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WORD AND IMAGE IN ACADEMIC WRITING: A STUDY OF VERBAL AND VISUAL MEANINGS IN MARKETING ARTICLES

Abstract

This article investigates the relationship between visuals and written text, with the objective of contributing to a fuller understanding of the image-text relation in research writing. More specifically, the paper examines the written text in relation to the figures that have geometric shapes and vectors, in a sample of articles in marketing studies. Based on the grammar of visual design (Kress & van Leeuwen, 1996/2006), the study gives evidence that texts refine meanings in theoretical models, and visuals show general meanings that may make the theories more accessible to readers. The analysis indicates that, with their particular capacities for making meanings, image and text contribute together towards advancing marketing theory. The paper discusses the findings in terms of present knowledge of the function of visuals in research writing and it explores implications for the teaching of academic writing.

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Key words

journal article, research writing, visual language, marketing.

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Sažetak

U radu se istražuje odnos između vizuelnih elemenata, s jedne, i pisanog teksta, s druge strane, s ciljem da se doprinese boljem razumevanju odnosa između slike i teksta u naučnim člancima. Konkretnije, rad istražuje odnos između pisanog teksta i vizuelnih elemenata koji se sastoje iz geometrijskih figura i vektora, i to na uzorku naučnih članaka iz oblasti marketinga. Zasnovana na gramatici vizuelnog dizajna (Kress & van Leeuwen, 1996/2006), analiza u radu pokazuje da tekst precizira značenja u teorijskim modelima, dok vizuelni elementi ukazuju na opšta značenja koja teorije čine prijemčljivijim za čitaoce. Analiza ukazuje na to da slika i tekst, svojom specifičnom sposobnošću da definišu značenja, doprinose unapređenju teorije marketinga. U radu se bavimo rezultatima analize funkcijâ vizuelnih elemenata u istraživačkom tekstu, kao i njihovim implikacijama za nastavu akademskog pisanja.

Ključne reči

naučni članak, istraživački tekst, vizuelni jezik, marketing.

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1. INTRODUCTION

In articles in academic journals, visuals such as graphs and diagrams provide significant support for the arguments in the text. Experimental research articles in scientific journals illustrate this use of visuals, as demonstrated by Miller (1998) in his analysis of biology articles, since these kinds of images are a means of both reconstructing experiments and providing support for the results of experiments.

Research journals are a rich source of knowledge for researchers and academics, and, in some disciplinary areas, journal articles are valued more than book publications (Motta-Roth, 2002). Thus, it is worth exploring the characteristics of journal articles in various areas of study, in order to examine how authors present and discuss their research. This paper focuses on the visuals and the verbal text used for sustaining the arguments of authors and justifying their research in the area of marketing. The main objective is to understand visuals as a resource for the presentation of research and the meanings they bring to the verbal text.

The importance of visuals in academic texts is widely acknowledged (Bazerman, 1988; Myers, 1997; Johns, 1998; Miller, 1998; Swales, 2004), as it has become clear that visual meanings are part of the advance of science. In terms of research activity, it can be said that images are part of the production and reception of knowledge. From this view, an understanding of functions and

meanings of visuals is pertinent to the study of academic writing and the teaching of English for Academic Purposes.

This paper explores visuals in articles in marketing journals. The reason for choosing the area of marketing comes from my own experience of teaching and text revision for students in a doctoral program in Business Studies, when I became interested in the differences between marketing journals. That interest developed into a study, part of which described the occurrence of "non-verbal elements" in practical, scholarly-applied, and research articles (Hemais, 2001). Later on, following a multimodal perspective, more specifically, the grammar of visual design (Kress & van Leeuwen, 1996/2006), my interest shifted to questions about visuals in research writing in marketing. The questions were about how students deal with visual meanings in their writing, how the studies of visual language can be applied to the teaching of academic writing, and what the studies can contribute to a fuller understanding of research writing, in an area that has received less attention than other disciplines.

The study examines the interrelationship between visual and verbal language in articles that have theoretical models about services marketing, a sub-area of marketing studies. The paper outlines some of the work on image and text relations, then gives examples of how the visual and verbal meanings in figures characterize the theoretical modeling in the articles. Finally, the paper discusses some implications of the findings for the teaching of English for academic writing.

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2. BACKGROUND: STUDIES OF VISUAL LANGUAGE FROM A MULTIMODAL PERSPECTIVE

Jewitt (2011) defines multimodality as "more than language" when we look at representation, communication and interaction. It is the case of noticing that several modes of communication are used in the design of a semiotic product or event. In the approach that Jewitt uses, multimodality is understood as a wide range of representational and communicational modes or resources for making meaning, such as image, writing, gesture, gaze, speech, posture. In this paper, the focus is restricted to written text and visual language, more specifically, to the visual language of geometric figures.

One of the interests of visual communication studies is the relationships between producers, images, and audiences (Rose, 2001); that is, images are in a relation with those that produce them and those that receive or use them. Each of the three main elements has a particular context of creation or use. This paper will concentrate on the image itself, though it seems clear that authors (producers) and readers (audiences, users) of academic articles would also need to be studied, for a fuller understanding of not only preferred ways of making meaning but also practices of text interpretation.

Among studies of the relation between image and text, Royce (2002) examines a text in a science textbook; he shows how the verbal and visual modes create meanings in a complementary manner. He analyzes the text using cohesive relations, and he discusses the meaning relations as "intersemiotic" (Royce, 2002: 193).

The idea of avoiding the application of a linguistic description to image and text analysis led Unsworth and Cléirigh to develop an analytical model that comes from systemic functional grammar and that should consider "the nature of the image-language synergy" (2011: 154). They use the term "relational grammatical identification", which occurs with the verbs "to be" and "to have" when one participant is identified with another participant. The authors build their conceptualization of the relation between image and text based on the concept of mutual identification.

Of the various studies of images in academic settings, Miller (1998) explores visuals in both academic articles and popularizations in journalistic writing. He points out that visuals present the findings, which are the new element in the research, and also that they show large amounts of information in a compact space, which makes them an effective resource for advancing claims. In Miller's view, authors do not use the verbal text alone to set up their arguments, but they construct graphs, charts, diagrams, and figures to represent the results that are the basis for the arguments. Visuals are an aid in persuading the reader of the validity of the authors' arguments, since "the last line of defense and foundation of the research argument is the findings themselves, almost always presented in the form of visual display" (Miller, 1998: 30).

However, as mentioned above, Miller's work is about research in biology, and the visuals are representations of experiments. Differently, the articles used for this paper are taken from a services marketing journal and do not deal with experimental research; instead, they discuss conceptual models of marketing, which are a recurrent topic in the articles that were examined.

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The theoretical background for this study is based on the concept of a visual grammar. As conceived by Kress and van Leeuwen, their work is "a descriptive framework" for visual analysis (2006: 14). The "grammar of visual design" borrows from studies in visual communication, such as that of Dondis (2000). In this view, the meanings of geometric forms like the square, rectangle, circle and triangle are those of abstract qualities. The circle represents endlessness, protection, eternity, natural order, and organic growth. The square and the rectangle represent mechanical order, technology, or whatever is made by humans. Squares can be positively associated with progress or negatively associated with oppression. The triangle also represents mechanical order and technology, but Kress and van Leeuwen (2006: 55) understand that the triangle can also be used for pointing or showing processes, action, and directional movement.

Besides borrowing from visual communication for their theory of visual language, Kress and van Leeuwen also construct an application of Halliday's (1985) systemic functional grammar, to formulate their grammar of visual design. They adapt the concepts of the metafunctions of verbal language so as to capture visual meanings. In their visual grammar, the metafunctions are expressed in

terms that can "apply to all semiotic modes, and are not specific to speech or writing" (Kress & van Leeuwen, 2006: 42). The terms that they use are *representational*, *interactive*, and *compositional*, which correspond, respectively, to Halliday's terms *ideational*, *interpersonal*, and *textual* metafunctions. To explain their application of representation, which is the metafunction analyzed in this paper, the authors use photographs and paintings that show actions and states. The authors understand such pictures as being narratives in image form, with the participants taking on roles such as Actor, Carrier and Goal, and the represented actions being realizations of the Material, Relational or Projecting processes.

In this visual grammar, verbs of action are realized by "elements that can be formally defined as *vectors*" (Kress & van Leeuwen, 2006: 46). The vector represents an action in a process that has interaction between the participants. As they explain, when the vector connects participants, "they are represented as doing something to or for each other" (2006: 59). This capacity to mean acting, pointing, and transforming is attributed to the vector owing to its shape that suggests moving in a direction. According to Jewitt and Oyama, "[t]he vector expresses a dynamic, 'doing' or 'happening' kind of relation" (2001: 141).

Concerning diagrams in particular, Kress and van Leeuwen (2006: 48) see them as abstract visuals, often composed of boxes and arrows. Referring to the physical aspects of diagrams, boxes represent participants, who are people or things, and arrows are the processes that connect the participants. It should be noted that, when analyzing meanings in the processes in the diagrams, "vector" is the term used instead of "arrow". The connection between diagrams and verbal texts is illustrative of the characteristics of visual language and verbal language and of particular social uses of them, according to Kress and van Leeuwen. This argument relates to research articles, since, as was mentioned above, in studies such as Miller's (1998), verbal texts explain or paraphrase the diagrams that are part of the presentation of the research.

Focusing on vectors in diagrams, Kress and van Leeuwen understand that "the meaning potential of diagrammatic vectors is broad, abstract and hence difficult to put into words" (2006: 61). They also observe that words may not be able to say which action is represented by the vectors in diagrams. For the authors, verbal texts are more explicit about participants than about processes, for, as they note, scientific and bureaucratic texts have heavier loads of meaning in nouns (Kress & van Leeuwen, 2006: 61). In fact, in their view, diagrams, like verbal text, also tend to reflect nominalized relations, since events become shown as "spatial configurations" and processes become systems (Kress & van Leeuwen, 2006: 62). Considering this view, it is interesting that vectors function as a means of putting action, broadly speaking, into diagrams. In this respect, they may have a complementary function in the creation of meanings. A specific objective of this paper is to examine the capacity of the vector to create meanings in the sample of research writing.

To attempt to put this study of vectors in figures into a larger conceptual scheme, I also borrow from Martinec and Salway (2005), who formulate a model of analysis of various multimodal genres. Their model examines image-text relations,

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combining a semiotic approach (Barthes, 1997a[1961], 1997b[1964], as cited in Martinec & Salway, 2005) with systemic functional linguistics (Halliday, 1985, 1994). From Halliday's concept of logico-semantic relations, the authors use the process of projection, as it can explain meanings in figures. They also include relations of status of equal and unequal clause relations for the discussion of directionality, and they draw a connection between the systems of status and logico-semantic relations, based on Halliday, since clauses (whether equal or unequal) have logico-semantic relations of expansion and of projection.

For the present analysis, the logico-semantic relations component of Martinec and Salway's model, specifically projection, seems to help to explain the image-text relations more satisfactorily than the status relations. For this reason, I have attempted to apply only logico-semantic relations from their model.

3. THE SAMPLE AND METHODOLOGY

The search for the sample of articles started with a random perusal of articles in 24 marketing journals, to identify the kinds of visual elements. When it became evident that there were a considerable number of figures with geometric shapes and vectors, it seemed that further understanding of image-text relations could be gained by a focused study. The journal that was chosen for study, the *Journal of Services Marketing*, is one of the oldest publications dedicated specifically to the sub-area of services marketing. It is well known and respected in the research community, and it is judged to be one of the top five journals in this area (Svenssen, Tronvoll, & Slatten, 2008).

The sample from the online version of the *Journal of Services Marketing* was taken from the first issue of each year in the period between 1990 and 2011. Since for some years it was not possible to download articles with images, the sample covers 15 years (1990-1993, 1995, and 2002-2011). One article in the sixth issue of one year was also included, owing to the particular use of the vector that was not observed in the other figures in the sample. In the 15 issues, there are 96 articles, and, of these, 38 have the 69 figures that are the object of this study. Some articles had one figure, whereas others had three or four. Empirical research articles were examined; comment papers and state-of-the art papers were excluded, even if they had figures. Research articles have an explicit text-image relation that identifies them, as Hemais (2001) found; that is, in research articles, texts refer to figures with phrases such as "Figure 3 shows" and there are textual comments on the content of the figures.

The same kinds of arrangements of geometric elements and vectors characterize the figures throughout the whole period, and so the figures chosen for analysis are not contrastive but illustrative of the modelling in services marketing. The list of the articles that make up the sample is provided in the Appendix.

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It should be mentioned that the articles in the sample have a variety of visual elements, including mathematical formulae, tables, diagrams, and charts. These kinds of visuals are not analyzed, since the focus of this study is the interaction of meanings between the text and the figures that have geometric shapes and vectors.

4. ANALYSIS OF IMAGE-TEXT RELATIONS

The analysis is grounded in the process of projection, from the model that Martinec and Salway (2005) develop; applying Halliday's concept of projection, they offer a framework designed for examining the image-text relation. The present analysis also looks at the figures as analytical structures with embedded transactional structures (Kress & van Leeuwen, 2006: 51-52). The analysis proceeds in several parts. First, the arrangements of geometric shapes and vectors are briefly described and their meanings are explained, within the framework of Kress and van Leeuwen's visual grammar. Then, in the texts, the passages that refer to the figures are analyzed – specifically, verb processes, nominal structures, and circumstantial elements, based on Halliday (1994). Finally, the texts and figures are examined for the dimension of projection, following Martinec and Salway (2005).

4.1. A model of flow in marketing strategies

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The first image, labeled "Figure 2. A Conceptual Model of Services Marketing" in the article (Wasmer & Bruner II, 1991) shows a congruence between the placement and direction of the arrows, their meanings in the diagram, and the description of the model in the verbal text. The figure provides a close examination of services marketing, based on a model in another figure (which is labeled "Figure 1" in the same article); in other words, this model of services marketing is adapted from other authors.

There are various visual resources in the model in Example 1: three lozenge shapes for the three key participants, words that label each lozenge, numbers indicating different functions in the flow of information, and arrows pointing from one lozenge to another.[1]

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[1] One observation to be made is that "arrow" will be the term for the description in a physical sense, and "vector" will be the term for explaining its meanings, which are generally related to movement, direction, and action ("doing"). Another observation is that the verbal elements in the figure will be described not as separate text, but as part of the whole image, since they show the ideational content of the figure, following Martinec and Salway (2005: 353).

Figure 2
A Conceptual Model of Services Marketing

Adapted from Hoyt and Beverlyn (1987)
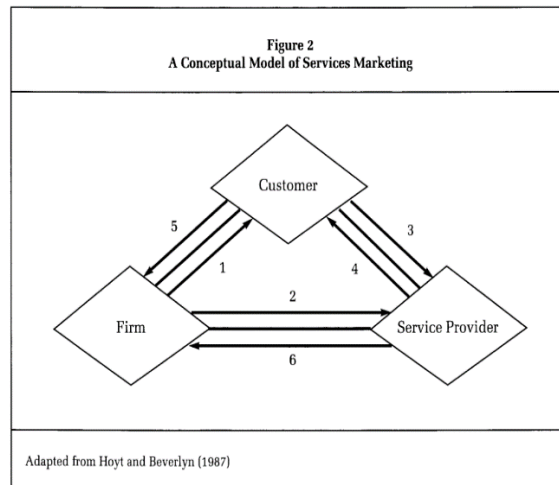
Example 1. Diagram of a model of flow in services marketing

The participants in the model exemplify the analytical process. The "Customer", "Service provider", and "Firm", as labeled in the lozenges, are the carriers in the process. The visual arrangement suggests a close interrelation between the three participants. The lozenges, whose elongated shape indicates a strong sense of order, are balanced as end bases in the triangular shape. The connecting arrows of equal length show the embedding of the transactional structure within the analytical structure (Kress & van Leeuwen, 2006: 51-52). The vectors show movement back and forth between the participants, and their regular, systematic flow supports the idea of a balanced relation between customer, service provider and firm. The shaping makes salient the idea of the three participants fitting into a coherent, balanced framework.

Projection applies to the relation between the visual and verbal text, since the visual content is represented again in the text. In the main text, the authors explain the relationships between the three participants as different directions of *flow*. The authors explain the flows in six brief texts, all of which have a high reiteration of discourse elements. Two sections of the verbal text (Text segment 1) illustrate both the reiteration and the variation in the authors' explanations.

The relationships among these participants can be characterized by six distinct 'flows' (Figure 2):
Flow 1: *The offer*. This represents the flow of information from the firm's marketing management to the customer. The consumer's expectations regarding service quality are formed on the basis of the information communicated through the firm's promotional activities.
Flow 4: *Service performance*. This represents activity flowing from the employee to a particular customer. It is in this flow that the service performance-gap manifests itself.

Text segment 1.

Text segment 1 shows that the verbal text introduces the model by referring to the figure ("The relationships. . . [Figure 2]"). The first sentence in each text about the

flow of information is formulated in one of two ways, as exemplified in **Flow 1** and **Flow 4**, and the second sentence gives a brief comment about the part of the figure that corresponds to the vector. The movement in **Flow 1** is shown not as a process verb element, but as the nominal "flow". In **Flow 4**, the verbal element is embedded in the nominal phrase headed by "activity". The direction is realized by the prepositions of movement "from" and "to". Although the authors chose a nominal that lends to the verbal text a certain abstraction, the sense of movement is apparent in the figure and in the verbal text. Still, recalling Kress and van Leeuwen's view that diagrams tend to have nominalized relations (2006: 62), the concept of projection seems to show how image and text can complement each other.

It can be understood that, verbally, the flow of information indicates an intended, straightforward cause-effect relation rooted in the firm's intention to gain the customer's confidence. This specific meaning becomes salient in the textual phrase "expectations … are formed on the basis of the information"; in contrast, visually, the vectors show a general meaning of direction and movement.

To sum up the image-text relation, the model shows an abstraction of the system of marketing, with the firm, customer, and service provider being the participants in the analytical structure of the visual design. The figure also illustrates embedding in a diagram, since the activity of transaction, or the flow of action between the participants, is embedded in the analytical structure of the model. This figure illustrates the overall process of projection, with visual meanings shown in the flows of communication and verbal meanings explaining the particularities of the flows in the model.

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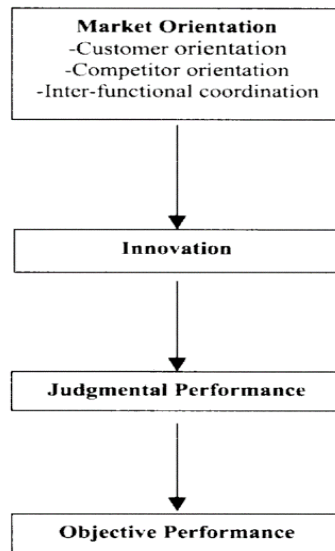## 4.2. A model of market orientation

The next image is labeled "Figure 1. The study model" in the article (Agarwal, Erramilli, & Dev, 2003), which discusses the relation between market-oriented service firms and high performance in the hotel sector.

In Example 2 below, the four boxes contain the labels of the components in the model, the first box having specification of concepts that measure market orientation in the study. Connecting the boxes are arrows of the same length, pointing downward.

In terms of meanings, the rectangular shape represents order, and the arrangement suggests balance, which in turn suggests that the model will measure equally weighted elements. The vectors indicate a uniform directional meaning and a correlation with the balance noticed between the labeled components.

This model is another illustration of an analytical process, since each box represents one of the components, which together constitute the carriers "Market Orientation", "Innovation", "Judgmental Performance", and "Objective Performance".

The four boxes together constitute the larger analytical process that models the associations between a service firm's orientation and its performance.

Example 2. Model of market orientation in firms

The projection in this model is evidenced in various ways, for example, Text segment 2 below that summarizes the model:

> The basic premise of this study is that a firm that is market-oriented is likely to be innovative, which in turn, is likely to result in achievement of superior judgmental performance, and which, in turn, is likely to result in achievement of superior objective performance. The model is illustrated in Figure 1.

Text segment 2.

The text elements that are part of the repetition of the analytical components of the model are "Market-oriented", "Innovative", "Judgmental performance", and "Objective performance". In the figure, these are reiterated as "Market Orientation", "Innovation", "Judgmental Performance", and "Objective Performance".

Similarly, there are text elements that have corresponding vectors in the figure. The first vector, which connects "Market Orientation" and "Innovation", is represented verbally as having a relational meaning of "is likely to be innovative", and it identifies an association that the authors hypothesize. The two lower vectors repeat the meaning of consequence, or transformation to a different status, which appears in the text as "is likely to result in"; firms may thus be transformed into successful performers.

The uniform arrangement of the vectors suggesting a sameness of relations between the components is not entirely reiterated textually, as the meaning relations are not the same. The vector capacity to mean transformational

movement and suggest material action is counter to the relational structure realized in "is likely to be innovative". This lack of correspondence in the projection relation may be partly explained by Kress and van Leeuwen's comment: "Because their meaning is so abstract and general, vectors can represent fundamentally different processes as though they were the same" (2006: 62). It can be suggested that, for the figure in Example 2, the capacity of the vector for abstraction allows for the material meaning and also for the additional relational meaning, owing to the specification in the text.

Briefly, then, this figure illustrates projection, with the re-occurrence of textual elements in the visual mode. The visuals carry the meanings of transformation, as well as order and balance, and the text makes explicit how the participants fit into the hypotheses. The analytical process has the embedded relational and transactional processes signaled by the vectors.

4.3. The cycle of information in obstetrical services

The next figure, labeled "Figure 1. The information cycle", is from an article (Marshall & Javalgi, 1995) that models the information cycle in obstetrical services, which the authors understand to include two main participants: the theoretician and the practitioner. The perspectives of these participants contribute distinct kinds of knowledge (conceptual and practical) to the quality of the services. The geometric organization of the figure in Example 3 reflects the authors' view, evidenced by Text segment 3 below, that

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> the essential component of the model is the integration and synthesis of two viewpoints, the theoretician's and the practitioner's (p. 62)

Text segment 3.

The figure is a series of squares, with the outer one serving as a frame for the model of the information cycle. Inside this is the square labeled "The information environment," and inside this square is the one with the "Perceptions" of the two symmetrically positioned participants, "Practitioners" and "Theoreticians". The innermost square contains four rectangular-shaped boxes connected by arrows and labeled with the four phases of the cycle: "Gather", "Interpret", "Implement", and "Evaluate". The figure is highly symmetrical and seems to capture visually the authors' argument for a balanced integration between the two main participants and information about obstetrical services.

As an analytical process, the figure has two carriers, the practitioners and the theoreticians, and the process is the cycle of information. As observed above, embedded in the analytical process, in the innermost square, is the transactional process with vectors signaling the "sequential and concurrent" movement of information.
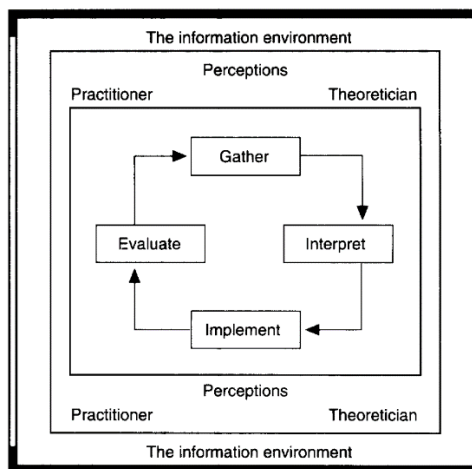
Example 3. Diagram of an information cycle

Projection can be seen in the meanings in the figure and the text. The segment of text that refers to the figure is below:

In the information cycle model shown in Figure 1, multiple information sources exist in the environment. These information sources are controlled and processed through two different perspectives, a theoretician's and a practitioner's, during all phases of the cycle. The four phases – gathering, interpreting, implementing and evaluating – are sequential and concurrent because the cycle mirrors the strategic management process of ongoing monitoring and implementing of changes, if required. (p. 62)

Text segment 4.

Visually and verbally, there are several near reiterations: the nominal labels in the figure, "Practitioner" and "Theoretician", correspond to "practitioner's" and "theoretician's" in the text; the verbal labels "Gather", "Interpret", "Implement", and "Evaluate" correspond to "gathering", "interpreting", "implementing", and "evaluating" in the text. The label "The information environment" appears in the text as "multiple information sources exist in the environment", and the label "Perceptions" is "perspectives" in the text.

The geometric elements in the figure account for other re-representations of meanings from the text. The whole square is "the information cycle"; in addition, the vectors connecting the phases of the cycle in a continuous flow represent the notions of "sequential and concurrent" in the text.

These relations can also be understood as lexical and componential cohesion and help to explain the relations of projection (Martinec & Salway, 2005: 355). The lexical elements in the labels and in the text establish one connection, mostly who the participants are and how the process occurs (the phases of the cycle), and the componential elements in the series of squares and the vectors help show the contained and concurrent nature of the cycle in the management process.

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What the analytical process shows, then, is the design of the model, which highlights the integration and synthesis that the authors see between the theoreticians and practitioners. The transactional process with vectors adds the actions involved in the information cycle, though the figure shows the process as part of a system rather than events (Kress & van Leeuwen, 2006: 62). Projection allows the analysis of the double representation of these image-text meanings, with the figure showing general meanings and the text making explicit the importance of different perceptions and the significance of the four phases in the cycle.

4.4. A model of internal marketing

The final figure, labeled "Figure 1. A model of internal marketing for services", is included in the analysis for its particular complexity in the use of shapes and vectors. It comes from an article (Rafiq & Ahmed, 2000) in which the authors seek to fill a gap in empirical research by proposing a model of internal marketing. From their own set of criteria for the main elements of internal marketing, the authors formulate a definition from which they set up the model that shows the interrelationships between the various components.

The visual resources in Example 4 below are the circular forms, the labels in the circles, and the arrows. The choice of circles suggests an organic or natural order, as opposed to technological order. The model seems to show that there are various interconnections linking each component to other components. The uneven arrangement of the circles and the diverse directions of the arrows highlight an apparently organic complexity in the relationships.

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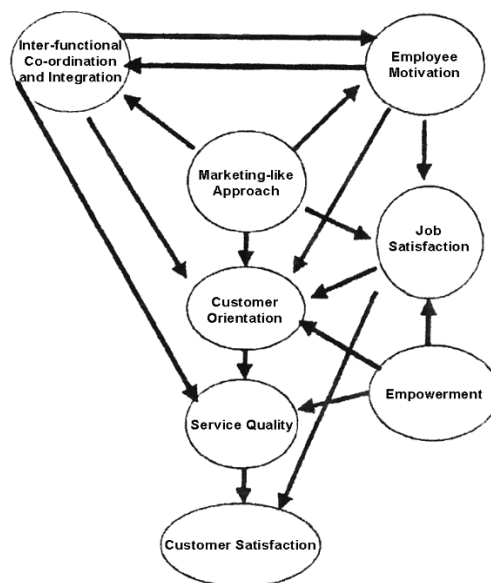
Example 4. An advanced model of marketing

The use of the vectors is significant in the figure. In connecting a circle to other circles, the vectors show directionality and action. They also suggest an emphasis on a high degree of interconnectedness between the conceptual elements. Furthermore, despite the differences in length, they indicate uniformity about the connections; in other words, the vectors do not indicate that some interrelationships are stronger than others but that there are multiple connections to be considered in the model.

To analyze projection in the image-text relations, the larger section of text that refers to the figure is reproduced below (see Text segment 5.). The sentences are numbered for the analysis that follows.

[1] Going beyond definitions, and based on the IM literature reviewed above, Figure 1 shows the interrelationships between the criteria for IM and the implementation of one particular organizational strategy that is at the heart of service organizations, namely, service quality. [2] The relationships indicated in Figure 1 are derived directly from the IM literature. [3] For instance, the motivation of employees via marketing-like activities was implicit in the phase one literature and explicitly stated in the phase two literature in the evolutionary development of IM (Berry et al., 1976; George, 1977; Berry, 1981). [4] Grönroos (1981) and others also recommend the marketing-like approach to improve the inter-functional co-ordination and hence customer orientation. [5] Inter-functional co-ordination and integration are central to phases two and three (. . .)
[6] At the centre of this framework is customer orientation which is achieved through a marketing-like approach to the motivation of employees, and inter-functional co-ordination. [7] The centrality of customer orientation reflects its importance in the marketing literature and its central role in achieving customer satisfaction and hence organizational goals. (. . .)

Text segment 5.

Sentence [1] states what the general analytical process is, and Sentence [2] clarifies the relevance of the literature, which is referenced in the explanation of the figure. The text begins to explain the figure in Sentence [3], with the example of the employee motivation component, placed in the upper right corner of the figure. Verbally, "via" in "the motivation of employees via marketing-like activities" suggests the means for the motivation to occur. Visually, this relationship is represented in the vector as acting, doing, or moving from the "Marketing-like Approach" circle to the "Employee Motivation" circle, a movement indicating that the approach impacts the employees, but without signaling the means for the relation to occur.

Sentence [4] focuses on "Marketing-like Approach" again and relates it to the participants "Inter-functional Co-ordination" and "Customer Orientation". The verb "improve" in "to improve the inter-functional co-ordination" seems to specify the positive change the actions bring. In "and hence customer orientation", "hence" indicates an indirect consequence, since the marketing approach would make a change in the co-ordination, which would then impact customer orientation. Visually, with vectors moving in two directions, "Marketing-like Approach" "does something" to "Inter-functional Co-ordination" and also to "Customer Orientation".

In this instance, the vectors represent actions and connections, though they do not specify the kinds of connections expressed by the text.

Although sentence [5] asserts a central position for "Inter-functional Co-ordination and Integration", of more interest is sentence [6], because it focuses on the importance of "Customer Orientation", which is "at the centre of this framework". The verb "achieved" in "achieved through a marketing-like approach" means applying effort in order to be successful in doing something or causing it to happen (*Collins Cobuild English Dictionary*, 1995); the meanings of doing and happening are consistent with the meaning of the vector. However, "through" suggests an instrument or a reason for the process (Halliday, 1994: 154-5). With this verbal element, the text provides a more explicit notion of the concepts in the model, and the vectors represent a general sense of directionality and interconnectedness.

This brief analysis shows that projection offers an understanding of how the image-text relation contributes meanings to the model. The verbal discussion develops the interrelationships through grammatical devices that indicate more exactness concerning how the model works and that refine the relationships that constitute the model. On the other hand, the vector meanings create a pattern of directionality, uniform relationships, and immediate connections between the components.

5. DISCUSSION

This paper has focused on the relations between image and text in services marketing research articles. What the analysis suggests is that vectors have several functions. Generally, they signal proximal relationships between components in the models, and they represent agency, in other words, which participant in the relation initiates the connection, as exemplified in the information flow in the first figure. Vectors can also make the relationships seem dynamic, especially when the model involves concepts of material or cognitive effects. As the analysis of projection attempted to show, the visual meanings are a second representation of the textual meanings, which are more specific and explicit.

Considering the notion that visuals support the research claims, the figures in this sample may help services marketing authors to compete for space just as biologists do, recalling Miller's (1998) discussion. The figures would draw readers' attention to the newness or innovativeness of the work. Interestingly, though, in working with models, these marketing authors tend to resort to the same pattern, so that distinctness and innovation seem to be rather obfuscated by the repeated visual resources, that is, the arrow, the square, and the circle. It seems to be the case that visuals are a resource that more tangibly shows a complex idea that is realized verbally with conceptualization. In other words, the preference for the same pattern choices in the design of the models can be argued to give the readers

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a familiar resource, while the verbal text develops the new conceptualization of complex and abstract ideas.

One aspect of the context of academic writing that this article does not address is the agents around the texts. Considering that, recalling Rose (2001), images are related to producers and audiences, it would be insightful and productive to learn what the members of academic discourse communities know about the multimodal genres that are available to them. This could include questions such as the values that researchers attribute to figures and other kinds of images in reading and writing texts, the significance of visuals for journal editors, the interpreting strategies of potential readers of articles like these, and the expectations of professors about students' ability to interpret visuals in textbooks.

Nevertheless, for the purpose of this paper, the image-text relation is arguably an appropriate starting place for an understanding of verbal and visual meanings in an academic context. Furthermore, an analysis of published articles has the potential for pointing to questions that can be pursued in further studies.

6. PEDAGOGICAL IMPLICATIONS

There are some implications of the visual-verbal relation for the teaching of reading and writing in academic settings. For one thing, the values and practices of students may not be attuned to the important capacities of image and text as complements of each other. Do novice readers take into account the multimodal nature of the genres they read? What do novice writers understand about the function and importance of visuals in their own writing?

A separate question is the extent to which a grammar of visual design such as Kress and van Leeuwen propose could be of use in guidelines for writers and in the teaching of academic writing. Considering the complex theoretical base underlying their grammar, careful adaptations would need to be made for it to become practical material for pedagogical use in the process of writing.

Further study of the image-text relation in academic writing could investigate other areas of research in marketing, such as Organizations or Finance, and other disciplinary areas as well. In addition, future investigations could explore the relation between images and social institutions. For Hyland, the writing of disciplinary communities is related to "forms of power in those organizations" (Hyland, 2000: 11).

Johns sees this question in relation to teaching ESP and argues for understanding "how the ideologies of particular academic and professional cultures may affect the ways in which information is presented" (Johns, 1998: 193). It is important to explore what student writers understand about how visuals reflect ideologies, as well as their ability to use visuals effectively in the genres they must produce.

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Some tentative suggestions can be made for building students' awareness and ability to use visuals. One suggestion is that, through explicit teaching of aspects of the grammar of visual design, such as the action potential of the vector or the narrative and analytical processes, students could become aware of the potential of this approach for designing their own visuals. A practical activity for building awareness of visual-verbal meanings (the projection process), could have students explain the results of small empirical research, which could be their own or provided by the teacher, and then try to identify the visual elements that will represent those results. Students could also examine figures taken out of journals and then write commentaries. Another suggestion is that students from diverse disciplinary areas could examine the visuals in journal articles from their areas, compare what they find, and discuss the ideologies of their areas. Students could also write the author guidelines for a new journal, including the specifications about the use of images.

Though students are intensely involved in their academic culture, they are often left on their own to discover the issues, values, and practices of their community. Visuals are a significant resource that needs to be learned not by trial and error but by careful instruction.

7. CONCLUSION

This paper has analyzed a sample of visual representations of models in research articles in services marketing, with a view to characterizing the use of figures and the examining the interrelation between this kind of visual language and the verbal text. The practical objective of the study was to suggest implications of the insights gained from the study for the study and teaching of academic writing. The main bases for the analysis were the grammar of visual design of Kress and van Leeuwen (1996/2006) and the model of image-text relations of Martinec and Salway (2005), principally the logico-semantic relations in the projection process. The analysis illustrated that (1) the geometric arrangements in the figures represent the analytical process and show the modeling of services marketing, (2) the vectors in the figures correspond to a transactional, or material, process and show general meanings of direction and movement, interrelationships between components, and dynamics, and (3) these image-text relations can adequately be accounted for by the projection process. This last item offers a small contribution of this paper, in that an application of this theoretical notion seems to explain the interplay of the visual and verbal meanings in the services marketing articles. What words and images do in these articles can be seen as an integration of meanings, which more study might possibly confirm or extend.

This paper has focused on an aspect of multimodality in academic writing. It has attempted to bring a contribution to the study of images and texts by focusing on a disciplinary area that has received less attention than areas in the hard

sciences. Finally, the results of this study could become part of materials for teaching academic writing. It is hoped that applications of studies like this one will ultimately help students gain a well-grounded knowledge of visual and verbal capacities and meanings that they can use for effective academic writing.

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Appendix

Sample of articles from *Journal of Services Marketing*

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