Chapter 4

The strategic management of science communication

4.1 INTRODUCTION

In the previous chapters the importance of science communication (including its development and history) and awareness of science and science communication amongst stakeholders of HEI were discussed. The theories on which the aforementioned concepts are based were also described. Chapter 4 now contains a discussion of the strategic management of communication departments at HEIs in science communication. The theories of excellence in public relations and communication management and corporate communication strategy are also explained.

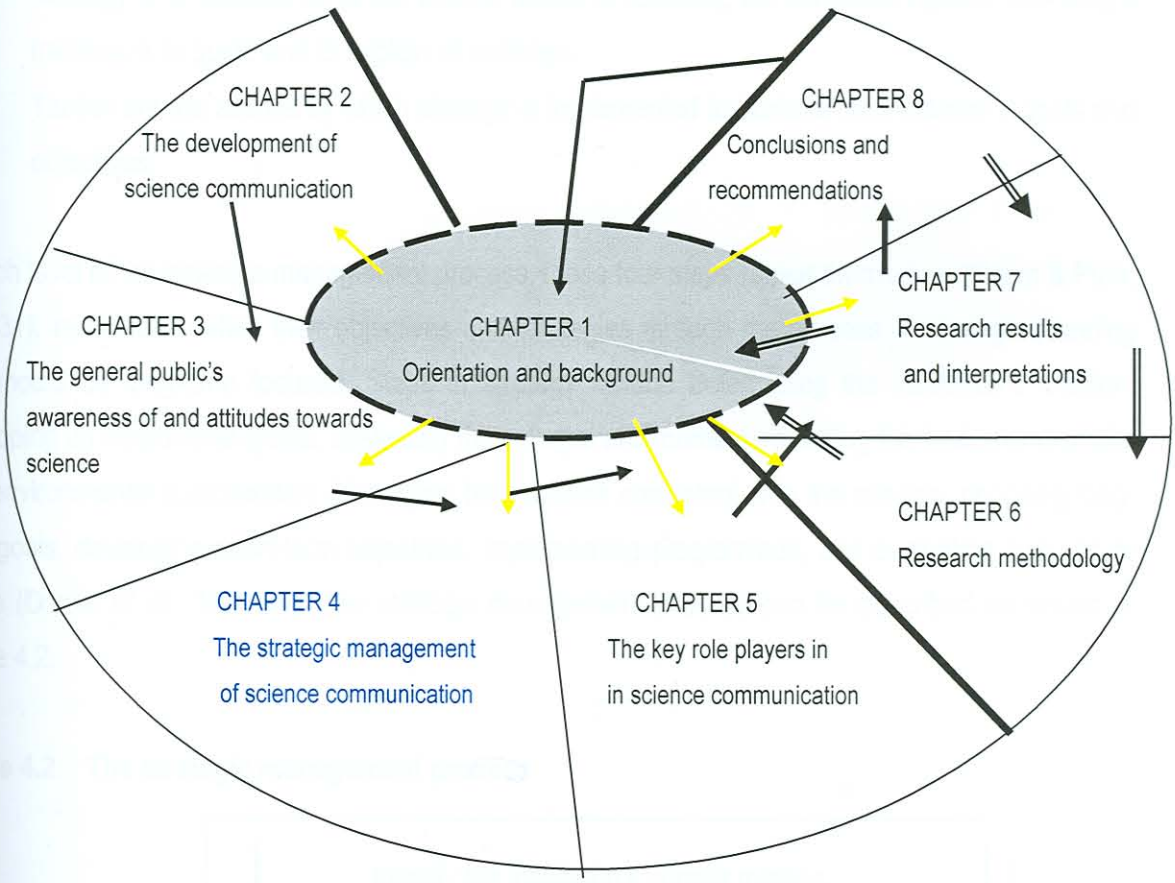
Strategic communication is about mission and message. It is also about the world and about changes occurring in the world people live in and the attentiveness they provide to the world. Since developments in science and technology during the recent past have resulted in changes in people's daily lives, it became a necessity to ensure that these developments in science are communicated properly to the general public. Strategic communication is furthermore the art of expressing values and solutions so that people who need to know would understand what is being said. But it is also about the science of transmitting information so that people who need to know would see what is meant and hear what is said (Radtke, 1998:xi). The clarification of strategic communication is also applicable to communicating science. In science communication it is equally important to have a proper strategy so that the right message can reach targeted stakeholders and in a way that can be understood by the particular stakeholder.

Strategic communication is a critical success factor in addressing the political, social and economic issues that business management would like to address. A management philosophy that excludes strategic communication is no longer appropriate for the present and likely future environment (De Beer, 2001:78). Axley (1996:24) states that "... many of today's most pressing organisational and management challenges – leadership, empowerment, shaping organisational culture, building effective teams, and managing change – hinge on communication activities and can best be understood and met in terms of communication and communicating".

Chapter 4 leads the study to the final discussion on theoretical conceptualisation in Chapter 5, in which the application of the theory is applied to science communication in more detail. In Chapter 4 the

theory of strategic management is discussed first and thereafter the application to science communication follows at the end of each section, since the strategic management of science communication at HEI should be regarded as highly important. Figure 4.1 demonstrates the position of Chapter 4 in relation to the other theoretical chapters.

Figure 4.1: Chapter 4 in relation to other theoretical chapters



4.2 STRATEGIC AND CORPORATE COMMUNICATION MANAGEMENT

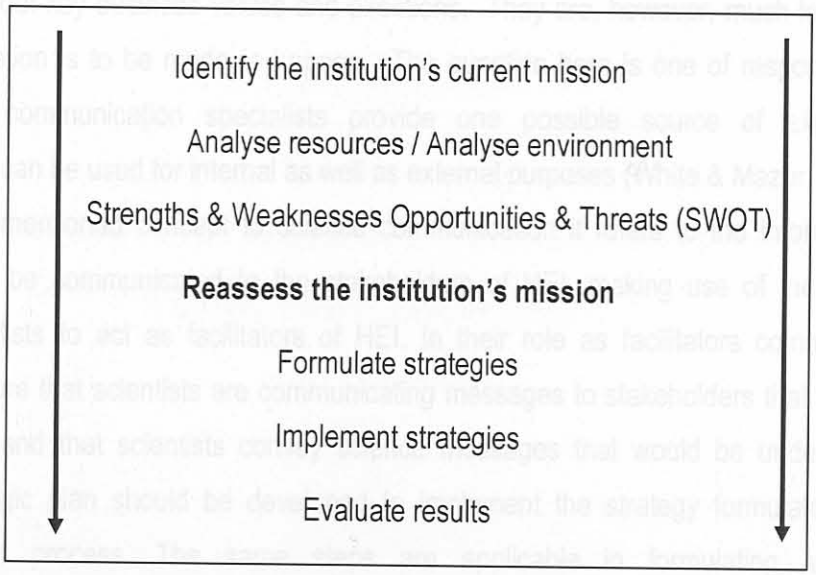
Strategy is the fundamental pattern of present and planned objectives, resource developments and interactions of an institution with its publics, stakeholders and other environmental factors (Walker, Boyd & Larréché, 1999:8). In a pure sense, a strategy is a plan to use selected means in predetermined ways to attain a desired result. Strategic thinking links the fact-finding phase to planning and programming (O'Hair, Friedrich & Shaver, 1998). Strategic management is a process that enables any organisation, company, association, non-profit or government agency, to manage the implementation of its strategy by identifying its long-term opportunities and threats, mobilising its assets to address them and carrying out a successful implementation strategy (De Beer, 2001:90).

Once the strategy has been decided upon, strategic planning in the strategic management process on how science should be communicated can begin. Makin (1999) identifies the following steps in formulating a strategic plan as part of the strategic management process:

- Aim or goal refers to what the institution wants to achieve.
- Objectives are the measurable steps by which one can judge whether the goal is being achieved.
- Strategy is a rationale for all the actions aimed at achieving the institution's goals, providing a framework to guide and to explain all activities.
- Tactics are the actions by which strategy is implemented to achieve the institution's goals and objectives.

At each level of the strategic management process, these four steps repeat themselves (Steyn & Puth, 2000:31). Institutions define their objectives and strategies through the process of strategic planning that should be long-term focused. Steps in strategy include determining the institution's mission, developing an institutional profile, assessing the external environment, matching the institutional profile with environmental opportunities, identifying best options consistent with the mission, choosing long-term goals, developing short-term objectives, implementing programmes, and evaluating success or failure (Dozier *et al.*, 1995:85). The strategic management process can be described as shown in Figure 4.2.

Figure 4.2: The strategic management process



Adapted from: Makin (1999: [3])

Beerel (1998:162) states that strategic planning is a formal process designed to interpret the institution's environment for the purpose of identifying its adaptive challenges and guiding its responses so as to optimise longer-term competitive advantage. Although planning undoubtedly produces a series of integrated decisions, this serves a secondary purpose. The very process of monitoring and evaluating the environment is the sharp end of the strategic planning process. It is the critical link between the institution as a living network and the infinite number of networks that defines its environment (Beerel, 1998:162).

Steyn and Puth (2000:17) describe strategic communication management, as part of strategic management, as: " ... a process of thinking through the current mission of the organisation, and the current environmental conditions, and combining these elements by setting forth a guide for tomorrow's decisions and results". Strategic management and planning are high-level institutional functions tightly linked to excellence in communication management. The purpose and direction of an institution (its mission) is affected by relationships with key constituents (stakeholders) in the institution's environment. These relationships affect an institution's autonomy to pursue its mission and accomplish its goals (Dozier *et al.,* 1995:85).

Strategy is, therefore, essentially concerned with the long-term direction and scope of an institution. It is arrived at through a process of analysis and decision making, to which many in the institution should contribute. Once developed, it would need to be communicated so that it can be implemented (White & Mazur, 1995:25). Writers on strategy stress the importance of communication in transmitting and sharing information about key business values and directions. They are, however, much less explicit about how communication is to be made to happen. The question here is one of responsibility for communication, and communication specialists provide one possible source of expertise in communication, which can be used for internal as well as external purposes (White & Mazur, 1995:27). In applying the abovementioned concept to science communication it refers to the information on science which should be communicated to the stakeholders of HEI, making use of the ability of communication specialists to act as facilitators of HEI. In their role as facilitators communication specialists should ensure that scientists are communicating messages to stakeholders that would not be prejudicial to HEI and that scientists convey science messages that would be understood by stakeholders. A strategic plan should be developed to implement the strategy formulated by the strategic management process. The same steps are applicable in formulating a science communication strategic plan.

Kotler (1997:68) states that the strategic plan for an institution contains several components:

- the mission;
- strategic objectives;
- strategic audit;
- strengths, weaknesses, opportunities and threats (SWOT) analysis.

Mission

The mission states the purpose of an institution and what it wants to accomplish in the larger environment. According to Kotler (1997:68) a mission statement should be developed formally. It should be neither too narrow nor too broad, but should be realistic, specific and based on distinctive competencies. It should also act as a motivation tool in the institution. Within the context of science communication, the mission of HEI should be to promote science communication to stakeholders.

Strategic objectives

The institution's mission needs to be turned into corporate goals and objectives to guide management. Each unit on corporate level should have objectives and be responsible for reaching these objectives within a specific time frame. HEI should strive towards reaching science communication objectives by participating in science events, marketing the hands-on science activities, training scientists to communicate with the media, government and other stakeholders, and allow communication specialists to formulate their own objectives to enhance science awareness, for example to act as facilitators between scientists and stakeholders.

Strategic audit

The strategic audit covers the gathering of vital information. According to Kotler, Armstrong, Saunders and Wong (1996:78,79) it is the intelligence used to build the detailed objectives and strategy of an institution. Executive management at HEI should empower their communication specialists to gather relevant and important information required for the formulation of objectives and to use this information at their own discretion.

SWOT analysis

The guidelines that a unit, for example the marketing and communication function, can use to develop strategy in coherence with the institutional strategy and objectives are constituted in the unit's **s**trengths, **w**eaknesses, **o**pportunities and **t**hreats (the SWOT analysis). Normally, strengths and weaknesses are focused on the internal environment, while opportunities and threats focus on the

external environment. Ghemawat (1999:6) combines these elements in a way that emphasises the fact that competencies or resources have to match environmental needs in order to have value. In science communication it would be in the interest of a particular HEI to determine the strengths and weaknesses of the science communication process, which would refer to issues such as the relationship between scientists and communication specialists, as well as the trust and empowerment executive management provide to communication specialists. On the other hand the opportunities and threats science and the communication thereof have on stakeholders should be determined.

It is important for HEIs to ensure that the mission of science communication is clear to all key role players at that particular HEI and that they all understand the objectives of science communication. Executive management should empower and trust communication specialists to obtain the necessary information to formulate the objectives of science communication and lastly the SWOT analysis should be done to enable key role players in science communication at HEIs to focus on strengths and opportunities, while at the same time reduce the weaknesses and threats.

Although the components of strategic management mentioned above are applicable to all departments within an institution, the communication department has additional characteristics that distinguish it from the corporate strategic management of institutions. The strategic management of communication is discussed in the following section.

4.3 STRATEGIC MANAGEMENT OF COMMUNICATION

Strategic communication and management of communication differ from tactical or functionary communication. Strategic management communication involves top communication specialists in the highest management roles in an institution, and help executive management assess the external environment and respond appropriately (Dozier *et al.*, 1995:85). Steyn and Puth (2000:5-6) differentiate between corporate communication and communication management and state that corporate management are managing communication to increase organisational effectiveness by creating and maintaining relationships with stakeholders. Management communication, on the other hand, is the only field that integrates communication and management. Management communication follows a functional approach and regards communication as the means to an end, the achievement of organisational goals. According to Kinkead and Winokur (1992:23), the communication manager should work closely with executive management to help formulate policy, as opposed to merely plan the communication aspect of given events. In science communication it is not the communication specialists that are responsible for the strategic issues, but the executive management at HEIs, while

communication specialists are implementing the formulated strategies in managing communication with stakeholders.

Change in the external environment impacts directly on the way communication is being practised. The communication specialist or manager has to interpret change in the immediate external environment as well as globally, and has to initiate adjustments where necessary. The recognition the communication management function enjoys in the institution has a significant influence on the extent to which it is allowed to consult directly with management and to initiate changes (Claassen & Verwey, 1997:49). This recognition is also important in science communication, since executive management formulates the strategy to be implemented in communicating science to HEI stakeholders and the communication specialists have to be aware of any changes in the strategy to be able to inform stakeholders of these changes.

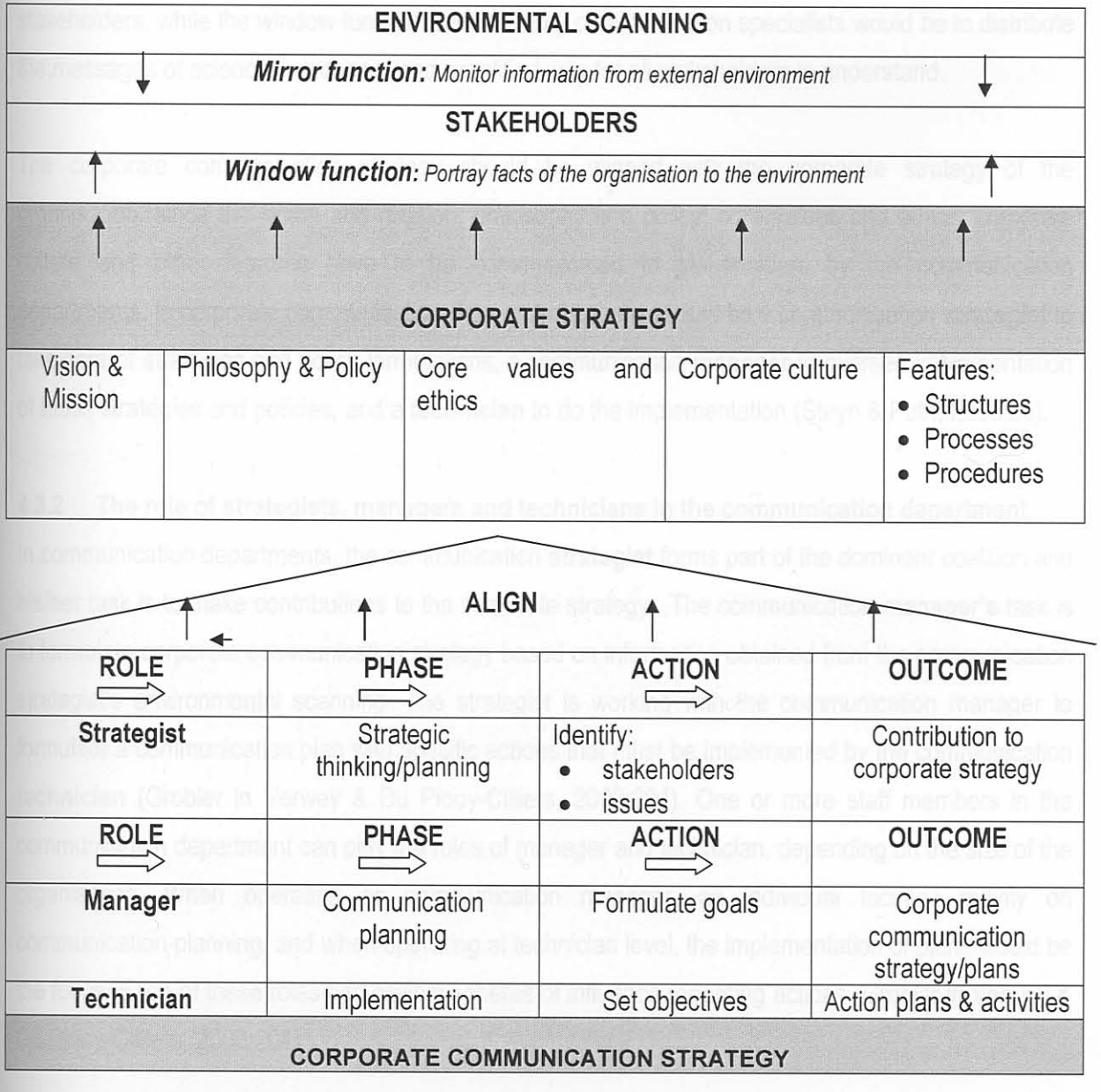
4.3.1 Strategic communication departments

The strategic communication department develops programmes to communicate with stakeholders that provide the greatest threats and opportunities to the institution. Participation in strategic management also elevates communication from its traditional reactive style of responding to communication crises to a proactive, responsive style of anticipating and then helping to reduce emergent conflicts (Grunig, 1997:5). Large-scale, complex organisations have a higher tendency to include communication in the policy-making process. They usually operate in a highly competitive environment and are more sensitive to policy issues, public attitudes and establishing a solid corporate identity. Consequently there is more emphasis on press conferences, formal contact with the media, writing executive speeches, and counselling management. In contrast, a small-scale organisation feels few public pressures and little governmental regulatory interest. It has little communication activity, and staff members are relegated to such technician roles as producing the company newsletter and issuing routine news releases. Communication has little or no input into management decisions and policy formulation (Wilcox, Ault & Agee, 1989:66,67).

Unfortunately many HEIs seem to operate like the small-scale organisations where science communication is concerned. Due to a lack of a proper relationship between executive management and communication specialists, science communication is not regarded as a priority. Since a proper strategic plan has not been developed, it results in too many voices responding on behalf of the HEI and different messages being sent to stakeholders.

Grobler (in Verwey & Du Plooy-Cilliers, 2003:200) incorporates all the theoretical assumptions, dimensions and elements of Steyn and Puth's (2000:53-76) model for a corporate communication strategy into a model for the alignment of strategic intent within the context of continuous change as demonstrated by Figure 4.3. Steyn and Puth's model focuses on the elevation of the contribution of the corporate communication division from purely tactical (functionary) practice to a key element of corporate strategy decision making.

Figure 4.3: Aligning the corporate communication strategy with the corporate strategy



Source: Grobler (in Verwey & Du Plooy-Cilliers, 2003:204)

The first block of Figure 4.3 represents the dimensions of corporate strategy and the second block the corporate communication strategy. The members of executive management, also known as the dominant coalition, formulate the corporate strategy. Environmental scanning provides information to formulate the corporate strategy. According to Van Riel (in Steyn and Puth, 2000:19), environmental scanning refers to the mirror function of the corporate communication's role to achieve the organisation's mission. The window function refers to the preparation and execution of a corporate communication strategy and policy, resulting in messages that portray all facets of the organisation to its stakeholders (Steyn & Puth, 2000: 19). In science communication the mirror function would imply that communication specialists need to scan the environment to obtain information on the HEI's stakeholders, while the window function performed by communication specialists would be to distribute the messages of science in a correct and simplified way for all stakeholders to understand.

The corporate communication strategy should be aligned with the corporate strategy of the organisation, since the vision and mission; philosophy and policy; core values and ethics; corporate culture and other features have to be communicated to stakeholders by the communication departments. In corporate communication departments, there should be a communication **strategist** to take care of strategies and policy formulations, a communication **manager** to oversee implementation of these strategies and policies, and a **technician** to do the implementation (Steyn & Puth, 2000:20).

4.3.2 The role of strategists, managers and technicians in the communication department

In communication departments, the communication **strategist** forms part of the dominant coalition and his/her task is to make contributions to the corporate strategy. The communication **manager's** task is to formulate corporate communication strategy based on information obtained from the communication strategist's environmental scanning. The strategist is working with the communication manager to formulate a communication plan with specific actions that must be implemented by the communication **technician** (Grobler in Verwey & Du Plooy-Cilliers, 2003:204). One or more staff members in the communication department can play the roles of manager and technician, depending on the size of the organisation. When operating as communication manager, an individual focuses mainly on communication planning, and when operating at technician level, the implementation of plans would be the focus. Each of these roles has distinct spheres of influence regarding actions (Grobler in Verwey & Du Plooy-Cilliers, 2003:204).

In science communication the roles of communication specialists are embedded in the managerial roles, since communication specialists have to formulate the strategy and action plan of science

activities. With regards to science communication, the corporate communication strategy should also be aligned with the HEI's corporate strategy, but the communication strategist is represented by executive management of HEIs who formulates the strategy to be followed in communicating science, while the communication specialist would represent the manager in implementing these strategies formulated by executive management. It is therefore imperative for executive management and communication specialists to have a relationship of trust and empowerment to ensure that the correct messages received from scientists are communicated to all stakeholders of the HEI.

However, to be successful in communicating science, excellence in the management function of science communication is required. The following section contains a discussion on the General theory of excellence in public relations and communication management on which part of this study is based.

4.4 APPLICATION OF EXCELLENCE IN PUBLIC RELATIONS ON SCIENCE COMMUNICATION

Communication departments strive towards excellence in their management of functions of their departments. Based on this goal of achieving excellence in public relations (PR) and communication management, the General theory of excellence was developed in the 1990s. The first phase of the *Excellence Study* was performed in 1990 and 1991 and included a survey of 321 organisations in Canada, the United Kingdom and the United States. The second phase included a follow-up of case studies in 1994 of 24 organisations that participated in the original survey. The findings of this study of public relations and communication management are reported in the book *Manager's Guide to Excellence in Public Relations and Communication Management* by Dozier, Grunig, L. and Grunig, J. (1995).

According to White and Mazur (1995:22), the *Excellence Study* has assisted to identify the following key elements of excellence communication:

- It can make an organisation more successful by developing and managing the organisation strategically, and by supporting the strategic objectives of the organisation.
- It nurtures relationships with key internal and external publics and stakeholders who provide the greatest threats and opportunities for the organisation.
- It makes a direct contribution to the bottom line by preventing the costs of conflict with key stakeholders in terms of strikes, litigation and boycotts.
- It can also assist the organisation make money by enhancing relationships with stakeholders, i.e. customers, shareholders and regulators.

White and Mazur (1995:23) identified certain key characteristics of excellence in communication and communication management, which include the following:

- These practices are strategic, not historical, and excellent communication programmes are created for strategic purposes. They are not just an evolution of what has been done in the past; they are aimed at groups that are important to the institution in strategic terms.
- They are concerned with impact, not process, and aim to influence stakeholder attitudes, opinions or behaviours rather than simply putting processes into motion such as news release production.
- Excellent communication use both formal and informal research to understand its stakeholdrs and monitor effectiveness.

The *Excellence Study* focused on three spheres of communication excellence: the 'knowledge level of the communication specialist'; the 'shared expectations between executive management and the communication specialist', and the 'culture of the organisation'. All three spheres are important to establish a successful relationship between an organisation's executive management and communication departments. These spheres are also applicable to science communication, since communication specialists need to have a basic knowledge of science; the expectations of executive management and communication specialists at HEIs should be understood by both groups; and the culture of the HEI should be of such a nature that there is trust and empowerment between executive management and communication specialists to ensure the correct science messages are conveyed to the stakeholders of the HEI.

4.4.1 The knowledge level of science communication specialists

Most communication departments have creative communication specialists, called technicians, who can write and edit, handle technical aspects of production and know about photography and graphics. However, enhancing these technical skills in themselves does not lead to excellence (Dozier *et al.*, 1995:11). Communication specialists need to become business managers who specialise in communication and should assist other business managers to be more effective and successful with their science communication experience (Potter, 1998:15). In the case of science communication it would mean that communication specialists as managers must have a basic knowledge of science to be able to act as facilitators between HEI and stakeholders. Communication specialists should be in a position to decide what should be communicated to stakeholders and what should not be communicated.

The *Excellence Study* found that executive management believed that communication specialists' most valuable contribution to their institutions could be in identifying trends that might affect business and operations. However, most of the executive management agreed that communication specialists were not effective in determining and managing those trends. It is not easy to be knowledgeable and courageous enough to confront strategic issues – even if that is what the executive management want and expect of communication specialists (McGoon, 1998:19). Although this statement might be true in the corporate function of the communication department, it is not applicable to science communication, since communication specialists are the managers and not strategists with regards to science communication.

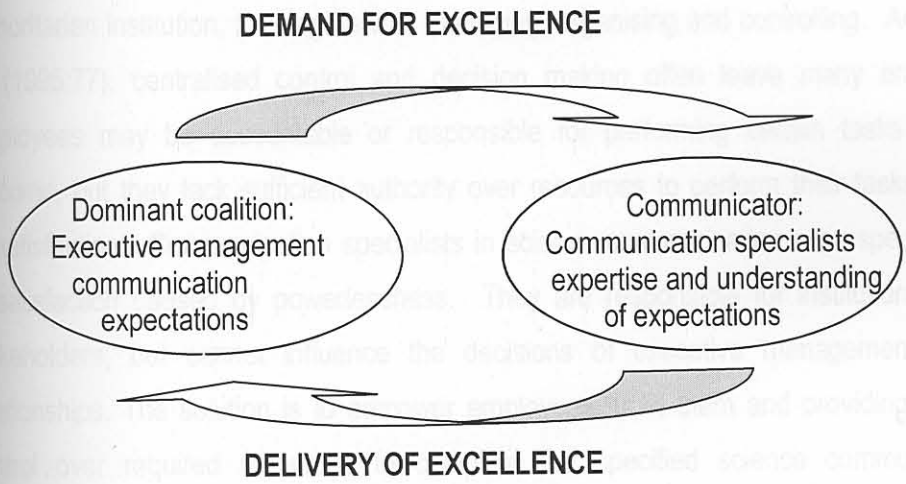
4.4.2 The shared expectations between executive management and science communication specialists

Surrounding the core of the knowledge base there is a sphere that represents a set of shared expectations about communication between executive management and top communication specialists. Shared expectations create linkages between the executive management and communication specialists. These linkages are the demand from executive management for communication excellence and the delivery of such excellence by the communication specialists (Dozier *et al.*, 1995:10).

Communication specialists and executive management at HEI have certain expectations from each other, such as empowerment and trust, especially in science communication. Mutual understanding is therefore required to ensure that communication specialists implement science communication strategies determined by executive management correctly. Regular consultation between communication specialists and executive management should take place to achieve excellent communication and relationships with stakeholders. Communication specialists require freedom to make recommendations to executive management and subsequently to implement these recommendations. According to Potter (1998:15), it is therefore imperative that communication specialists establish what the executive management value and what behaviours communication specialists have to adopt to be valued. Communication specialists should also develop mutual understanding between executive management and the stakeholders of the institution. Communication specialists should research the external environment and inform management of what stakeholders think about the institution. Executive management want two-way communication and win-win outcomes (Lindeborg, 1994:5).

When executive management demand excellence from the institution's communication specialists and communication specialists understand that demand and are able to deliver, a demand-delivery linkage is established. This demand-delivery linkage, displayed in Figure 4.4, describes an ongoing relationship between communication specialists and executive management (Dozier *et al.*, 1995:16).

Figure 4.4: The demand-delivery linkage for communication excellence



Adapted from: Dozier *et al.* (1995:16)

Over time, expectations and performance reinforce one another. Executive management value and support the communication specialists when they play an integral part in developing shared expectations, which lead to communication excellence (Dozier *et al.*, 1995:16-17). In science communication executive management expects communication specialists to mediate the process of communication between scientists and journalists to ensure the message of science reach the stakeholders of HEI successfully.

4.4.3 The culture of the institution

The institutional culture surrounds the knowledge core and shared expectations sphere. According to Dozier *et al.* (1995:17), the *Excellence Study* highlighted two basic forms of institutional culture: participative and authoritarian.

In science communication a participative corporate culture fosters excellent science communication. Such a culture is decentralised with shared power and decision making. It values cooperation and equality, including opportunities for women. It welcomes ideas from outside and innovation (Lindeborg, 1994:5). A participative culture would enhance a relationship of trust and empowerment between

executive management and communication specialists and would encourage all key role players in science communication at HEIs to participate in achieving the ultimate goal of science communication, which is to convey the message of science successfully to all stakeholders.

Authoritarian cultures emphasise centralised control and decision making by a few powerful managers. Participative cultures, on the other hand, emphasise teamwork, with wide participation in decision making (Dozier *et al.*, 1995:77; Lauzen, 1995:191). According to Senge (1990:181), in the traditional authoritarian institution, the dogma was managing, organising and controlling. According to Dozier *et al.* (1995:77), centralised control and decision making often leave many employees powerless. Employees may be accountable or responsible for performing certain tasks or achieving some outcome, but they lack sufficient authority over resources to perform their tasks. This leads to job dissatisfaction. Communication specialists in science communication are especially subject to such dissatisfaction caused by powerlessness. They are responsible for institutional relationships with stakeholders, but cannot influence the decisions of executive management that shape those relationships. The solution is to empower employees, trust them and providing them with sufficient control over required resources to complete the specified science communication tasks. The empowerment value runs deep in participative culture.

Science communication excellence can grow in a participative culture that provides a nurturing soil. Communication specialists are more likely to be excluded when executive management makes centralised decisions by virtue of formal authority. As decision making expands to include other contributors without formal authority, communication specialists are more likely to be influential and trusted. Communication specialists in science communication need such informal power, a form of empowerment for communication specialists, in order to achieve communication excellence (Dozier *et al.*, 1995:78).

In a HEI where communication is excellent, assuming that there is a healthy relationship between executive management and communication specialists, scientists of the institution would also feel comfortable to trust communication specialists liaising with stakeholders on their behalf. In science communication the excellent communication would furthermore result in a positive relationship between the institution and its stakeholders, especially the media.

4.4.4 A single, integrated communication department

Communication departments in the less-than-excellent institution are often splintered into discrete functions that support other departments (primarily marketing, finance or personnel) or that respond to different publics. These departments typically develop from a historicist, rather than strategic, direction. As a result of their fragmented structure, they cannot respond and change as the strategic nature of their public fluctuates (Grunig, 1997:6).

The excellent communication department is an integrated one. It encompasses all communication functions and thus has the flexibility to shift its resources to respond to the inherent dynamism of today's environment (Grunig, 1997:6). If the communication department is to be the interpreter of management, then it must know what management is thinking at any moment on virtually every public issue. If communication is made subordinate to any other discipline, such as marketing, advertising, legal, administration, etc. then its independence, credibility, and ultimately its value as an objective management counsellor, would be sacrificed (Seitel, 1989:47).

At some HEIs a dilemma exist, since HEIs have various faculties with their own communication specialists. Besides these communication specialists there is also a corporate communication and/or marketing department with communication specialists. This structure causes problems for HEIs, since there are spokespeople within the faculties as well as in the corporate communication department. It is therefore imperative for executive management to ensure that all faculties and communication departments are informed of who is the spokesperson of the HEI in different situations. In science communication it should be clear to all HEI employees who the communication specialists are that are responsible for liaising with all stakeholders of the HEI. These communication specialists should be the facilitators between scientists and HEIs to ensure that the communication of science is done correctly and understandable.

4.4.5 Symmetric versus asymmetric approaches in science communication

In 1976 Grunig took the idea of one-way and two-way models of communication and elaborated on the idea to include the purpose of the communication as well as the direction. He used the terms synchronic and diachronic. However, research revealed that the two models were too gross and oversimplified to capture the reality of PR practice. He then replaced these terms with the terms asymmetrical and symmetrical to describe the purpose of PR as striving for balanced rather than unbalanced communication and effects (Grunig, 1992:287).

Rensburg and Angelopulo (1996:11) described the symmetrical model as a non-commercial communication process with the purpose of disseminating information in order to inform, to create awareness and to educate within a development context focusing on capacity building, empowerment and information sharing between all parties involved. Although the process of diffusing information is inherently one-way, the processes around it should be participatory (not only interactive) and dialogic employing two-way communication in a face-to-face context. The asymmetrical model on the other hand is described as one-way, top down flow of information from a central authority, which is inflexible.

The *White Paper on Science and Technology* (Department of Arts, Culture, Science and Technology, 1998) leaves little doubt about the importance of information and communication: "The ability to maximise the use of information is now considered to be the single most important factor in deciding the competitiveness of countries as well as their ability of empower their citizens through enhanced access to information". This forms part of the goal to promote science in order for people in South Africa to be informed about science and technological developments, since knowledge allows people to make informed and better decisions in their daily lives.

As stated by Dickson (2003), achieving a proper public understanding of science is a two-way process. To quote the words of Leschner (2002): "There is a need to engage the public in a more open and honest, bi-directional dialogue about science and its products, including not only their benefits but also their limits, perils and pitfalls". Dickson (2003) continued that there is even a need to go beyond inquiring how the process of developing a partnership with the general public, including rural communities works in practice. It is necessary to acknowledge the role of communication specialists, whose role it is not only of conveying the 'truth' to the public, but to communicate significant facts and the nature of this significance. In other words, the task of communication specialists is essentially one of extracting significance from a mass of scientific evidence, policy documents, and headline-grabbing statements from individuals and institutions that may or may not have a vested interest in the outcome. Those engaged in the communication of science – particularly when it is conceived of as a two-way process – becomes proxies for the public when it comes to interpreting and articulating the relationship between science and society (Dickson, 2003).

The symmetric model can be linked to the general systems theory with principles such as openness and adaptability. In order to achieve successful science communication, HEIs should allow proper two-way communication, which will allow communication specialists to distribute science to stakeholders

and will allow stakeholders to provide feedback. This process will provide an effect on the distributed science message.

4.5 STRATEGIC COMMUNICATION PLANNING

The concepts of strategic communication planning and design go beyond isolated, anecdotal message production and consumption activities. Strategic communication planning implies an *a priori*, long-range co-ordination of purposes for institutional communication activities. Analysis of strategic communication planning begins with an understanding of communication management philosophy. Management philosophy influences design selections; while design selections influence communication content, division of communication labour, and communication flow (Cummings, Long & Lewis, 1987:89).

In communication departments the strategists will be responsible for formulating the communication plan, while the managers will implement the plan and the technicians will be responsible for the material used to communicate the message to stakeholders. The manager has the responsibility to implement the corporate communication strategy in harmony with the institution's corporate strategic plan. The communication plan should integrate employee communication with the messages to all constituencies and stakeholders. Because these groups interact with and influence one another, it is vital to have consistent, candid messages tailored to the specific stakeholders with the overall goal of contributing to the success of the business (Foster, 1990:9-12; White & Mazur, 1995:27; Winokur & Kinkead, 1993:18). In applying the aforementioned concept to science communication it would mean that scientists would convey scientific facts to communication specialists, who communicate the messages of science to various stakeholders. By facilitating the process of communication flow between scientists and stakeholders, communication specialists, as managers, should ensure consistent science messages are being conveyed to stakeholders. Executive management at HEIs are responsible for formulating the strategic communication plan.

In today's strategising, there is a tendency that those who do not take 'ownership' of the plan are least likely to implement the plan effectively. Since modern corporate strategic plans go well beyond financial forecasts and incorporate strategies that deal with the way in which an institution ought to interact with its stakeholders, communication must inevitably be part of the strategising process. The communication department must help to define the target stakeholders to be reached by the institution and to devise and implement the communication plans to reach those stakeholders (De la Rey in Lubbe & Puth,1994:23). It would also be the case in science communication, where it is important for

HEIs to know who their stakeholders are and communication specialists are responsible for defining these stakeholders.

Communication strategies, formulated by the strategists, must be coupled with objectives and the results must be measurable. Management commitment to communication is a prerequisite for the success of any such strategy. If the members of management display a negative attitude towards company strategies, objectives, goals and decisions, those reporting to them would probably feel the same. In science communication, executive management who take responsibility of the objectives, should realise that science communication should be regarded as a high priority at the HEI. Executive management cannot expect to obtain credibility and acceptance for a communication strategy if they do not provide support to the idea of communication. Communication decisions would therefore be taken within the parameters of the constraints placed on effective communication (Oberholster, 1993:25). It is therefore of the highest importance to be assured of executive management's full support for communicating important issues, such as science.

Institutional and communication goals are reciprocally related. Communication is the consequence of institutional goals, not the reverse. As such, communication programmes focus upon complementing institutional productivity, efficiency, member and stakeholder satisfaction, adaptation, development and survival through communication management activities (Long & Hazelton, 1987:8). Even in the absence of a strategic plan for the department of communication, an institution can emerge with an effective, well-coordinated programme because of its results-orientated approach. From the beginning, once a communication initiative is taken in a particular area, for example a science communication activity, it should be strategically supported by research, planning and involvement by many players within the institution who would be critical to the programme's success. Communication departments should also be managed by objective, and the function should be held accountable for measurable and meaningful results (Webster, 1990:19).

4.6 ENVIRONMENTAL SCANNING IN ANALYSING THE INSTITUTION'S ENVIRONMENT

The model of Grobler (in Verwey & Du Plooy-Cilliers, 2003:204) that was displayed in Figure 4.3 demonstrates the alignment of the corporate communication strategy with the corporate strategy, incorporating the mirror and window function. The mirror function refers to monitoring relevant environmental developments and anticipates the consequences for the institution's strategies and policies. The corporate communication department is in an excellent position to provide and interpret strategic information, because of its wide contact with the external and internal environment (Steyn &

Puth, 2000:19). The window function refers to the preparation and execution of a corporate communication strategy and policy, resulting in messages that portray all facets of the institution. Communication specialists interpret the philosophies, policies, programmes and practices of executive management to the institution's stakeholders. In this facilitating role, they assist to accomplish an active outward orientation for the institution, establishing a firm base for mutual understanding and cooperation with strategic stakeholders (Steyn & Puth, 2000:19). However, to be able to fulfil the mirror and window functions successfully, communication specialists need to conduct environmental scanning. Environmental scanning could be seen as part of the interpretation process in an institution, which represents the data collection.

Applying the open systems approach to PR calls for the purposeful scanning of the environment to anticipate and detect changes that may affect the institution's relationships with its stakeholders (Mersham *et al.*, 1995:51). In science communication, the non-scientific stakeholders and the media are important communities and the environment in which they function is of critical importance for the best-structured messages to reach them.

Environmental scanning is the study and interpretation of the political, economic, social and technological (PEST) events and trends, which influence a business, an industry or even an entire market. Scanning is also the communication activity through which institutions learn about trends and events in their environment. Institutions with formal environmental scanning systems tend to monitor a larger number of issues in their environments for shorter periods of time, when compared to institutions or organisations with informal environmental scanning systems (Lauzen, 1995:187). Since science communication is a relatively new concept, environmental scanning is imperative to determine the trends and requirements of the social environment, including literate and illiterate, urban and rural societies as well as old and young people, who are all stakeholders of HEI. It is furthermore important to determine the political environment, in other words know what the Department of Science and Technology's goals for science communication are and how the economy would impact on the promotion of science. The media should also be scanned, since they are the channels by which the science message should reach the general public. New technological developments should be scanned, since technology is used in communicating science to the general public.

Communication specialists' role of gathering and processing information contribute to executive management decision making. They must bring executive management to an understanding of broader issues that can affect the HEI's image and reputation (Osborne, 1994:64). Inadequate

scanning of environmental changes might be an important reason for the failure of strategic planning in some institutions (Steyn & Puth, 2000:169). Where environments generate a variety of problems or uncertainties, boundary-spanning staff that are able to interpret and make sense of surroundings, become influential in decision making. Boundary spanners or environmental scanners are individuals within the institution who frequently interact with the institution's environment and who gather, select and relay information from the environment to decision makers in executive management. Communication specialists are among an institution's designated boundary spanners (White & Dozier, in Grunig, 1992:103). Regarding high-level strategic decisions, boundary-spanning practitioners perhaps play their most important role when they serve as consultants who advise on methods of problem representation (De Beer, 2001:85).

In science communication for example, communication specialists should take previous studies on attitudes towards science into account and should perform similar research on stakeholders of HEI to determine how science would be received (positive or negative) by stakeholders. Boundary spanning is discussed in more detail in Chapter 5.

4.7 EVALUATION RESEARCH IN THE COMMUNICATION PLANNING PROCESS

Current institutions realise that institutional functions and departments must satisfy demanding stakeholders in a globally competitive environment, since the quality of their work would ultimately make a difference in how stakeholders behave with respect to the institution. Although communication departments have opportunities to contribute measurably to institutional performance, these departments first have to improve their managerial capabilities in performance assessment (Fleisher & Mahaffy, 1997:118). Steyn and Puth (2000:158) describe evaluation research as research conducted primarily to ensure or determine the effectiveness of a corporate strategic plan.

Evaluation research is well known to most communication specialists. They realise that a well-designed performance assessment system is an essential part of any strategic communication initiative. Strategic performance assessment systems should be balanced, integrated and designed to highlight the communication function's critical input, process, output and outcome (results) variables (Fleisher & Mahaffy, 1997:118). Science communication activities and programmes should also be evaluated to determine if the science messages successfully reached all stakeholders of the HEI.

Various models evaluation has been established, but the model most applicable to science communication is the guidelines provided by Lindenmann. According to Lindenmann (1997:394), the

following seven guiding principles were selected as key factors to measure PR effectiveness. These principles have been applied to science communication:

- Establish clear science communication programme objectives and desired outcomes before beginning, to provide a basis for measurement of results. The goals of communication specialists should tie in directly with the overall goals of the science communication strategy.
- Differentiate between measuring science communication *outputs*, which are usually short-term and measuring science communication *outcomes*, which are usually long-term and can have more impact.
- Measuring media content needs to be viewed as only a first step in the science communication evaluation process.
- There is not one, simple, all-encompassing tool or technique that can be relied on to evaluate science communication effectiveness. Usually, a combination of different measurement techniques is required, since the stakeholders of HEIs varies from literate to illiterate; urban to rural societies and young to old people.
- Be wary of attempts to draw a precise comparison between science communication effectiveness and science promotion effectiveness.
- Science communication effectiveness can best be measured if an institution's principal messages, key target audience groups and desired channels of communication are clearly identified and understood in advance.
- The science communication evaluation process should never be carried out in isolation.

The principles for evaluation research mentioned above are guidelines that could contribute positively to evaluate the science communication activities or campaigns of HEIs. However, without the cooperation of all key role players in science communication, no strategic plan can be implemented successfully.

4.8 CONCLUSION

Chapter 4 described the importance of strategic management and planning in communication, specifically science communication as a division of the corporate communication department at HEI. The General theory of excellence in PR and communication, which forms the theoretical base for the strategic management of science communication in the context of this study, was discussed in detail. The theories described in Chapter 4 are important to this study, since they provide guidelines by which communication specialists should act to successfully distribute science messages.

Communication specialists can build excellence by becoming more expert in the emerging, increasingly sophisticated aspects of communication practices, specifically as far as science communication is concerned. Executive management must also broaden their conception of science communication and representation to recognise that communication can make a contribution to effectively distribute science messages. A management philosophy that excludes strategic communication is no longer appropriate for the present and likely future environment – science communication will become a meaningless function unless it complements management strategically at the executive level. In order to be excellent and a valuable contributor to decision making, communication specialists need to scan the environment, acknowledge the needs of stakeholders and implement a strategic science communication plan to execute the identified strategies and objectives of the HEI. After the implementation of the science communication plan, evaluation research has to be conducted to measure the outcomes and success of the plan or science communication campaign.

Although science communication is an important phenomenon all over the world, the contribution of key role players in science communication in distributing the message of science to stakeholders is even more important. The roles of executive management, scientists, communication specialists and journalists are explored in more detail in Chapter 5. The specific role of the media as well as the agenda setting theory and gatekeeper theory as functions thereof which forms part of the theoretical base of this study is also discussed.