

The discovery of Fibonacci in integrated communication

ABSTRACT

Fibonacci was a renowned scientific explorer. It is widely documented that the famous Fibonacci numbering sequence is found in several spheres of life. To date, this phenomenon has not been discussed within a communication context. However, a literature review done to explore the different functional fields of organisational communication within an integrated communication ideology, has brought to light that the Fibonacci phenomenon might also have relevance in the field of communication. In this article communication - as foundation of modern organisations - is explored from a systems perspective. The position of each of the different functional areas of organisational communication in an organisation practising integrated communication is demonstrated and the resemblance between this demonstration and the Fibonacci swirl is highlighted.

1. INTRODUCTION

Leonardo Pisano (Fibonacci) was born in Pisa in 1170 AD and was the author of *Liber abaci* in which the decimal number system called the Fibonacci sequence was first introduced. The Fibonacci sequence entails adding the last two numbers to obtain the next number in the sequence [for example 1,1,2,3,5,8,13,21,34,55,89,144,...] (Knott, 2007). The numbers in this sequence are called the Fibonacci numbers, and can be illustrated in diagram format (see Figure 1).

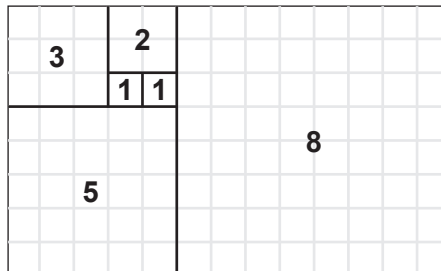


Figure 1: Fibonacci numbers illustrated
 (<http://en.wikipedia.org/wiki/Image:FibonacciBlocks.svg>)

A Fibonacci spiral (Figure 2) is created by drawing arcs connecting the opposite corners of squares in the Fibonacci tiling (Figure 1).

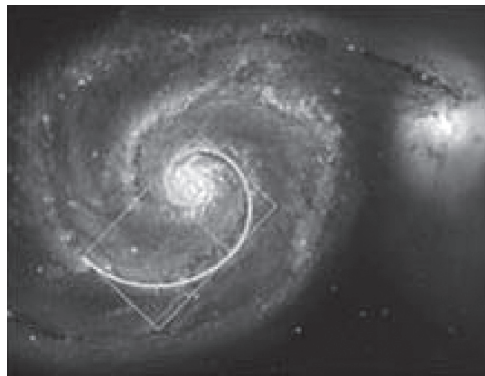


Figure 2: The Fibonacci swirl

The Fibonacci swirl has been documented to occur in almost all spheres of life (e.g. astrology, mathematics, nature, the human body), but thus far its presence has not been documented in a communication context. However, a literature review on integrated organisational communication

yielded an interesting revelation that is disclosed in this article. The objective of this study is to demonstrate the presence of the Fibonacci swirl in an organisation practising integrated communication.

2. ORGANISATIONAL COMMUNICATION: AN OVERVIEW

Organisations are typically regarded as specific contexts (Kreps, 1990: 13). They do not merely exist. Some authors perceive them as scientifically managed in order to attain predetermined goals and objectives (Harris, 1993; Schein, 1993). According to Werner (2007: 3), an organisation is “a collection of people who work together to achieve a wide variety of goals. The organisation as a whole also tries to accomplish goals”. Mersham and Skinner (2001: 9) define an organisation as a relatively stable system of individuals who work together to achieve, through a hierarchy of ranks and a division of labour, common goals.

Kreps (1997: 11) suggests that organisational communication is a process whereby members gather pertinent information about the organisation and the changes occurring within it. According to Antonis (2005: 44), communication within the organisational context is fundamentally a data-gathering function for members in that it provides them with relevant information, which helps them to understand the organisation’s activities in order to accomplish individual and organisational change and goals, and fulfil their personal needs. Organisations can therefore be considered to be social systems that operate within broader systems from which they receive energy and other resources (Oksiutycz, 2006: 34).

The general systems theory perspective on organisations represents the organisation as a complex set of interdependent parts that interact to adapt to a constantly changing environment in order to achieve its goals (Kreps, 1990; Littlejohn, 2002). According to Baker (2002), systems theory models are widespread in organisational theory. Focus is placed on several key components that make up organisations, namely the individual organisation member, structural and functional groups in the organisation, and organisational technologies and equipment. The key element of the systems-theory approach to organisations is the emphasis on the functional integration of system units in the accomplishment of organisational activities (Kreps, 1990: 100). It is argued that the entire system functions and yields better results than do the different parts of the system individually. According to Miller (1995: 87), the interdependence, permeability and interrelatedness between the different parts of the system form the three main characteristics that define the systems concept. Several authors, like Rensburg (1997), Harris (1993a) and Checkland (1995) support this view. At the most basic, level a system can be seen as an assembly of components, which in an organisational context are the members of the organisation in the various departments. Members at all levels of an organisation are involved in formal and informal, internal and external communication with colleagues, customers, shareholders, the media and other stakeholder groups. Therefore, suggest Van Staden, Marx and Erasmus-Kritzinger (2007: 10), no organisation can function properly or attain organisational goals without a good system of communication. Antonis (2005) proposes that there are very specific functions that underline and define organisational communication in that it is informative, it regulates and it persuades

and integrates people, processes, systems and structures. Rensburg (1997) supports this view and argues that organisational communication is functionally oriented and centres around four functions, namely an informative function, a regulatory function, an integrative function and a persuasive function.

The hierarchy of ranks, or different levels that exist in organisations are described by Steyn (2003, 2002), and Steyn and Puth (2000) as the enterprise, corporate, business unit, functional and operational levels. At the enterprise level, the organisation's mission, purpose and role in society are outlined. Activities at the corporate level tend to be financially oriented and focus on the portfolio of businesses in which the organisation should compete and how they should be integrated. At the business-unit level, it is determined how a product or group of related products should compete in the market. Digman (1990) indicates that the primary focus at the functional level is to implement strategies to support the enterprise-, corporate- and business-level strategies. Finally, the previously mentioned organisational strategies are implemented at the operational level (Steyn, Grobler & Cilliers, 2005). As communication takes place on all of these different levels, it is obvious that organisational communication is complex and multifaceted.

As mentioned earlier, the study of organisational communication is highly diverse and fragmented. It spans communication at the *micro* (interpersonal communication), *meso* (group, organisational, inter-organisational communication), and *macro* (mass communication) levels (Baker, 2002: 5). One often finds descriptions of organisational communication to include both internal processes of communication (among the members of the organisation itself) and communication towards the outside (how the organisation presents itself and exchanges information with external stakeholders). Both Rensburg (1997) and Kreps (1997) describe four levels of communication identifiable in these contexts, namely the:

- intrapersonal communication level (where the individual processes information);
- interpersonal communication level (where individuals establish and maintain relationships);
- small groups communication level (where members of different units co-ordinate activities); and
- interorganisational level (where different functional units of organisations co-ordinate efforts).

It is obvious that organisational communication involves both communication and organisations. Views of organisational communication can be categorised as those that view organisational communication as one aspect of an organisation versus those that see it as the underlying basis of the organisation itself. The competitive environment in which organisations have to compete has forced them to evolve in directions that make the latter view more appropriate. Supporting this view, Myers and Myers (1982: 42) suggest that organisational communication is "the central binding force that permits coordination among people and thus allows for organised behaviour".

As the earlier discussion on the different functions and levels of communication in organisations has indicated, organisations are complex systems of elements that cannot exist in isolation. According to Niemann (2005), systems-thinking provides a model for seeing interrelationships, rather than just focusing on individual factors. In these relationships, integrated organisational communication should be the golden thread running through modern organisations, and contributing to overall organisational functioning and success.

3. FIELDS OF ORGANISATIONAL COMMUNICATION

Organisational communication is a subdiscipline within the larger field of communication studies. Although Cheney, Christensen, Zorn and Ganesh (2004) treat the terms *organisational communication* and *management communication* as synonymous, an analysis of organisational communication literature reveals that its focus is much broader and usually includes theoretical and methodological issues, internal and external environments, patterns of organisational interdependence and behaviour in organisations. Key distinctions in respect of organisational communication involve levels (formal versus informal) direction (vertical, horizontal, diagonal) and internal versus external focus. The focal point of organisational communication literature in the past was formal, top-down communication. Informal communication was often seen as a potential hindrance. According to Baker (2002), this is no longer the case. Communication that is ongoing, dynamic, and non-formal has become part of the communication mix to ensure effective conduct of work in modern organisations. It seems that organisational communication has largely grown in response to the needs and concerns of businesses (Baker, 2002).

As discussed by Cuel and Ferrario (2006), the literature on organisational communication has classified communication according to different criteria, namely the level of formality, the direction of informational fluxes, the content of messages, the function that it performs, and the purpose that it has. **Level of formality** distinguishes between formal and informal communication (Cuel & Ferrario, 2006; Kreps, 1990; Miller, 2006). The typology based on **informational fluxes** includes vertical (top-down and bottom-up), horizontal (between individuals on the same level), and transversal (similar to horizontal, but involves the wider organisation) communication (Cuel & Ferrario, 2006). **Message content** singles out political messages (strategies, correct behaviour, etc.), basic messages (information aimed at enhancing the functioning of the organisation) and messages related to the image (definition of the style of the organisation). The typology based on the **function of the communication** sees properly functional communication in charge of guaranteeing the correct functioning of the organisation “machinery”, informative communication as in charge of the visibility of the enterprise, with its products and services, and creative communication as the function of establishing a sense of belonging through presentations, meetings, parties, etc. (Cuel & Ferrario, 2006). Said authors see the last typology as being based on the **purposes**, which include messages to inform, create involvement, and to sell products and services.

In short: communication is the means by which information flows into, through, and out of an organisation (Rensburg, 1997; Van Riel, 1995). Communication is thus at the heart of an

organisation's ability to do its work. Organisational communication, as a discipline, is an intention or attempt to ensure that the flow of communication is unhampered, and that the quality of both the information and knowledge shared is excellent. Literature depicts that organisational communication is frequently described as the theoretical study of the role and functions of communication in an organisation (Cuel & Ferrario, 2006; Kreps, 1990; Miller, 2006). It is argued that it is an overarching term that has more substance than being just one field of communication on the same level as business communication or marketing communication. This description shows several similarities with the integrated communication (IC) phenomenon. Niemann (2005: 99) defines IC as "the strategic management process of organisationally controlling or influencing all messages and encouraging purposeful, data-driven dialogue to create and nourish long-term, profitable relationships with stakeholders". Against this background, it is argued that an organisation should thus strive towards the integration of its communication mix.

The different functional areas of communication in organisations were analysed by means of a literature review so as to come to a better understanding of the communication mix in organisations. The more prominent fields that deal with communication in the organisational context are organisational communication, business communication, management communication, corporate communication and marketing communication (Barker & Angelopulo, 2006). To Ströh and Leonard (1999) *public relations* and *communication management* are terminologically synonymous, while Grunig (1992) argues that the terms *public relations* and *communication management* are broader than specialised public-relations programmes and communication techniques. Grunig (1992: 4) opines that "public relations and communication management describe the overall planning, execution, and evaluation of an organisation's communication with both internal and external publics – groups that affect the ability of the organisation to meet its goals". However, the term *corporate communication* is suggested for the broader and more strategic application of public relations, or communication management (Hutton et al., 2001; Sandin & Simolin, 2006; Steyn & Puth, 2000).

With regard to business communication, Rensburg and Bredenkamp (1991: 12) differentiate between a rational perspective and a humanitarian perspective in respect of business communication. Weich (in Rensburg & Bredenkamp, 1991) considers the systems approach to business communication to be a rational approach adopted in respect of the activities of business and especially in respect of the application of business communication. As previously discussed, this study is grounded in the systems approach. The rational approach to adopt in respect of business communication is the one in which business communication is described as the pragmatic study of various forms of written, oral and interpersonal communication within a business environment (Van Deventer, 2005). Viewed in this light, business communication is seen as a field within corporate communication rather than as a distinctive field on its own.

Based on, amongst others, Van Staden, Marx and Erasmus-Kritzinger (2007), Antonis (2005), Steyn and Puth (2000), and Rensburg (1997), one could argue that organisational communication is the umbrella concept for all communication that takes place in the organisation. Against this backdrop, it is posed that organisational communication thus embodies the following interrelated,

sometimes overlapping, often inseparable and converging areas: *managerial or management communication, corporate communication* and *marketing communication*. The next section will provide a brief overview of these three fields of organisational communication.

3.1 Managerial communication

Authors on this topic are in agreement that management in an organisation cannot be effective without communication (Mulder, 2004; Puth, 2003; Van der Walddt, 2005; Stefanescu & Popa, 2008). Thus, management and communication go hand in hand. According to Puth (1994: 11), the paradox in managerial communication is that, although it is natural and easy to communicate, it still remains difficult to communicate effectively to ensure that meaning is shared.

An uncomplicated definition of managerial communication is that it is the study of communication between managers and employees. Barker and Angelopulo (2006: 13) define it as management's use, adaptation and creation of languages, symbols and signs for the effective and profitable management of the corporate enterprise. According to Smeltzer (1993), management communication deals specifically with the communication of management and managers, communication variables that affect management, and the practice of communication by managers. Barker and Angelopulo (2006) opine that, by definition, management is an organisational phenomenon, therefore all management communication occurs within the organisational sphere.

When discussed within the context of this study and against the background of the systems approach, certain basic assumptions are made (Puth, 1994: 21), namely:

- The general systems theory, with its emphasis on structure, interdependence and relationships, is concerned only with the parts of the organisation as they relate to the whole;
- Communication is considered an essential process that permits interdependence among the parts of the organisation;
- According to the concept of boundaries, an organisation is differentiated from and dependent upon the environment in which it exists;
- In open system organisations, energy comes into the organisation from the environment, is transformed within the organisation, and is returned to the environment;
- Managers spend more time communicating with employees and with one another than with people from outside the organisation;
- At the lower levels of an organisation, employees in a given department spend more time and energy communicating with one another than with employees from other departments in the organisation;
- Managing is a complex process that can be done effectively in a number of different ways, and there are various effective leadership styles;

- The effectiveness of a leadership style depends on, amongst others, the situation and the people concerned;
- Social communication is crucial in an organisation because structures are essentially held together by a system of attitudes, perceptions, beliefs, expectations and motivation and by meanings shared by the people who are part of that system; and
- There are no simple recipes for dealing with the human problems encountered in organisations.

Managerial communication, according to Stefanescu and Popa (2008: 3), represents the decisive means through which managers fulfil their tasks and duties, and employ the competences and skills pertaining to their roles in the company and in the relations with the organisational partners. The individual and group performance of employees therefore largely depends on the quality of the managerial communication process. Van der Waldt (2005: 6) comments that managerial communication is the first element of corporate communication.

3.2 Corporate communication

As previously indicated, corporate communication is used as a synonym for the broader and more strategic application of public relations, or communication management (Steyn & Puth, 2000). Corporate communication is seen as the strategic management of the multitude of stakeholder relationships, to achieve mutual benefit for both parties (Shackleton, 2006: 33). Corporate communication provides focus and direction for an organisation's communication with stakeholders and builds symbolic and behavioural relationships with its strategic stakeholders (Steyn, Grobler & Cilliers, 2005: 33). Corporate communication can therefore be described as an outside-in approach to strategic management, conducting environmental scanning to gather information on stakeholders, publics and issues from the environment, and anticipating the consequences for the organisation's policies and strategies – specifically with regard to the stakeholder and societal environment (Steyn, Grobler & Cilliers, 2005: 34). Goodman (2001: 69) states that corporate communication is a vital management function in contemporary organisations. This author considers it to be the total of an organisation's efforts to communicate effectively and profitably.

Corporate communication's inputs should thus support all organisational levels (Steyn, 2000). According to Skinner and Von Essen (1999: 98), it should create a climate of belief. Van Deventer (2005) suggests that the overall goal of corporate communication is to plan, initiate, develop, integrate, optimise and manage specialised forms of communication with internal and external stakeholders of an organisation. Steyn and Puth (2000) add that corporate communication practitioners should demonstrate knowledge of their organisation's mission, strategies and goals, and their communication solutions must address real needs and reflect the bigger picture. Steyn and Green (2001) support this notion and suggest that it is in the identification of stakeholder concerns and issues, and the management of communication with those strategic stakeholders, that the corporate communication function could make its biggest contribution to organisational effectiveness.

Corporate communication is distinguishable from, but cannot always be separated from managerial and marketing communication. The main implementation areas of corporate communication are:

- researching stakeholder opinions and expectations
- public relations
- employee communication
- corporate image, identity and reputation
- crisis communication / issues management
- business communication
- institutional / corporate advertising and advocacy
- media liaison
- investor relations / financial communication
- community relations / corporate social responsibility and investment
- management counselling
- industry / industrial relations
- government affairs / relations
- corporate affairs (focus on the positive projection of corporate culture)
- communication auxiliary (providing specialised and technical support to other areas) (Shackleton, 2006; Van Deventer, 2005).

In all instances, the functions and techniques of each implementation area, as described by experts in each field (Cutlip et al., 1985; Jefkins, 1986; Matera & Artigue, 2000; Mersham et al., 1995; Rensburg & Cant, 2009; 2002; Seitel, 1992; Skinner & Von Essen, 1999; Wilcox et al., 1989;) are included in the equation.

3.3 Marketing communication

Marketing communication is described by Egan (2007: 1) as the means by which suppliers of goods, services, values and/or ideas represent themselves to their target audience with the goal of stimulating dialogue leading to better commercial or other relationships. Du Plessis et al. (2003) describe marketing communication as communication to customers specifically about products and services. The marketing strategy includes four variables known as the marketing mix, namely the product, price, distribution and marketing communication. Marketing communication is the most visible of the marketing-mix elements. It influences the other three elements and vice versa. The ultimate goal of marketing communication is to reach identified members of the audience so as to affect their behaviour. Du Plessis et al. (2003) suggest that, in order to inform, persuade and remind targeted customers effectively, marketers rely on one or more of the major elements of the marketing communication mix. The most prominent elements of marketing communication are:

- advertising
- public relations

- sponsorships
- direct/interactive marketing
- personal selling
- sales promotions (Burnett & Moriarty, 1998; Clow & Baack, 2004; Egan, 2007; Koekemoer, 2004)

According to Ouwersloot and Duncan (2008: 8), marketing communication is all about how to create, deliver, manage, and evaluate brand messages – in other words, all the information and experiences that impact how customers and other stakeholders perceive a brand. Marketing communication consequently entails the activities undertaken to present products (tangible and intangible) to the marketplace. Marketing communication is described by Ouwersloot and Duncan (2008: 9) as a collective term for all the various types of planned messages used to build a brand. Branding is essential to marketing communication and the success of a brand owes much to how effectively the brand owner communicates with the public (Egan, 2007: 79). The ultimate goal of branding and IMC is to create brand equity. Aaker (1991) describes brand equity as a set of assets and liabilities that can be categorised in terms of brand awareness, brand associations, perceived quality and brand loyalty.

IMC focuses predominantly on customers and on messages sent by the organisation (i.e. external messages) (Rensburg & Cant, 2009). With IMC it is assumed that integration takes place within the realm of marketing. IC, however, is broader than IMC and proposes a more holistic perspective to include all stakeholders (Mulder, 2008). In the context of IC, the focus is on communication, therefore emphasising that all communication contributes to the brand of the organisation (Rensburg & Cant, 2009: 4). This focus includes both internal and external messages. Thus, in IC the strategic intent of the organisation as a whole drives all the communication of the organisation. IC can thus be seen as being strategic in nature and contributing to the strategic thinking processes within the organisation. Another theoretical component of IC is the two-way symmetrical nature of communication in IC (Niemann, 2005). This type of communication enhances interactivity through which long-term, mutually beneficial brand relationships can be created, developed and maintained.

4. THE INTEGRATED ORGANISATIONAL COMMUNICATION SPIRAL

To demonstrate both the position and the prominent components of each of the different functional areas of organisational communication in an organisation practising IC, an illustration is provided (see Figure on page 54). A swirl is used as analogy because of the resemblance between the intrinsic characteristics of a swirl and those of integrated organisational communication. It is used as metaphor to represent the organisational communication context within which the three functional areas of organisational communication are practised in an integrated manner. The swirl was chosen because several of the characteristic ascribed to a swirl are also applicable to IC and its underlying constructs. These characteristic include the evolving nature thereof, i.e. the fact that it is dynamic and constantly changing. It is open to the environment, while the units are interrelated, inseparable and overlapping. Furthermore, the swirl also comprises converging

areas. The many resemblances between the swirl and the nautilus shell led to exploring the use of the nautilus shell as metaphor for the model in this study. Why the nautilus shell? Allen (2003) describes the nautilus shell as follows:

- It gains its strength through the harmonious coming together of its many individual parts (as do organisations, especially within the system-thinking model);
- It grows outward from a strong centre (managerial communication at the heart/core of the swirl, as it is at the centre of an organisation);
- Its spiral geometry evokes order and proportion (although it is difficult to separate the functional areas of organisational communication, different techniques do exist that create a sense of order in organisational planning);
- The rainbow of colour of the nautilus shell reflects the diversity and richness so essential to a healthy, vibrant organisation;
- The simple outer appearance of the nautilus shell belies its phenomenal inner beauty and strength (akin to the internal and external focus and functioning of an organisation); and
- The chambers of the shell are separate, but each is connected to the others by a tube running through them. (Equally, all functional areas of communication in an organisation are separate, but each should be connected to the others by a golden thread that should continuously run through all communication activities.)

Against this background, a swirl or nautilus shell is proposed as metaphor to represent the organisational communication context within which managerial, corporate and marketing communication are practised in an integrated fashion (see Figure 3). The main thrust of the nautilus-shell model is the fact that IC should be an organisation-wide endeavour implemented on a strategic level, as suggested by Niemann (2005). As mentioned at the outset, communication is not a separate function, but underlies the basis of the organisation itself. In IC, a strong sense of cooperation, collaboration and connectedness is necessary.

In the model, managerial communication is positioned at the heart/core of the swirl, as it should be at the centre of an organisation (Stefanescu & Popu, 2008). Puth (2003) supports this view and suggests that communication is vital to all other management functions. Furthermore, if the communication developed within the managerial communication sphere is carried through to the corporate and marketing communication functions, this will lead to strategic consistency and, ultimately, greater trust between the organisation and its stakeholders. In the second place, the evolving nature of the swirl reflects the true nature of IC as it is also dynamic and ever changing – adapting to the environmental and stakeholder input. Both are thus open to the environment and in a state of constant change. This allows two-way interactive communication through which meaningful relationships can be built with the members of stakeholder groups.

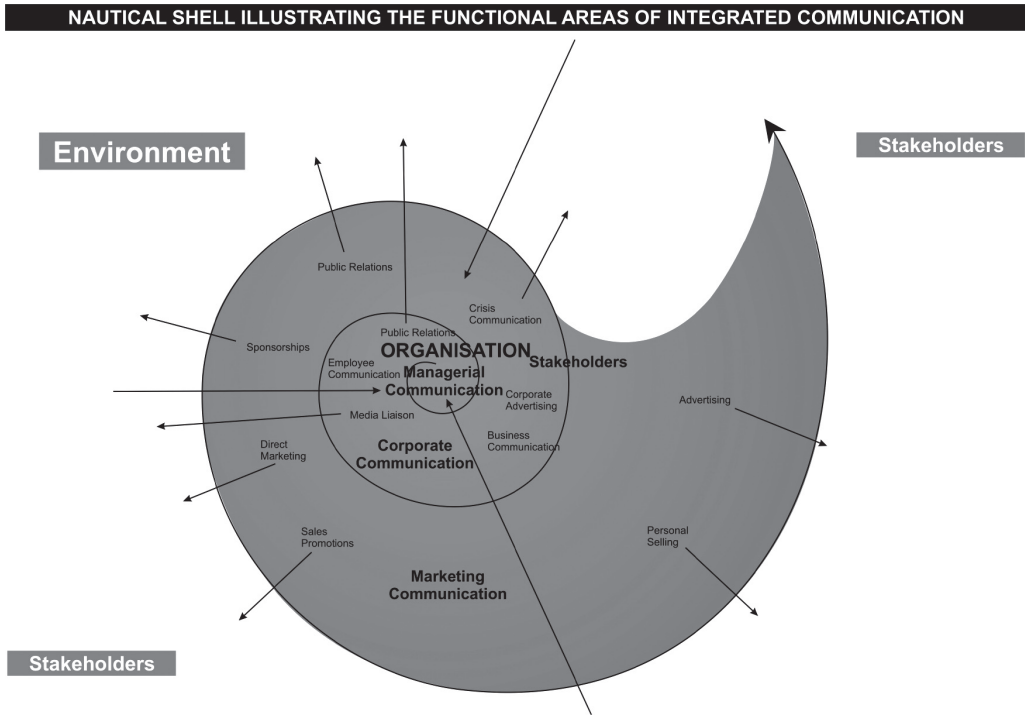


Figure 3: Nautilus-shell model of integrated communication (Mulder, 2007)

Further, the three main components or functional areas of integrated organisational communication, namely managerial communication, corporate communication and marketing communication are interrelated, overlapping and often inseparable, as illustrated in Figure 3. They offer converging areas between the organisation and its stakeholders (e.g. advertising, personal contact), but also amongst stakeholders themselves (e.g. managerial communication with employees). This model therefore also accommodates the importance of employees as stakeholder group, an aspect emphasised in IC (Mulder, 2008).

Figure 3 demonstrates that an integrated organisational communication approach unites all endeavours. While Niemann (2005: 105) claims that the concept of IC in brief means concord of endeavours, this author argues that it does not only refer to consistent messages, but further encompasses concord of rationale for the organisation, concord of organisational procedures, concord of an organisational purpose, and concord of achievements within the organisation. Niemann (2005: 105) furthermore suggests that integration ultimately refers to everything the organisation does and does not do. In essence, advises this author, integration intensifies the integrity of the organisation. Integration produces integrity because an organisation that is seen as a whole rather than an anthology of incongruent, autonomous functions is perceived to be

more sound and reliable (thus, a concord of endeavour), and these are imperatives for sustainable relationships with the stakeholders.

4. SUMMARY

Communication has been part of the organisational and marketing process for as long as goods have changed hands from one person to another. However, the advent of technology and research, among other reasons, has made the communication process increasingly sophisticated and has contributed to the rise of the IC phenomenon. The main thrust of this article is marketing and communication and the integration of the latter two in the organisational context. As Barker and Angelopulo (2006) pointedly state, it is now commonly accepted that organisations' communication should be integrated. Such integration is seen as the creation of synergy between marketing-related activities, the coordination of planned communications, managerial communication coordination, strategic or corporate communication coordination, and the coordination of internal and external communication (Barker & Angelopulo, 2006: viii).

Strong positive relationships between the organisation and its stakeholders are the eventual outcome of the successful integration of all of an organisation's communication. They induce loyalty and an equitable corporate brand. According to Barker and Angelopulo (2006), the corporate brand is the consolidated outcome of every message about the organisation to which a stakeholder has been exposed - including planned, unplanned, service and product messages. In addition to Barker and Angelopulo, various authors like Burnett and Moriarty (1998), Egan (2007), Percy (1997), Smith and Taylor (2002), Schultz, Tannenbaum and Lauterborn (1994) – to name a few – see the best way of ensuring that the perception of the brand is the intended one, to be through coordination and alignment of these messages. The term for such coordination and alignment of messages is *integrated communication*.

It is suggested in this article that when the manifestation of the fields of integrated communication is illustrated, the characteristics and scope are best reflected in the shape of a swirl or nautilus shell. Like the Fibonacci sequence and swirl, integrated organisational communication is a meticulous process where attention should be paid to every detail and it should moreover be planned, structured and managed effectively in order to obtain optimal results. It can therefore be argued that the swirl or nautilus-shell model of integrated communication could indeed be an instance of the occurrence of the Fibonacci sequence in communication.

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