on interrelationship cybernetics. In the social system, the parts of the organisation (human) are regarded as purposeful system.

7. Complex Systems Theory in Public Administration

Systems theory has a role to play in public administration in South Africa. This is due to the fact that public administration in South Africa is already complex and public servants are charged with responsibility to interact with the complex environment. Therefore, public servants must find ways to be more responsive to this complex environment. The South African public administration will benefit by transforming more public institutions into more open systems with permeable boundaries. Public administration scholars have identified external and internal patterns

of government adaptation. The external relationship in South Africa is the contracting out of government services to the private sector. This contracting of government service has evolved to the extent where government administration and citizen interface have been significantly changed. Some literature discusses how public leaders can improve and embrace these forms of participation. Thomas (1995) argued that in order for public managers to engage in a strategic approach to the involvement of the public, as to shape forms of coproduction of services of government where citizen groups and citizens (network) start to behave as receivers of government services but have significant program responsibilities in government.

Public servants must form networks of shared power in order to solve complex problems across their department. The implication for the public servants is the development of skills in managing a shared environment, understanding other government departments and how they influence one another. The resulting feedback loop, taken as a whole, will push the agency towards the direction of a complex organisation. The public servants' role in the situation of this nature is to remove obstacles. Complexity in the external environment requires new forms of governmental adaptation.

Sabatier, (1999) recognises the complexity of public administration. In the literature, public administration like public policy is described as linear process with inputs, throughputs and outputs. What complexity theory suggests is that public administration is a system that coevolves with its social systemic environment and it engages in a nonlinear relationship with other systems. Frederickson (1996) identified a number of goals and practices for public administration that may be best understood achieved through the complex system theory application. Surely, empowered public servants can arrange for empowered citizens to make choice bureaucracies that are bankrupt becomes more open system. Mission driven rather than rule driven public administration is promoted by eliminating some of the equilibrium conditions on which rules are based. Systems of public private partnership are correctly controlled by ensuring that boundaries between public and private are more permeable.

8. Conclusion

The aim of this paper was to discuss the use of the complex systems theory in public administration in South Africa. The paper discussed the complexity theory and its application and relevance to public administration in South Africa. Public administration in South Africa is very diverse and has a spectrum of stakeholders. For the success of public administration, stakeholders must be managed accordingly and their interests must be satisfied. Some of these stakeholders are interrelated and this makes it difficult for the public servants to manage them. Complex systems theory can be utilised to manage these stakeholders in public administration. The systems approach might not be a panacea for all problems but surely it could generate awareness of the shortcomings and weaknesses of formal administrative structure. Systems approach is utilised as a disapproval towards the closed system model of Max Weber's Ideal bureaucratic theory.

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