**RESEARCH – EVOLUTION – APPLICATION**

# LSP
# &
# PROFESSIONAL COMMUNICATION

*Fagsprog og Fagkommunikation*
*Langues de spécialité et communication professionnelle*
*Fachsprachen und Fachkommunikation*
*Lenguajes Especializados y Comunicación Profesional*

**An International Journal**
**(Formerly Unesco Alsed-LSP Newsletter)**


## Volume 1, Number 1
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LSP and Professional Communication
DSFF / LSP Centre
Dalgas Have 15
DK-2000 Frederiksberg
Denmark

Tel: +45 38 15 32 89 Fax: +45 38 15 32 33 E-mail: fq.fc@cbs.dk

For further information please consult our homepage: http://www.dsff-lsp.dk



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## International Advisory Board



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LSP and Professional Communication is an international refereed journal aimed at those interested in language for special purposes and professional communication. The aim of the journal is to build bridges between theoretical and applied research within these areas along with the practical applications of both types of research. The articles published in the journal will be targeted towards researchers as well as practitioners.

The Editors especially wish to encourage papers on: recent research within the field of LSP and new comments or reports on particular problems or on situations special to certain countries or regions. Papers should be written in an accessible though rigorous style, which also communicates to non-specialists.

DSFF

*would like to thank*

*the following foundations and official bodies*

*who have given financial help for the establishement of DSFF and for the creation of the*

*new International Journal "LSP and Professional Communication":*

(In alphabetical order)

**Direktør Ib Henriksens Fond**

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(Danish Association of Business Language Graduates)

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*LSP and Professional Communication*
*Volume 1, Number 1, April 2001*

# Contents

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# EDITORIAL:

La présente revue sera à l'avenir le point de ralliement du réseau mondial de la nouvelle association internationale "Association danoise des LSP et de la communication professionnelle" (DSFF), crée l'an dernier à Copenhague. Le but de l'Association est de poursuivre et d'intensifier l'action, au niveau mondial aussi bien que national, menée depuis 25 ans par le Centre LSP de Copenhague, secrétariat international du réseau Unesco Alsed-LSP. La nouvelle revue remplace par conséquent l'ancien Bulletin "Unesco Alsed-LSP Newsletter".

A l'intention de nos nouveaux membres et lecteurs, qui ne connaissent pas nécessairement les origines du projet "Alsed" de l'Unesco, nous nous permettons de récapituler brièvement son histoire[*].

En 1975, l'Unesco adopta le programme Alsed (Alsed = Anthropology and Language Science in Educational Development). Un des volets du programme était voué aux LSP, et sur la demande de l'Unesco, l'HEC de Copenhague (CBS) accepta, en 1976, de réaliser les intentions formulées dans le programme Alsed, à savoir, en bref:

1. établir un réseau international et faire l'inventaire de tous les centres LSP (départments universitaires, institutions, groupes de recherches etc.) dans le monde entier.
2. promouvoir la coopération entre les membres du réseau, par exemple en organisant des conférences et des symposiums.
3. diffuser les informations sur toutes sortes d'activités dans le domaine des LSP.

Le Centre LSP de Copenhague, créé en 1976, devint le secrétariat permanent du réseau Unesco Alsed-LSP, et le premier modeste bulletin (4 pages) parut en juin 1977.

Le financement fut assuré pour 3 ans par l'Unesco et ensuite par l'HEC de Copenhague (CBS), entièrement pendant une dizaine d'années et partiellement depuis 1990.

Il est satisfaisant de constater aujourd'hui que les visions de la Commission de l'Unesco, chargée de mettre au point le programme Alsed en 1975, étaient réalistes et viables. Satisfaisant également de voir, que dans une large mesure le projet a été réalisé: il existe aujourd'hui, par les soins du Centre de Copenhague, un réseau LSP mondial. Les centres des différents pays qui l'ont désiré, figurent dans l'inventaire "World of LSP" qui, après trois éditions papier, se trouve actuellement sur Internet. De nombreux symposiums ont été organisés par notre Centre à travers le monde, souvent en collaboration avec d'autres organisations, et enfin le simple bulletin d'information était déjà devenu une revue internationale scientifique respectée.

[*] Voir aussi Unesco Alsed-LSP Newsletter: Vol.1, No.1-1977 / Vol.13, No.3-91 / Vol.15, No.1-93 / Vol.15, No.2-93 / Vol.18, No.2-95 / Vol.20, No.1-97 / Vol.23, No.2-00.

Cependant, les responsables du projet Unesco Alsed ont jugé que l'importance croissante des LSP dans tous les domaines de la société et dans tous les pays, justifiait une intensification du travail et un élargissement du réseau. Il semblait surtout important d'établir des liens plus étroits entre chercheurs et utilisateurs et d'intéresser davantage les autorités aux problèmes LSP.

C'est donc à cette fin qu'a été créée la nouvelle organisation danoise DSFF, qui se veut aussi internationale et avec laquelle le Centre LSP a fusionné. Quatre Universités danoises et deux grandes organisations professionnelles[**] ont participé à la mise en place de notre association, qui est ouverte à toutes personnes, institutions, organisations et entreprises dans le monde entier qui s'intéressent aux LSP. Par la même occasion, il a été décidé de moderniser et d'agrandir l'ancienne revue. La rédaction a été complétée par un conseil consultatif ("Advisory Board") international, qui compte pour l'instant une vingtaine de spécialistes renommés, couvrant tous les domaines des LSP et représentant autant d'universités dans une dizaine de pays. La revue paraîtra deux fois par an (en avril et en octobre) et sera complétée par notre nouveau site qui sera régulièrement mis à jour et contiendra aussi les informations pertinentes accumulées jusqu'ici, y compris le "World of LSP" (voir l'adresse de notre site ci-dessous).

Nous vous rappelons que toutes les informations utiles que vous pourrez nous faire parvenir, seront diffusées sur notre site ou dans notre revue au profit des autres membres. C'est l'idée même du réseau, et nous remercions d'avance nos lecteurs pour leur précieuse collaboration.

Le Comité Rédacteur

http://www.dsff-lsp.dk

*NB! Certaines informations se trouveront encore jusqu'à nouvel ordre sur l'ancienne adresse:*
*http://www.cbs.dk/departments/LSP*

**DÉLAIS**

Toute contribution destinée à être publiée dans notre nouvelle revue "LSP and Professionel Communication" doit nous parvenir dans les délais suivants:

October (Vol. 1, No. 2, October 2001): **le 1er mai 2001**
Avril (Vol.2., No.1, April 2002): **le 1er décembre 2001**

*Pour plus de détails:*
*Veuillez consulter le site de DSFF (rubrique: International LSP Journal)*

[**] Voir aussi notre site: http://www.dsff-lsp.dk

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# EDITORIAL:

From now onwards this review will serve as the focal point for the worldwide activities of the new international network: "The Danish Society for LSP and Professional Communication" (DSFF), set up last year in Copenhagen. The aim of DSFF will be to pursue and intensify, at both the global and national levels, the work promoted for the last 25 years by the Copenhagen LSP Centre, the international secretariat of the Unesco Asled-LSP network. Consequently, the new review will replace our former bulletin: "The Unesco Asled-LSP Newsletter".

For the benefit of new members and readers, who are not necessarily familiar with the origins of the Unesco "Alsed" project, we would like to take this opportunity to give a brief recapitulation of its history*.

In 1975, Unesco set up the Alsed programme (Alsed = Anthropology and Language Science in Educational Development). One of the aspects of the programme was LSP and, at the request of Unesco, the Copenhagen Business School agreed in 1976 to carry out the intentions formulated in the Alsed programme. These were, in brief:

1. to establish an international network and list all the LSP centres (university departments, institutions, research groups, etc.) in the entire world,
2. to promote cooperation between the members of the network, for example by organizing conferences and symposiums,
3. to spread information about every aspect of activity within the domain of LSP.

The Copenhagen LSP Centre, created in 1976, became the network's permanent secretariat from where the first modest number of our bulletin (4 pages) appeared in June 1977.

Its initial funding was provided by Unesco for the first three years, and then entirely by the Copenhagen Business School (CBS) until 1990. After that date CBS continued to do so on a partial basis.

It is a source of genuine satisfaction to be able to say that the visions of the Unesco Commission responsible for putting the Alsed programme into effect in 1975 were both realistic and viable. It is equally satisfying to see that in large measure the project has been carried out and that, thanks to the stewardship of the Copenhagen Centre, there is now a worldwide LSP network in existence. Those centres in the various countries which wanted to be included are now to be found in our listing: the "World of LSP" which, after appearing three times in book form, is now available on the Internet. Many symposiums have been arranged by our Centre throughout the world, often in collaboration with other organizations, and, ultimately, what began as a simple information bulletin had already become an internationally respected scientific review.

* See also Unesco Asled-LSP Newsletter: Vol.1, No.1-1977 / Vol.13, No.3-91 / Vol.15, No.1-93 / Vol.15, No.2-93 / Vol.18, No.2-95 / Vol.20, No.1-97 / Vol.23, No.2-00.

Nevertheless, those responsible for running the Unesco Alsed project felt that the increasing importance of LSP in every aspect of society and in every country justified an intensification of the work and the enlargement of the network. Above all it seemed vital to strengthen the links between researchers and end-users and to increase the awareness of the authorities of the need for LSP.

It is therefore to achieve those ends that the new Danish organization (DSFF) has been created. Its intention is to be as international in its scope as the LSP Centre with which it has now amalgamated. Four Danish universities and two major professional associations** have participated in setting up our organization whose membership is open to all individuals, institutions, organizations and enterprises throughout the entire world that are interested in LSP. At the same time it has been decided to modernize and enlarge the former review. The editorial board has been supplemented by an international Advisory Board, which numbers at present some twenty world-renowned specialists covering all aspects of LSP and representing as many universities in a dozen countries. The new review will appear twice a year (in April and October) and be complemented by our web-site, which will be regularly updated and contain all pertinent information so far accumulated, including the "World of LSP" (see our web-site address below).

We should like to remind you that whatever useful information you are able to send us will be put on to our web-site or made known through our review to the advantage of other members. It is the raison d´être of our network and we thank our readers in advance for their invaluable cooperation.

The Editorial Board

http://www.dsff-lsp.dk

*NB! Some information will still continue to be available*
*for the time being on our old web-site:*
*http://www.cbs.dk/departments/LSP*

**DEADLINES**

Any contribution to be published in the International Journal "LSP and Professional Communication" should reach us within the following deadlines:

October (Vol. 1, No. 2, October 2001): **May 1st 2001**
April (Vol.2, No.1, April 2002): **December 1st 2001**

*For more details:*
*Please consult our web-site (rubric: International LSP Journal)*

** See also our web-site: http://www.dsff-lsp.dk

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**ARTICLES:**

# More than Meets the Eye
# The Role of Visuals in Science Textbooks

Steven Darian
Department of Education
Rutgers University, USA

## 1. Introduction

In this article we will examine the role, or functions, of visuals in introductory science texts. These functions are surprisingly varied and numerous; as many as ten or fifteen, depending on what you might consider primary or secondary functions. But more of this in a moment. My point is that there are more major functions than meet the eye, far more than the traditional role we attribute to visuals--that of creating or heightening the reader's interest.

Our study begins with a section on The Significance of Visuals, including a few words on scientists' use of visuals, a topic that has received a great deal of attention by scholars and scientists alike; it also treats the reader's use of visuals. The next section addresses the problem of Understanding Visuals, including the degrees of reality, or *similitude*, of various visuals; and with various genre-specific problems. The third section will explore the many functions of visuals, that appear in our corpus and other genres of scientific writing.

Part Four will analyze the corpus, which is drawn from two university-level texts: *Biology: Life on Earth* (Audesirk & Audesirk, 1993) and *General Chemistry* (Ebbing, 1990). This section will examine such verbal-visual relationships as: captions and figure references, complementarity and redundancy, linearity and branching, and the interaction between graphics.

It will also discuss the reciprocity between genres and functions. I would like to begin with a few remarks on the iconic nature of written language.

## 2. The iconic nature of written language

> The evolution of language started with pictures, progressed to pictographs... to phonetic units, and then to the alphabet
>
> The symbol systems we call language are inventions and refinements of what was once the object perceptions in picture-strip mentality
>
> Donis Dondis

The use of visuals in human communication has been with us since the start of recorded time. Twenty thousand years ago, before alphabets and written language, there were cave paintings with iconic meanings behind them, that reported the world as people understood it at the time (Dondis, 1973: 2. Chauvet, 1996).

As philologist I. J. Gelb emphasizes, all writing is basically pictorial, representational, in origin (Gelb, 1980: 1). “Thinking in concepts,” suggests Koestler, “emerged from thinking in images through the slow development of the powers abstraction and symbolization, just as phonetic script emerged by similar process out of pictorial symbols and hieroglyphics” (1964: 322). Egyptian hieroglyphics, for example, blended iconic and phonetic signs into what C.E. Hodge calls a superb semiotic system (Meltzer, 1980: 64).

Indeed, graphic devices, as Macdonald-Ross reminds us, have been invented “to help *represent, explain,* and *control* the world in which we live” (Macdonald-Ross, 1977: 48). We find a clay map from Mesopotamia, for example, dated as early as 2500 B.C.

The **iconic** nature of written language comes down to us today, in Chinese and Arabic. We find iconic elements as well, in languages that use the Roman alphabet; for instance, in certain typographic marks: the ampersand (&), and percent sign (%); parentheses, or the exclamation point for emphasis (!), plus various prosodic markers like the interrogative (?) and others that indicate different degrees of pause. Typographic marks, in short, are nonalphabetic and thus represent an additional semiotic system that is integrated with what we think of as writing.

Other elements of typography provide emphasizers, signaling the important of certain information--items like boldface, italics and underlining, as well as different type size in quotes and headings.

We find further remnants of the iconic in our use of Arabic numbers, in which one mark may signify a series of letters that spell out the word (7 and seven, for example), or two marks representing a single word (19 and nineteen). In fact, the entire symbol system of mathematics has a strong iconic bias.

## 3. Significance of visuals

> It is impossible to think, analyze, or create without mental imagery
>
> Aristotle, DeAnima

> Visualization is the way we think. Before words, there were images.
> Visualization is not just an idea; it is one half of consciousness.
>
> Don Gerard, in Samuels, 1975, xi.

Our first learning comes through tactile awareness, quickly integrated with the sense of taste, smell, and hearing. These senses are soon overshadowed by iconic forces -- the perception of the world by visual means.

"From nearly our first experience of the world," urges Donis Dondis, "we organize our needs and pleasures, preferences, and fears, with great dependence on what we see" (Dondis, 1973: 1). Arnheim argues for the perceptual basis of thought itself, especially for such operations as *comparisons* and *problem-solving* (functions we will examine below).

He states that "Concepts are perceptual images, and ...thought operations are the handling of those images;" a strong claim modified by the caution that "images come at any level of abstraction" (Arnheim, 1969: 13, 227)

Estimates are that about 85% of all the messages we receive are visual, 10% auditory, and the rest taken in through other channels (Doblin, 1980: 89). We can divide visual messages into two classes: *orthographic* (words) and *iconographic*, including elements like pictures and diagrams.

In this paper, I will use the term visuals to refer to iconographic elements. Similarly, we may distinguish graphic from typographic; using graphic to refer to visuals.

The role and significance of visuals vary with the genres they appear in. About 30% of scientific and technical prose in general are illustrative in nature (Rubens, 1986: 80). This would include a range of types, from textbooks to research articles and technical manuals. Similarly, visuals

(figures, tables, etc.) occupy one-third to one-half the space in typical research articles, as shown in an analysis of *Science* and *Nature* (Miller, 1998: 29).

Within that genre, experimental reports tend to display more graphics, theoretical analyses more equations (with their strong iconic element) (Lemke, 1998: 89).

### 3.1 Scientists' use of visuals

> The words or the language, as they are spoken and written, do not seem to play any role in my mechanism of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be "voluntary" reproduced and combined.
>
> Einstein

Many scholars--historians, philosophers of science, and scientists themselves--have commented on the role of visualizing among practitioners, both for *discovering* and *explaining* their work. Einstein, for one, always claimed to think in terms of nonverbal imagery. Indeed, nuclear physicists in general rely heavily on *models*, especially those that can be drawn on paper (Giere, 1988: 137). As we will see, models--specifically three-dimensional models--represent the closest thing to "reality," even more than do photographs. Many studies have shown a strong correlation between physics and spatial visualization (For references, see Lord, 1983: 5).

One study revealed that spatial ability was very important in conceptualizing chemical reactions (Baker & Tally, 1972). And of course we have Kekulé's well-known narrative describing his discovery of the benzene ring (Shepherd, 1978) (For an excellent list of citations in different sciences, see Lord, 1983: 3ff). Indeed, an investigation of 64 eminent scientists found that all of them possessed an extremely high degree of spatial conceptualization (Roe, 1952).

What explains this strong correlation between scientific inquiry and visualization? As philosopher of science Steven Toulmin explains: "The heart of all major discoveries in the physical sciences is the discovery of *novel methods of representation* (italics mine) and so of fresh techniques by which inferences can be drawn (Toulmin, 1953: 103ff). Macdonald-Ross cites as examples of these, the use of the calculus in Newtonian dynamics and the role of chemical equations in the periodic table (Macdonald-Ross, 1977: 71).

The visual element also provides "the material form of scientific phenomena;" in other words, a form in which the object of one's inquiry may be examined and manipulated (Lynch, 1985: 43). Lemke offers a further insight: "The concepts of science," he suggests, "are not solely verbal... They are *semantic hybrids*, simultaneously... verbal, mathematical, and visual" (1998: 87).

**Explanation.** As Lynch and Woolgar point out, "engineering, botany, architecture, mathematics, none of these sciences can describe what they talk about with texts alone" (1990: 34). When scientists communicate in print, they combine these verbal, mathematical, and iconographic elements "and a host of specialized visual genres seen nowhere else" (Lemke, 1998: 87). Many scientists actually write their articles in order to highlight the visual. (Miller, 1998: 30. For a deeper analysis, see Miller, 1981: 383-395).

### 3.2 The reader's use of visuals

Scientists and nonscientists sometimes read things differently. An expert reader may actually study the visual before reading the rest of the article (Miller, 1998: 30).

In the field of biology, Lord has described how the entire discipline has shifted from a taxonomic to a "conceptual" approach, with greater stress on lab work and a deemphasis on lecture. Likewise, a movement from rote recall to inquiry. And finally, the movement from dull two-dimensional graphs to color-filled multidimensional displays and the manipulation of models. All this has brought with it the development of iconic processes. At this point, competence in visual literacy "became an important aspect of achievement." (Lord, 1983: 16-17).

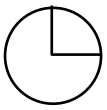
## 4. Understanding visuals

Before we proceed to the functions of visuals and analysis of our corpus, I would like to say a few words on the matter of understanding visuals. We will then use this information in the inquiries that follow.

### 4.1 Degrees of similitude

A central concept for our study is the **degree of similitude** of a visual, or graphic. In other words, how close does the graphic come to "the real thing," to the actual phenomenon? For this analysis, I would like to draw on the work of industrial designer Jay Doblin, who presents an excellent typology of messages in print media (Doblin, 1980: 89-111) Doblin divides messages into three classes, or forms, which we can call verbal (lexical), numeric, and visual. Every message, suggests Doblin, has an independent form and

content; citing, as example, the phrase: “It is three o’clock,” which can also be represented as

3:00 or  .

He then offers three subsets under the category of visuals. Let us call them **ideographic, diagrammatic,** and isogrammatic, or **realistic**. Ideographs include such things as Chinese characters, road signs, and flags. He also uses the term **marks** for geometricized symbols with ascribed arbitrary meanings; in other words, letters. Diagrammatic visuals include charts and graphs “used for visualizing processes that are otherwise difficult to comprehend.” Realistic techniques are visual representations of reality, and include items such as drawing, photographs, and models. Maps would be somewhere between the last two categories since their contours have similitude but their contents may not. Degrees of similitude could thus be arranged on the following scale:

**abstract** **realistic**

marks tables charts & graphs diagrams maps drawings photographs models

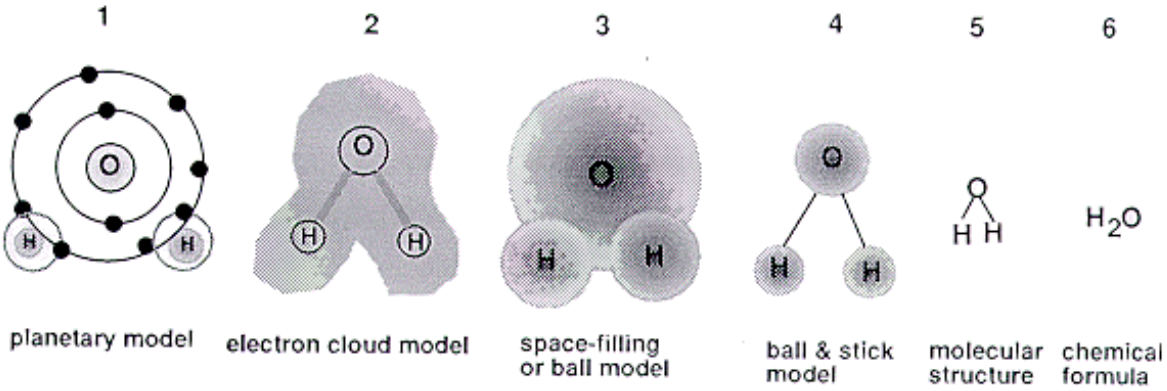
The segment including charts, graphs, and diagrams forms a bridge between the abstract (words) and the most realistic representations. This makes them better suited to describe processes than would pictures. Winn cites as an example, a simplified diagram of the digestive system, which he suggests, illustrates more effectively how it works than a realistic picture of organs and tissues (Winn, 1987: 153).

Doblin notes that “the most realistic form of drawing, illustration, is nearly as realistic as color photographs, but not nearly as realistic as prototype models.” He goes on to say that an object can be represented in any of the forms listed above, a claim open to some dispute (Lemke, 1998: 110. Gombrich, 1972: 87).

### 4.2 Representations and reality

Our biology text itself discusses some of the problems in representing simple molecules (B33). The authors describe *six different ways* of visualizing a water molecule (H2O), each with its own benefits and drawbacks. The most familiar (1) is the planetary model, depicted as a miniature solar system, with the electrons revolving around the nucleus. Despite the fact that planetary models are inaccurate, it best illustrates how atoms bond together to make a molecule. The (2) electron cloud model (in which the three atoms form a

triangle, with the entire surrounding area shaded in) is the most accurate representation since it captures the idea of electrons roaming over a relatively large area. But it is hard to draw.




This roaming nature of electrons is best captured by a (3) space-filling, or ball model, which shows two small balls marked **H** (hydrogen) in front of a large ball marked O (oxygen). This contrasts with (4) the ball-and-stick model, which shows three small balls connected by sticks (single, double, or triple sticks, depending on the number of bonds). Ball-and-stick models are easier to draw and best represent the bonding feature of molecules. The simplest and easiest geometric representation (5) shows the three atoms in triangular relationship, with simple lines connecting the two hydrogen atoms to the one oxygen atom. Finally, if the structure doesn't need to be shown at all, one can use (6) the simple chemical formula.

Thus we have trade-offs: *different criteria* as a basis for the various forms of representation. These criteria include: accuracy #1: methods of bonding; accuracy #2: number of bonds; ease of drawing; to which we may add the saving of space (with the chemical formula).

### 4.2 Genre-Specific Problems

Individual graphics have their own problems: in design, function, and comprehension. Design considerations fall outside of our inquiry. The relation of graphic to function will be discussed in Part Four. Here, I would like to examine some of the comprehension problems posed by several visuals. But first, I would have a word about definitions. There is some confusion about the words *chart* and *graph*. The two words are often used indiscriminately, even by experts. Graphs are sometimes considered a type of chart. In this paper, I will use the term **graphs** for those items that have trend lines--lines that indicate changes. The term **chart** will be used for graphics

that enclose volumes of space (bars, circles, etc.) (For a slightly different view, see Winn, 1987: 153).

### a) Photographs

Kolers suggests that few photographs are a truly accurate reflection of reality. And that one must learn to read picture just as much as any other form of symbols (Kolers, 1980: 257. Gombrich, 1972: 89). The greater the realism in a photograph, the more information. But realism does not necessarily correlate with learning. As Perkins points out, the important factor is whether or not that realism adds information that the viewer needs (Perkins, 1980: 269).

We may even find "too great a degree of realism." In its effort at achieving the highest fidelity, a photograph or realistic drawing may include *too much* irrelevant information, that detracts from the function of the visual.

Another consideration is the problem of multiple photographs. As soon as the reader is confronted with a series of pictures, she must decide on the relationship between them. In our corpus, these relationships are one of:

(1) comparison, (2) sequence, or (3) details (e.g., a large picture and several small inserts).

### b) Tables

A problem with tables is the difficulty of deciding what is important since all items receive equal emphasis. They do not specify relationships and so are easy to misinterpret. A significant trend is much harder to identify in a table than in a chart or a graph. There are many people who cannot interpret the simplest table. This may be due in part to its unfamiliar perspective: the need to process information vertically and horizontally at the same time--which of course is so different from the way we read. Another weakness, as Macdonald-Ross suggests (1977: 63), is its abstract nature, composed as it is solely of words and numbers. In this way, it is one of the least iconic of all graphical forms.

### c) Graphs

After tables, graphs seem to pose the greatest problem to understanding. One reason is that they are hard to interpolate because of their continuous nature. In order to get even an approximate value, one has to interpolate, or mentally connect the point on the graph line to its corresponding points of the vertical and horizontal axes. In addition, some graphs contain more than one trend line, which adds the function of comparison to the other correlations. In short, graphs are good for presenting data but not especially good for

teaching. As Winn says: “Their function is mainly descriptive and not really instructional (Winn, 1987: 192). We find an acknowledgment of this complexity in our biology text (B366), where the text goes into considerable detail explicating the graph in general and the four individual trend lines in particular.

In a study of seventh graders, Roller found that graphs actually increased the difficulty of reading despite adequate literacy and math skills of the students. Vernon (1951) came to a similar conclusion in her study with an older population. Roller suggests that “text and graph information are not commonly merged in the mind of the reader” (1980: 307).

## 5. Functions of visuals

Thought needs shape

Rudolph Arnheim

Visuals serve far more functions than meet the eye. Our corpus reveals at least a dozen. We can examine them along several dimensions. One is to think in terms of primary and secondary functions of visuals. Primary visuals are those that are an end in themselves, such as understanding or remembering. Secondary functions are those that ultimately serve a primary function. One such is summarizing, which can serve the primary functions of understanding, remembering, and so forth. Secondary functions are no less important than primary ones.

I would like to begin this section by noting the various functions of visuals and offering a few comments on each:

### 5.1 Interest-Motivation

A chief function of visuals in most genres of science writing, apart from research articles, is that of interesting or motivating the reader. From the creator’s point of view, it may also be seen as an instance of artistic expression. One study by Mayer found that 85% of the illustrations in sixth grade science textbooks were “decorational”, which the author defines as having no useful information; or “representational,” such as an unlabeled photo of a rocket ship in test flight (Mayer et al, 1995: 31). We find comparable graphics in our corpus--usually photographs. I would suggest, however, that such visuals serve a very important function; namely, that of interest.

As for artistic expression, Gelb points out that historically, there was no sharp division between artistic and communicative graphics. “The aims of communication and expression are so closely intertwined in all forms of human behavior that normally it is impossible to discuss one without being forced to consider the other” (Gelb, 1980: 8. Gombrich, 1972: 94).

## 5.2 Understanding

Another main function of visuals in our corpus is that of understanding. There are many items that are hard to grasp through words alone: various concepts and physical relationships, processes and temporal occurrences. Some simultaneous events are hard to understand through the linear constraints of text. In Arnheim’s words: “Intellectual thinking dismantles the **simultaneity** of spatial structure” (1969: 246). Even sequentiality--especially if complex--may also be hard to follow in words. Visuals such as diagrams are particularly well-suited to express temporal events, both simultaneous and sequential. Similarly, a long stretch of text may be quite inadequate for describing the parts--say, of an organ or bodily system, and the relative position of those parts. Visuals serve the following major subfunctions in our corpus. Understanding of (1) abstract processes (B338), (2) parts and spatial relationships (B33, 196, 247, 248. C202), and (3) movement and sequence (B244, B404. C192).

In general, according to Lemke, “our visual discrimination is far better than our linguistic system at dealing with... continuous variations in space, line, shape, and color” (Miller, 1998: 31. Quoting Lemke, 1995).

Visuals also eliminate the lexical and grammatical complexity often found in text. They have no *ifs*, *althoughs*, *howevers,* or *instead ofs* that can make the verbal message extremely confusing. There is one less symbol system the reader must decode. This, of course, depends on the visual’s degree of similitude. Graphs, as we have seen, require a great deal of interpretation, especially for the uninitiated, while photos require far less.

Dondis goes as far as to suggest that people actually *prefer* visual representations to written explanations, noting: “In the modern media...the visual dominates; the verbal augments. Print media is not dead yet, nor will it ever be, but, nevertheless, our language-dominated culture has moved perceptibly toward the iconic” (Dondis, 1973: 7). This is apparent in the ever-increasing influence of television and computers. As we have seen, it is also reflected in the changed approach in the teaching of biology, that emphasizes visual, object-oriented, hands-on phenomena.

**For Quick Understanding.** Speed of processing is an additional factor in our discussion of understanding. Certain visuals in our corpus allow the reader to grasp information much faster than does printed text. This realization is the basis for those semiotic system in which rapid understanding and reaction is crucial; systems such as road signs and warnings (on labels and otherwise). We respond to these stimuli quickly once the are learned. As a result, "they diminish the amount of decoding time needed" (Goodman 1997: 42)." Sight," in the words of one scholar, "is swift, comprehensive, simultaneously analytic and synthetic" (Gattegno, 1969).

## 5.3 Remembering

> Sight...requires so little energy to function--as it does--at the speed of light, that it permits our minds to receive and hold an infinite number of items of information in a fraction of a second.
>
> Caleb Gattegno

Psychologists have conducted a great many experiments on the relationship between visuality and memory. The general consensus is that information entered visually is more easily remembered than information taken in verbally (Shepherd, 1966; Tuersky, 1969; Paivio, 1986; Lord, 1983). Fleming emphasizes that "objects and pictures are remembered better than their names, and concrete words... better than abstract words" (Macdonald-Ross, 1977: 56. Citing Fleming, 1970). And Pressley, in a study with eight-year-olds, found that having the children form a picture in their heads after reading each paragraph of a story--improved their recall of the information, compared to a control group that did not form images (Pressley, 1976).

Gombrich speaks of the **mnemonic** power of the image (1972: 91), as does Levie (1987: 16). And Yates, in his classic study, describes how Roman orators would remember their topics by placing them in imaginary rooms in an imaginary house, and stroll from one room to another, retrieving them.

Shepherd and Chipman (1970) describe the relationship of the mental image to the real event or object--as a second order isomorphism. In other words, people tend to have a one-to-one relationship between the mental representation and the thing itself. As for the range of graphics found in our corpus, most do not have a high degree of similitude. Only photographs, 3-dimensional models, and some drawings "pretend" to an approximation of reality. We will examine the idea of degrees of realism later in the article.

Samuels suggests what we might call a certain "haptic" or "synesthetic" function of visuals--I'm not sure there is a word for it--when he says: "Visualization enables a person to incorporate into his body or being in a concrete way that which must otherwise be an abstract idea" (Samuels, 1975: 28). We might think of this as a process of reification: making real--in this case, with a visual--a concept that does not have a natural physical form. We can infer that the more tangible a concept or phenomenon, the easier it is to understand and remember it.

### 5.4 Elaboration

As we will see in Part Four, a major function of visuals in our corpus is elaborating on statements in the text. Graphics can show physical relationships, size, shapes, etc., without having to describe them in detail. They can provide additional information, sometimes in the form of details, sometimes in the form of **examples**. Examples thus become a secondary function of visuals.

### 5.5 Economy

> One of the factors which makes graphic organization so powerful is that it can draw simultaneously on a number of different codes and so achieve great economy of expression.
>
> Macdonald-Ross

Conversely, visuals provide a source of economy; specifically, lexical economy. A visual requires fewer words to be processed than does text. As Lord points out, this saves space in a textbook (Lord. 1983: 94; Miller, 1998:30). In this context, let us examine one or two graphics from our corpus and see how they would be rewritten as text.

The first is a photograph from our chemistry book, in which the text states: "Figure 11.38 shows a demonstration of the electrical conductivity of graphite" (C440). The photo then shows an 8-volt battery, a meter, and a graphite pencil, all connected to each other by alligator clips. The visual-to-verbal rewrite might look something like this: "The conductivity of graphite can be easily demonstrated by an 8-volt battery, connected to a meter and a pencil by wire. The 6-volt reading on the meter indicates that the graphite pencil conducts electricity."

That was a short one; what Edward Tufte calls a visual with low *information density*. However, visuals often contain a lot more information, that would require a lot more words to compensate for them. Take another example; in

this case, a drawing of the regions of the brain, including the functions of the various regions (B799). The lead-in from the textbook reads: “The functions of the cerebral cortex are localized in discrete regions.” My rewrite:

> The human cerebral cortex is divided into four regions: the frontal, parietal, occipital, and temporal lobes. The frontal lobe deals with the higher intellectual functions such as speech. It is also the premotor and primary motor area, governing the movement of legs, trunk, arms, torso, hands, face, and tongue. The parietal lobe is the primary sensory area and governs sensory associations. The occipital lobe is the area of visual association while the temporal lobe governs language formation and comprehension.

The drawing present the information in a much more holistic way.

### 5.6 Summarizing

A major function of visuals, in our corpus and universally, is their ability to summarize--to pull together in one focused space--a considerable amount of previously given information. At the same time, we must consider summarizing as a secondary function. What are the reasons for summarizing? They include: remembering, understanding, and quick reference.

When placed at the beginning of a section, such visuals can serve as advance organizers, providing an organizational framework for the material (Winn, 1987: 159; Levin et al, 1987: 56).

### 5.7 Reasoning/Analysis/Exploration/Discovery

> We envision information in order to reason about, communicate, document, and preserve... knowledge.
>
> Edward Tufte

The chief function of statistical graphics, according to Tufte, is helping people reason about quantitative information (1983: 91). One way of accomplishing this is enabling people to perceive new relationships. This visual can do by providing comparisons and bringing out cause-and-effect relationships. “Such displays,” urges Tufte, “are often used to reach conclusions and make decisions” (1997: 10).

**Making Comparisons.** Several writers on the subject stress the importance of graphics for making comparisons. Otto Neurath, father of the isotype chart, states that comparison is the major function of visuals (in Macdonald-

Ross, 1977: 55). Likewise, Howard Paine, art director of *National Geographic*, mentions comparison as an important function of visuals (Paine, 1980: 143). Similarly, Tufte (1983: 13) notes that graphics "encourage the eye to compare different pieces of data." Macdonald-Ross (1977: 403) notes that "many of the formats (such as bar charts and isotypes) are naturally adapted for visual comparison, and would hardly be chosen if rote recall of exact numbers was the intention". In research articles, according to Miller (1998: 37), the most important use of visuals is highlighting relationships of comparison, in order to imply cause-and-effect relationships. In our corpus, comparison is presented chiefly by tables, drawings and multiple photos.

### 5.8 Problem-Solving

Studies of cognition suggest that humans have two types of cognitive processes: a linguistic-analytical type and a holistic-image-based model (Loftus & Bell, 1975). French (1965) found that most cognitive tasks can be solved by using one or a combination of both strategies.

As we have seen, visuals can represent a simplified or codified form of information, that is more easily analyzed and manipulated than text, thus making them suitable for solving problems (Szlichcinski, 1979: 254). Herbert Simon suggests that one of the key steps in solving a problem is to represent it "so as to make the solution transparent" (Simon, 1969). For certain types of problems, graphics provide an ideal format. Some of the more useful graphic formats for solving problems include: tables, algorithms, and diagrams. "Even diagrams in anatomy texts," suggests Macdonald-Ross, "could be considered as problem-solving tools for dissection and surgery" (1977: 60).

It is instructive to recall certain idioms in the English language that reveal the visual nature of analysis, understanding, and problem-solving. These include words and phrases like: *insight* and *imagination*. Or the terms *visionary* and *far sighted*, meaning someone who is able to "see" beyond the ordinary and thus achieve a creative solution to a problem. Similarly, the words *seer* and *enlightening*; or the word *illumination*, meaning a sudden understanding. Likewise, the act of *reflecting*, a synonym for thinking itself. We have in addition, words like *viewpoint* and *perspective*, meaning a different way of examing a problem, which, as we have seen, is often key to solving it. Even words like *uncover* and *research* have a visual substratum. And the phrase "I see what you mean" has come to have the connotation "I understand." Arnheim goes as far as to suggest that "words that do not now refer to direct perceptual experience did so originally" (1969: 232).

Design scholar Donis Dondis describes the process from the visual thinker's point-of-view: "In some mysterious way, we form the sight of something we

never saw before. Vision, previsualization, is intricately linked to the creative leap... as *a primary means of problem-solving* (underlining mine). And it is this very process of moving around in mental images in the mind that frequently takes us to the point of breakthrough and solution" (Dondis, 1973: 8).

Significant treatments of the topic include Borow and Colins (1975), Kleinmutz (1966), Newell and Simon (1975), and McKim (1980)

### 5.9 Argument-Persuasion

> There is no such thing as 'facts displayed' pure and simple. All facts presented in papers and textbooks are selected from a huge pool of possibilities.
>
> Macdonald-Ross

The persuasive function of graphics is far more prominent in research articles than in textbooks. And logically so. The main purpose of textbooks is to instruct. The chief function of research articles is to prove a point--to persuade the reader of one's argument. In doing this, the author tries to make the facts "speak for themselves" (Miller, 1998: 30. Also Bazerman, 1988. Myers, 1990). Those facts, in the forms of graphs, photos, and tables, "give the illusion of direct access to the data" (Miller, 1998, 30). Thus, while persuasion is a major function of visuals in research articles, it does not play a prominent part in our corpus.

## 6. Analysis of the corpus

In our analysis of the corpus, material from the chemistry text will be indicated with a **C**, material from the biology text with a **B. B12**, for example, refers to material on page 12 of the biology text. I would like to approach the corpus from two points of view. The first examines the reciprocity between major elements; specifically: (a) book text, (b) visual, and (c) caption text. We will explore such questions as: How do the three elements interact? To what extent are they complementary or redundant? How do different kinds of visuals interact with each other? We will also look at the use of figure references in the text, plus the issues of complementarity and redundancy, linearity and branching.

The second section will examine the relationship between functions and genres: What are the main functions of different genres (of tables, for example)? And conversely: Which genres are used for different functions (Which genres are most used for comparisons, for instance)?

## 6.1 Verbal-Visual Relationships

> The concepts of science... are semiotic hybrids, simultaneously verbal, mathematical, visual.
>
> Jay Lemke

This being the case, it is natural to find these modalities used in science textbooks. In our corpus, this includes *prose (text)*, *visuals*, and *caption text*, and, of course, formulas and equations. Captions are less common than one might think, at least in the biology text, which uses them only for tables and occasionally for graphs; reflecting, perhaps, the realization that these two genres need support for interpretation. Other visuals in the biology text have no captions. In contrast, the chemistry volume uses captions for all visuals except cartoons and beginning-of-chapter photos, which are repeated on the following page, in reduced form and with captions. The chemistry volume makes additional use of formulas and equations.

## 6.2 Interaction of different modalities

Our corpus shows great variation in the relationship between text, visual, and caption text. At one extreme, we find a case in which the text contains no verbal reference to the photo (a cesium clock) (C14); only a figure reference. At the other extreme, we find two pages of text describing the first appearance of land plants and animals. The accompanying artist's rendering of a Carboniferous swamp forest adds no new information whatsoever, but does provide a visual *summary* of the information (B412).

## 6.3 Where the information lies

In different instances, the bulk of the information may be found in one modality or another. In our case of the cesium clock, above (C14), the bulk of information is found in the caption text, which contains information on the visual, and which also adds information to the general discussion. Here are some ways that text, visual, and caption text relate to each other:

1. A short statement in the text, plus information in the visual (B243, B402, B403)
2. A short statement in the text, plus information in the caption text (C14)
3. A short statement in the text, plus information in visual and caption text (B340, B341, B346)
4. Main discussion in the text, plus information in the visual. That information often takes the form of example, comparison,

summary, or illustrating a process or sequence (function: understanding)

5. Text gives detailed extended description of the visual (C144)

### 6.4 Caption text

Caption text is an unacknowledged part of the package. It serves a variety of functions, some of them crucial. These functions include:

1. explaining the visual (B347)
2. adding information to the general discussion (B346)
3. a combination of both functions, as in the cesium clock example (C14).

In one interesting case, the text sentence is a general statement ("To maintain homeostasis and to grow, organisms need materials and energy") (B5). The visual is a photograph of a cape buffalo grazing in the tall grass. Nothing in the text relates it explicitly to the visual. This is done in the caption text, without which there would be no connection between text and visual.

The "success" of a visual depends greatly on its relationship to text, caption, and caption text. The more iconic visuals (photos, models, realistic drawings) may be described in the text by a particular sentence. But there are a hundred other statements one could also make about the visual (Gombrich, 1972: 82). The viewer of a visual requires verbal guidance unless the purpose of that visual is strictly one of interest.

### 6.5 Complementarity and redundancy

The relation of the modalities may be one of **complementarity** (adding new information) or **redundancy** (restating old information). The choice of one or the other seems to depend on the complexity or importance of the concept. The greatest number of iterations--eight--occurs in the chemistry text, in the discussion of Boyle's Law (C146). This includes two separate discussions in the text, an equation, three graphics (table, graph, and drawing), and two captions texts. Though not strictly redundant--the second text discussion, table, and graph contain *elaboration* of details--this provides a canonical form of the interaction between the various modalities.

While information in some of our cases may be redundant, functions are not. For example, a passage from the biology text (B242) describes the steps in the life cycle of a certain bacterium. The accompanying drawing gives a visual depiction of the sequence, its function being *understanding* (understanding a sequence of events).

Complementarity in a visual often takes the form of details, examples, or comparisons. In a sample from our corpus (B347), on homologous (comparable) structures in animals, we find all three. The text states: "Despite the enormous diversity of functions, the internal anatomy of all bird and mammal forelimbs is remarkably similar." The visual (a drawing) then includes examples of various animals--nine in all--highlighting the homologous structures (in wings and feet).

### 6.6 Interaction between Graphics

In addition to the modalities discussed above, visuals also interact with each other. These interactions usually take the form of: (1) comparison (B795, B1015), (2) examples (B416), or (3) details (B778, C34-35). For instance, we find several instances of photographs as "main topic," with three of four small insets providing details. (B945, 953, 1023, 1026, 1031, 1033, 1035). A typical display is a large photo of a tropical rain forest, with four insets of plants and animals that live in it. An explanation of their ecology appears in the caption text.

We also find reciprocities between different types of visuals. The biology text contains several cases of a graph paired with a photo (B1018-1019, B948). One (B952) shows the effects of introducing an animal population (reindeer, in this case) into an area that has no predators. The statement in the text is brief and general ("Other dramatic cases of overgrazing have occurred when herbivores such as reindeer have been introduced onto islands without large predators"). The photo shows a herd of reindeer; while the graph plots the introduction, the sharp rise, and dramatic decline of the population. Interpretation is left to the caption text, which describes the event in words. This grouping reveals an added function of caption text: keeping text in the main body of the book from becoming "clogged;" that is, from becoming too detailed, which runs the risk of drowning the reader in a sea of information.

### 6.7 Figure References

Figure references--references in the text, to an accompanying visual--fall into two classes: (1) as part of a sentence, and (2) subordinated in parentheses. We may refer to them as the strong form and weak form:

As Part of the Sentence (Strong form):

1. "The interrelationship of experiment and explanation is displayed in Figure 1.5" (C7).
2. "In Figure 1.6, a steel rod has been placed next to a ruler." (C8)

3. Full sentence in parentheses: ("Figure 1.11 and 1.12 dramatically show the relative densities of substances") (C17)
4. "Table 2-1 lists the most common elements in the universe, the Earth, and the human body" (B24)
5. "Figure 17-3a illustrates two important points about genetic drift: (1)..." (B366)

Subordinated in Parentheses (Weak form):

1. "Balances measure mass...the quantity of matter in a material (Figure 1.2)" (C4).
2. "The flash from a (flash)bulb accompanies a chemical reaction triggered by the heat of an electrical current (See Figure 1.3)" (C5).
3. "Most laboratory glassware (Figure 1.10) is calibrated in liters or milliliters." (C17)
4. "A crystal of table salt (Fig. 1-1a), for example, consists of just two elements..." (B1). *Note*: The sentence mentions the function of the visual.
5. "The phylum name means 'spiny skin,' which is *especially obvious* in sea urchins (Fig. E1-13)" (B11)
6. "Because the water molecules at the surface of a pond cohere to one another, the surface film acts almost as a solid--supporting relatively dense objects such as fallen leaves (and) *water striders* (Fig. 2-13a)" (B38).

**A Comparison**. In the strong form, the actual reference may appear in initial, medial, or final position. In the weak form, it appears only in medial or final. Sentences in the strong form normally explain what the visual contains or does; that is, they often state or infer the function of the visual. In this way, the strong form provides greater cohesion between text and visual. The strong form is also closer to natural language.

Sentences with the weak form do not refer to the visual, except obliquely, as we can observe in the sea urchin example above (#5), where the phrase "especially obvious" points the reader toward the photo located directly below it. Similarly, in sentence #6. Here the sentence *does* mention to topic of the visual (an insect called the water strider) Thus, we can discern even in the weak form, different *degrees of reference*, with sentence #6 exhibiting a high degree of reference (Also B23, B65, B66, B67, 368), sentences #5 and 4 a medium degree, and examples #1-3 a low degree of reference. Weak forms are far more frequent in our corpus.

## 6.8 Linearity and Branching

Lemke notes that "scientific text is not primarily linear" (Lemke, 1998: 96) and is not meant to be read sequentially. In this light, it is interesting to observe the placement and operation of figure references; and also of chapter references--those little notations that say: "See Chapter 12." Or "We will discuss the matter in Chapter 27."

Figure references point in various directions. They may refer to a figure on the same page or an adjoining one. They may also refer to a graphic that appeared several pages earlier; in some cases, as many as five (B6, B25, B32, B53, B57; and B37, which appears five pages earlier). We also find examples of double branching, in which the text points in two directions; in one case, to the same page and also to a later chapter (B5). As for chapter references, they are overwhelmingly forward branching (For examples backward branching, B69, and B361).

Several questions come to mind: How does the reader respond to the author's suggestion? And how does the author *want* her to respond? If the reader indeed follows the author's invitation and skips to the visual, what effect does it have on her comprehension? For verifiable answers, these question are best answered by empirical studies. We may, however, offer a few comments on the matter.

Presumably, chapter references in the form of "See Chapter 24," if the reader is currently on Chapter 7, serve as a type of forecasting statement, or advance organizer. However, the actual referent usually appears so much later in the book that this function probably has little effect. More likely, the purpose of the reference is the equivalent of saying: "This is a preliminary discussion. We will discuss it in more detail in Chapter 24" (B4, B5, B6). It is not even likely that the author wants the reader to interrupt what she is reading and turn to the distant chapter. My guess is that--almost invariably--the reader rejects the invitation. What about figure references? Here the situation is less certain. Most figure references direct the reader to nearby graphics; in which case, it is more likely she will accept the invitation. There's even a good chance she will encounter the visual before actually reading the text. Either way, we are forced back to the question of reciprocity.

**Visuals and Branching**. A visual may relate to the end of a topic (say, an item mentioned at the end of a paragraph); in which case, it does not interrupt the passage, but provides instead a transition from the end of one topic to the beginning of the next. This is much less disruptive, and may even have a beneficial effect for the reader, somewhat akin to white space or a paragraph ending. (e.g., B23)

It is also much easier to skip from text to photo and back to text than from text to a graphic that needs considerable analysis, and back to text again, which is often the case with nonpictorial graphics. In this way, photos are less disruptive than most other visuals, and are thus a more preferable way--for the reader--of receiving details and examples (B51, B367). For visuals that require a great deal of interpretation, the figure reference, if followed, can make comprehension more difficult.

## 7. Genres and functions

Several problems arise in our effort to understand the relationship between genres and functions. These include, among other things, issues of interest, multiple functions, and demonstrability.

**Interest**: While the function of interest may be seen to hide behind most visuals, some seem more challenging and repelling than inviting. Some seem to say: "Figure me out if you can." This, as we have seen from our earlier analysis, includes graphs and tables. It also includes certain types of drawings.

With drawing, we can distinguish between drawings of the familiar and those of the unfamiliar. Drawings of the familiar are more pictorial, depicting things that we have seen and that we know. Drawing of the unfamiliar--of the microscopic or submicroscopic, or internal bodily systems--have a less pictorial "feel" to them and thus are closer to the abstract.

**Demonstrability**. It is easier to determine when a visual increases interest, adds detail, provides an example, or summarizes. Apart from empirical studies, it is harder to decide how much it increases understanding, persuades the reader, or aids in remembering. For this reason, I have omitted the function of remembering, analysis, and persuasion from the tabulation. Earlier on, we reviewed several laboratory studies that did evaluate some of these functions. And that is as far as we can go in terms of efficacy. However, our study focuses more on function than on efficacy.

This said, let us look at the various functions and visuals and see which--in our corpus--is used to express the other. I would like to present the information in the form of a table; after which, I will offer a few comments.

A capital **M** in the cell means that it is a major function of the visual; a function that has appeared a dozen or more times in the corpus. A small **m** indicates a minor function; one that appears a half dozen times or less:

| | Photo | Table | Drawing | Diagram | Chart | Graph | Map |
|---|---|---|---|---|---|---|---|
| Interest | M | | | | | | |
| Under-standing | M | | M | m | | | m |
| Elaboration by details | M | M | M | | | m | m |
| Comparison | M | M | M | | | m | |
| Example | M | | M | | | | |
| Summary | | M | | | | | |
| Handy reference | | | | | | | |

Interaction of Genres and Functions

**The Pictorial.** The more pictorial a graphic, the greater the **interest** it arouses. Similarly, it is things pictorial that create emotions; the farther from the pictorial, the less emotional. In this way, the more pictorial graphics tend to be more **persuasive**, since ultimately we are persuaded more by emotions than by numbers and logic. Pictorial genres give us tangible objects; things closer to the real world as we know it. For this reason, the best **examples** are also things closest to real world phenomena, in contrast to numbers, which are one step further removed from reality.

**Photographs.** As we can see from the matrix, the major functions of photos are interest, understanding, adding details, comparison, and examples. In short, even photos--the most pictorial of graphics-- serve other vital functions apart from simply heightening interest. Indeed, several studies showed that subjects who viewed a picture after reading a passage improved their understanding of the material (Bradford, 1983: 264). With the prominence of computer graphics, the line between drawings and photographs grows thinner, as does the difference between artifice and reality.

**Maps.** Maps have their own uniqueness. They are not pictorial in the literal sense. Still, the average adult has seen enough globes and maps of the world, to have a strong visual image of it. In that sense, maps do have a pictorial feel to them; a feeling of the known, the familiar. There are actually very few maps in our corpus: seven in the biology text and none in the chemistry. For

this reason, though I have had to enter a small **m** next to their functions for understanding and details, these are their two major functions in the corpus.

**Tables.** Tables, as we might have guessed, serve the three major functions of summarizing, adding details, and comparing; and a minor function as a handy reference. It is important to realize that tables *are* implicit comparisons.

**Drawings**. Drawings, as we might expect, also serve several major functions in the corpus. However, I would stress that many drawing in the corpus are very difficulty to understand, and as such fail to accomplish the purpose they were intended for. These include especially drawings of microscopic and submicroscopic processes, things most people have no internal representation of.

Viewing the matrix from the other direction, it is also interesting to see which genres the authors rely on most, for presenting the major functions of understanding, details, comparisons, and examples. Here we find elaboration of details done chiefly by photos, tables, and drawings. Likewise, comparisons are also made chiefly by photos, tables, and drawings. Examples are expressed chiefly by photos and drawings. And understanding is achieved chiefly through photos, drawings, and diagrams. Elsewhere I have noted that visuals are often used to show the results of experiments. In some cases, the results are presented *only* in the visual and not in the text (Darian 1997: 33).

## 8. Conclusion

We have touched on the ontology of language and its development from iconographic to more typographic forms. We have also noted that iconic elements are still quite prevalent in modern written language--as seen in typographic and punctuation marks and in the “alphabet” of numeracy.

We have also examined, in greater detail, the relationship between visuals and reality--what I have called degrees of similitude. We have seen that, in some cases, reality (as exemplified by photographs) is not the ultimate criterion for the creation of a visual. But that it does have certain specific benefits, such as speed of processing, which is important as the reader’s eye flits from text to visual and back again.

We have explored the functions of visuals, from which comes the following recommendations: When deciding to use a visual, or graphic, to illustrate a text, there are important things to be aware of, including: (1) the best form of representing the information; (2) whether the information in the graphic should be complementary or redundant; (3) the function of the visual; and (4) the reciprocity between text, visual, and caption text. There are, likewise,

important considerations for the reader. These include items three and four, just mentioned, and the need, in some cases, for training and interpreting graphs and tables.

We come away with the thought that the relation between visuals and text is extremely complex, subtle, and crucial--to the communication of ideas in science and to the communication of knowledge in general.

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# ABSTRACT

## More than Meets the Eye
## The Role of Visuals in Science Textbooks

Steven Darian
Department of Education
Rutgers University, USA

Visuals and visuality are an integral part of science; whether in the thinking of scientists, the portraying of their work, or in the teaching of science. This paper examines the role of visuals in university-level textbooks.

Apart from the function usually associated with visuals--that of interest--graphic devices serve a wide range of functions--as many as 10 or 15, some of which are crucial to the scientific process. These functions include such items as elaboration and economy, understanding and remembering, persuasion and analysis.

We will explore some of these functions as well as the different degrees of reality that various graphics contain. We will also analyze the critical relationship between text, visual, amd caption text; a relationship that is not fully appreciated by readers and writers alike. The paper further investigates such issues as linearity and branching in the text, plus the interaction between graphics. The final section discusses the relationship between genres (e.g., pictures and tables) and functions (e.g., remembering and problem-solving).

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# Pour un environnement propre
# Genre, politesse et argumentation
# dans la communication verte des hôtels

Finn Frandsen et Winni Johansen
Ecole des Hautes Etudes Commerciales d'Aarhus
Aarhus, Danemark

## 1. Introduction

Le but de cet article est de montrer comment les préoccupations écologiques se propageant dans les sociétés occidentales ont eu un impact important sur la communication des entreprises en créant à la fois de nouveaux genres textuels et une nouvelle rhétorique. Dans ce but, nous allons étudier la communication verte des hôtels scandinaves, plus précisément un de ces nouveaux genres qui ont fait leur apparition au cours de ces dernières années, à savoir les petits cartes, affichettes ou autocollants placés dans les chambres et conviant les clients à se comporter d'une certaine façon : "pour un environnement propre". Les textes qui seront analysés font partie d'un corpus plus large comprenant des textes venant de différents hôtels européens, y compris 40 établissements danois dont la plupart sont membres de la *Clef Verte* ou font partie de la collaboration entre la chaîne Best Western et le WWF (World Wide Fund For Nature). Quant à la méthodologie utilisée, nous allons combiner l'analyse de genre (Swales 1990, Bhatia 1993, Frandsen, Johansen & Nielsen 1997) et les théories de la politesse linguistique et de l'argumentation (Brown & Levinson 1978; Kerbrat-Orecchioni 1992 et 1996). Nous espérons que l'analyse de la communication verte des hôtels pourra montrer que la communication marketing, par laquelle nous comprenons à la fois la publicité et les relations publiques, constitue un nouveau champ pertinent pour les recherches en langue de spécialité.

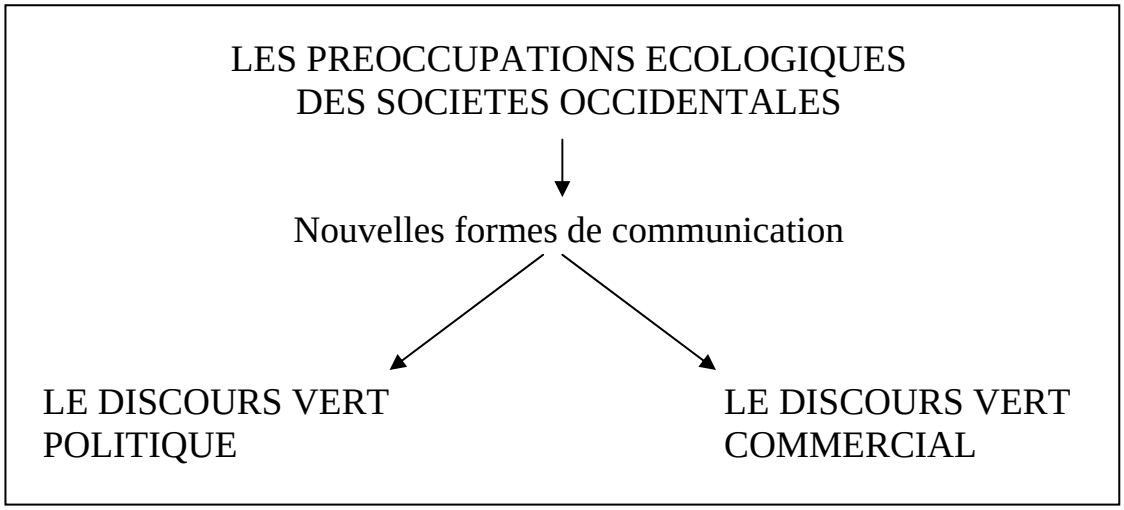
## 2. Les discours verts de la société

Au cours des trois dernières décades, une évolution a eu lieu aux Etats-Unis et dans une grande partie de l'Europe (surtout en Scandinavie); une évolution

que les chercheurs en sciences sociales ont essayé de saisir en parlant de "lumières écologiques" (Beck 1989), de "l'époque nature/éco" (Jakobsen 1998), de "greening" (Harrison 1994) ou de "la sensibilisation de l'opinion publique aux problèmes liés à l'environnement" (Libaert 1992).

Cette évolution a eu une influence importante, non seulement sur la vie politique et quotidienne en transformant l'environnement en valeur centrale pour les sociétés occidentales, mais aussi sur la communication sociale. En simplifiant à l'extrême, on peut dire que l'on peut distribuer les nouvelles formes de communication sur deux discours verts. Par discours, nous comprenons un type d'usage langagier associé à un type de pratique sociale. Chaque discours se manifeste dans un ensemble spécifique de textes oraux ou écrits qui sont liés au discours à travers des genres spécifiques (Rastier 1989 : 39-40).

***Fig. 1. Les discours verts des sociétés occidentales***




Le premier discours est *le discours vert politique*. Il axe toutes les contributions directement ou indirectement argumentatives aux débats sociaux autour de la nature, de l'environnement et de la pollution, et va du roman littéraire de Henry David Thoreau *Walden, ou la vie dans les bois* ou de l'essai d'Al Gore *Sauver la planète Terre* aux programmes, manifestes, affiches et mailings des partis et des mouvements verts comme *Green Peace* ou *Les Amis de la Terre*. Les textes du discours vert politique ont déjà fait l'objet de plusieurs études, surtout d'analyses rhétoriques partant de l'hypothèse constructiviste qu'il n'y a pas de nature ou d'environnement au sens objectif des termes, indépendamment des mots utilisés afin de parler de la nature ou de l'environnement. L'objectif général de ces analyses de la

rhétorique environnementale n'est pas seulement, comme chez Aristote, de "trouver les moments persuasifs", mais aussi d'aider les citoyens à participer aux débats publics nécessaires à l'existence d'une démocratie. Killingsworth & Palmer (1992), Herndl & Brown (1996) et Harré, Brockmeier & Mühlhäusler (1999) sont des exemples des études du discours vert politique. Killingsworth & Palmer parlent de l'*ecospeak* défini comme "the patterns of rhetoric typically used in written discourse on environmental politics" (1992 : 1), alors que Harré, Brockmeier & Mühlhäusler parlent du *greenspeak* défini comme "the loose cluster of dialects we could call the 'language of environmentalism' itself : Greenspeak, the whole gamut of linguistic means employed in raising awareness of environmental issues in a range of discourses both radical and conservative" (1999 : 2).

Le deuxième discours est *le discours vert commercial*. Il comprend tous les textes produits par les entreprises privées ou publiques et ayant pour but de commercialiser des produits verts ou de créer et de promouvoir une image verte chez les consommateurs et dans la société environnante. Ce discours est avant tout le résultat d'une réaction des entreprises vis-à-vis du nombre croissant de consommateurs militants (allant des consommateurs individuels aux institutions publiques comme les hôpitaux ou les écoles) souhaitant acheter des éco-produits qui ont été fabriqués dans des conditions acceptables d'un point de vue bio-éthique. Ainsi, l'écolo-marketing constitue-t-il aujourd'hui une branche importante en marketing (voir par exemple Ottman 1998 ou Fuller 1999 pour ne mentionner que deux exemples de la riche littérature des manuels). Le discours vert commercial se caractérise également par le fait qu'il se manifeste dans plusieurs types de textes, allant des labels verts aux textes des emballages et des annonces publicitaires en passant par les brochures de présentation, les rapports annuels et les sites web. Jusqu'à maintenant, les dénominations du discours vert commercial restent peu nombreuses. Sharon Livesey, elle-même un des chercheurs pionniers dans ce domaine (voir par exemple Livesey 1999 og 2001), a proposé de parler de *business environmental discourse* (BED). Les études linguistiques ou rhétoriques des textes verts des entreprises restent, elles aussi, peu nombreuses. Pourtant, on trouve un ensemble d'études de la publicité verte faites par des chercheurs en économie et se basant sur une analyse de contenu quantitative (voir par exemple Carlson, Grove & Kangun 1993, Banerjee, Gulas & Iyer 1995 ou Easterling, Kenworthy, Nemzoff & College 1996).

## 3. La communication verte des hôtels scandinaves

Il est intéressant de voir comment le discours vert commercial s'est étendu à presque tous les types d'entreprises et de branches. Il n'est pas seulement question d'entreprises où les questions écologiques s'imposent à cause de

leurs produits ou de leurs procédés de production, mais aussi d'entreprises appartenant au secteur tertiaire comme par exemple l'hôtellerie et le tourisme. Ici, aujourd'hui, les éco-produits fourmillent : hôtels verts, restaurants verts et repas verts, auberges de jeunesse vertes, campings verts, agences de tourisme vertes, etc.

Comme le soulignent Vellas og Becherel (1999), on n'a guère étudié les efforts et les stratégies écologiques de l'hôtellerie et du tourisme, et dans leur contribution à ce livre Diamantis & Ladkin tentent de faire un des rares portraits de ce nouveau développement. Ils montrent par exemple comment des organisations privées ou publiques ont vu le jour afin de s'occuper des préoccupations écologiques au nom de leurs membres (Diamantis & Ladkins 1999 : 114-125).

Cela est aussi le cas au Danemark où l'on a *La Clef Verte*, association d'organisations de tourisme, d'hôtellerie et de restaurants créée en 1994 et collaborant aujourd'hui avec *Green Globe*. *La Clef Verte*, dont le logo a la forme d'une petite clef, attribue un certificat d'environnement aux hôtels danois respectant un certain nombre d'exigences en matière d'environnement et d'hygiène (55 critères d'attribution). Les hôtels obtiennent le certificat pour 12 mois à la fois, après quoi la demande doit être renouvelée. Les hôtels membres ont le droit d'utiliser le logo de l'association qui sert d'attestation de garantie à laquelle ils peuvent renvoyer quand ils souhaient souligner leur image verte. De plus, *La Clef Verte* met à leur disposition un dépliant traduit en anglais, allemand et français que chaque hôtel peut joindre à son propre matériel de présentation et où il peut imprimer son propre nom et son propre logo. Aujourd'hui, *La Clef Verte* compte parmi ses membres 93 hôtels, villages ou clubs de vacances, auberges de jeunesse et campings.

Il y a aussi des chaînes d'hôtels ou des hôtels indépendants qui font un effort particulier dans le domaine de l'écologie. Cela vaut par exemple pour les hôtels Best Western au Danemark. En 1995, ils ont décidé de collaborer avec le WWF en s'engageant à contribuer économiquement à cette organisation (une couronne danoise par nuitée). Aussi bien les entreprises commerciales que les ONG profitent de ce type de collaboration : le WWF reçoit un soutien financier, et la chaîne Best Western peut se venter d'avoir une image verte. Depuis, on a établi une colloboration de même type en Norvège et en Finlande. Ensuite, il y a aussi des chaînes d'hôtels ou des hôtels individuels qui essayent de se créer une image verte indépendamment des associations et des organisations. Dans cette catégorie, on trouve la chaîne scandinave Scandic qui souhaite "rendre ses chambres à la nature" en les transformant en "éco-chambres" où plus de 90% des matérieux sont récupérables (pour une

analyse de la communication verte de Scandic, voir Frandsen & Johansen 2001).

Tous les hôtels mentionnés ci-dessus ont ceci en commun qu'ils essayent de créer et de promouvoir une image verte à l'aide de nouveaux genres textuels et d'une nouvelle rhétorique. Pour notre étude de la communication verte des hôtels, nous avons établi un corpus de textes venant surtout d'hôtels danois. Si l'on applique la distinction traditionnelle entre la communication externe et la communication interne d'une organisation, on peut partager les textes entre les trois catégories suivantes :

***Fig. 2. Corpus***

| | |
|---|---|
| (I)<br>COMMUNICATION EXTERNE | 1) Dépliants spécifiques rédigés par les associations d'hôtels verts<br>2) Dépliants verts élaborés par chaque hôtel<br>3) Brochures de présentation dans lesquelles les hôtels peuvent présenter leur image verte ou leurs produits verts<br>4) Journaux d'hôtel dans lesquels l'identité verte est présentée<br>5) Feuilles d'information se trouvant dans les chambres ou fournies aux clients à la réception<br>6) Petites cartes, affichettes ou autocollants placés dans les chambres : sur les poignées des portes, sur les tables ou dans les salles de bain<br>7) Questionnaires remis aux clients de l'hôtel et contenant des questions vertes |
| (II)<br>COMMUNICATION EXTERNE<br>ET INTERNE | 8) Plans d'action verts remis aux clients de l'hôtel |
| (III)<br>COMMUNICATION INTERNE | 9) Extraits des manuels du personnel de l'hôtel |

Comme il ressort de cette catégorisation, beaucoup d'hôtels se servent de différents types de dépliants et/ou brochures: dépliants spécifiques des associations vertes, dépliants verts individuels spécifiques à chaque hôtel et brochures traditionnelles. Les préoccupations vertes des hôtels se reflètent dans la quantité de textes utilisés par chaque hôtel. Plus ils désirent créer une image verte, plus il y a de genres verts différents.

## 4. Un nouveau genre : les cartes vertes

Les cartes, affichettes ou autocollants verts (appelés par la suite les cartes vertes) représentent un des nouveaux genres engendrés par la communication verte des hôtels. Ce genre, qui paraît être originaire des Etats-Unis, est intéressant à plusieurs égards. Premièrement, c'est un genre qui s'est répandu comme une traînée de poudre dans une grande partie de l'Europe. Deuxièmement, c'est un genre où il n'est plus seulement question de créer et de promouvoir une image verte, mais aussi de convaincre les clients de se comporter de façon écologiquement responsable. Comme on verra, cela implique l'usage d'une série de stratégies de politesse et d'argumentation. Finalement, c'est un genre où l'on peut constater des différences interculturelles : alors que les cartes vertes sont répandues dans les hôtels en Europe du Nord, elles sont (toujours) beaucoup plus rares en Europe du Sud.

Dans les pages suivantes, nous allons faire une analyse des cartes vertes appartenant à notre corpus. Il est question d'un total de 17 cartes différentes venant, pour la majorité, d'hôtels membres de *La Clef Verte* ou faisant partie de la collaboration entre Best Western et le WWF. D'abord, nous faisons une analyse de genre : en utilisant Swales (1990) et Bhatia (1993), nous déterminerons la communauté de discours du genre, ses buts communicatifs et sa *move structure*. Ensuite, nous analyserons les stratégies rhétoriques mises en oeuvres dans les cartes vertes afin de réaliser à la fois la *move structure* et le but communicatif. La place qui nous est impartie ne permettant pas une analyse exhaustive de toutes les stratégies, nous avons choisi de nous concentrer sur les stratégies de politesse et d'argumentation. Finalement, dans une conclusion évaluative, nous discuterons la qualité des cartes vertes et la capacité des hôtels à prendre en considération les différences interculturelles en ce qui concerne l'environnement dans les différents pays européens.

### 4.1 Analyse de genre

Déterminer la communauté de discours dont font partie les cartes vertes est chose facile. Il y a, d'un côté, l'hôtel, une chaîne d'hôtels ou une association d'hôtels, et de l'autre, les clients, ce qui signifie avant tout : des commerçants et des touristes. Quant au but communicatif des cartes vertes, celui-ci est double : a) convaincre les clients de se comporter d'une façon spécifique, ou

plus précisément, de motiver un choix et de déclencher une décision concernant l'usage des serviettes et, par là (en dernière instance), la protection de la nature, et b) signaler une identité verte dans l'intention de créer et/ou de promouvoir une image verte chez les clients.

Alors que le premier but communicatif se traduit explicitement dans l'usage linguistique de toutes les cartes (cf. le grand nombre de directifs explicitement formulés), il est plus rare que le deuxième but communicatif se traduise explicitement. Pourtant, il y a des exemples où l'hôtel promeut son image verte en se déclarant écologiquement responsable : (1) *We care for our environment*. Dans d'autres exemples, cela se passe de façon moins directe dans le sens où l'hôtel s'incrit en tant qu'acteur dans un énoncé directif : (2) *You can help us to protect the environment*. Il y a aussi un exemple où un hôtel promeut son image verte en renvoyant au fait que le certificat de *La Clef Verte* lui a été attribué : (3) *We have been awarded the "Green Key", which certifies that the hotel is run according to environmentally-friendly standards*.

Derrière ce but communicatif double lié au genre même des cartes vertes se trouve un objectif stratégique plus général : par sa communication verte, un hôtel peut à la fois contribuer à la protection de la nature et gagner de l'argent. Ainsi, des sondages ont montré que les hôtels peuvent réduire de 28% leur consommation d'eau et d'électricité en choisissant une gestion écologique (voir par exemple Rasmussen 1998).

Bien que la plupart des cartes vertes se composent de textes très courts, elles peuvent présenter une structure assez complexe et avoir jusqu'à six *moves* différents. Dans le premier *move*, il s'agit d'encourager le client à protéger l'environnement. Dans le deuxième *move*, l'hôtel s'adresse directement au client. Le troisième *move* donne une justification de cet appel. Dans le quatrième *move*, l'hôtel demande au client de faire un choix et/ou l'instruit sur ce qu'il faut faire. Le cinquième *move* apporte une justification à cette demande et à cette instruction. Dans le sixième et dernier *move*, l'hôtel remercie d'avance le client en terminant poliment. On aura ainsi le schéma suivant :

***Fig. 3. La move structure des cartes vertes***

| | |
|---|---|
| *Move 1* | Encourager le client à protéger l'environnement |
| *Move 2* | S'adresser au client |
| *Move 3* | Justifier l'appel |

| | |
|---|---|
| *Move 4* | Demander au client de faire un choix et/ou instruire le client sur ce qu'il faut faire |
| *Move 5* | Justifier la demande/l'instruction |
| *Move 6* | Remercier le client et/ou terminer poliment |

Cette *move structure* est le résultat d'une analyse où nous avons pris tous les *moves* présents dans les cartes vertes de notre corpus. Il n'est donc pas question d'une structure prototypique, mais plutôt d'une structure *maximale* puisque il est très rare que les six *moves* soient présents en même temps. Dans l'exemple (4), qui vient d'un hôtel ibis allemand, tous les *moves* sont pourtant présents. On a même incorporé dans le texte des traductions en anglais et en français :

(4) *Unserer Umwelt zuliebe* (= *move* 1)

*Lieber Gast!* (= *move* 2)

*Können Sie sich vorstellen, wieviele Tonnen Waschmittel und wieviele Kubikmeter Wasser täglich verbraucht werden, um nur einmal benutzte Hand- und Badetücher zu waschen?* (= *move* 3)

*Bitte entscheiden Sie: Handtücher auf den Boden heißt: "Bitte austauschen" - Handtücher zurück auf den Halter bedeutet: "Ich benutze sie weiter!".*

*The choice is yours: Towels on the floor means: "Please change!" - towels on the towel-rall means: "I will use them again!"*

*Décidez vous-même: Les serviettes par terre veulent dire: "Veuillez les changer" - les serviettes raccrochées veulent dirent "Je les réutilise!"* (= *move* 4)

*Danke - Thank You - Merci* (= *move* 6)

*For a healthy environment - Pour un environnement propre* (=*move* 5)

Parmi les 17 cartes vertes danoises qui entrent dans notre corpus, il n'y a aucun exemple qui présente la *move structure* maximale. Cependant, il y a une carte qui présente une structure *minimale* composée exclusivement des *moves* 4 et 5. La carte est représentée dans l'exemple (5) où l'on peut aussi constater que le *move* 5 a été incorporé dans le *move* 4. Nous avons choisi de reproduire tant le texte danois que les traductions anglaise et française parce que (5) représente malheureusement aussi un exemple où ni le texte original danois ni les traductions ne sont le produit d'un travail exécuté de façon professionnelle.

(5) *Beslut venligst: Lader De Deres håndklæde ligge på gulvet betyder det, at De ønsker håndklædet skiftet ud. Ønsker De at* beskytte miljøet (= *move* 4*), hæng da venligst håndklædet op* (= *move* 3).

*Please decide: Hand-towels placed on the floor means that you want a new towel. For the sake of the enviroment, please hang up your towel.*

*Bitte enscheiden Sie: Handtücher am Boden bedeutet bitte austauschen. Handtücher zurück auf den Halter bedeutet: Sie benutzen sie ein weiteres mal* - der Umwelt zuliebe.

Quant à la *move structure* prototypique, on pourrait peut-être la mettre en relief en analysant la fréquence de chaque *move*. Le *move* 4 paraît être obligatoire, étant donné qu'il est présent dans toutes les cartes. Le *move* 2 est représenté 15 fois, le *move* 3 et 5 12 fois, alors que les *moves* 1 et 6 ne sont représentés que 6 et 8 fois. La structure prototypique semble donc être constituée par les *moves* 2-5.

Enfin, il faut aussi mentionner que l'ordre des *moves* peut varier d'une carte à une autre. Ainsi, il y a des exemples où l'ordre des *moves* 1-2 ou 5-6 (comme dans l'exemple (4)) est inversé. Pour terminer cette section, il faut en plus signaler que les textes de toutes les cartes vertes venant d'hôtels danois ont été traduits ou reformulés soit en anglais (10 cartes) soit en anglais et en allemand (6).

### 4.2 Les stratégies rhétoriques

Afin de pouvoir réaliser à la fois le but communicatif et la *move structure* des cartes vertes, un certain nombre de stratégies rhétoriques sont mises en oeuvre. La variation est grande : il y a des stratégies verbales (mise en scène du destinataire en tant que femme de chambre ou la Mère-Nature, politesse, argumentation) et des stratégies non-verbales (petits dessins amusants, le logo de *La Clef verte*, usage de papier recyclable, placement des cartes à des endroits stratégiques). Pourtant, nous allons nous concentrer uniquement sur les stratégies de politesse et d'argumentation.

#### 4.2.1 Les stratégies de politesse

Avec les cartes vertes, l'hôtel se trouve dans une situation de communication où le risque de se comporter de façon impolie vis-à-vis du client est considérable. Cela demande des précisions. Dans le but d'établir une typologie de territoires du moi, Erving Goffman distingue préliminairement trois types : a) les territoires *fixes* comme les maisons, les champs ou les cours, b) les territoires *situationnels* comme les bancs publics dans un parc ou les tables dans un restaurant et c) les territoires *égocentriques* comme par

exemple les sacs à main. Comme souligné par Goffman lui-même, la validité de cette division

tripartite est limitée dans la mesure où beaucoup de territoires entrent dans plusieurs catégories. A ce propos, il mentionne la chambre d'hôtel qu'il décrit comme "un territoire situationnel qui, pourtant, dans sa fonction, peut ressembler beaucoup à une maison, c'est-à-dire à un territoire fixe" (Goffman 1973 : 44). Cette description de la chambre d'hôtel en tant que territoire du moi est confirmée par ce que l'on attend traditionnellement d'un séjour à l'hôtel : le client s'attend à avoir droit à un certain endroit, d'un certain type, pour une certaine durée ainsi qu'à un certain confort. Ainsi, beaucoup de gens considèrent un séjour d'hôtel comme quelque chose de luxueux où l'on n'est pas obligé d'éteindre la lumière en sortant, où l'on peut prendre une douche ou un bain supplémentaire, utiliser toutes les serviettes que l'on veut, etc.

Cela implique qu'un certain nombre de clients (plus précisément : ceux dont la vie quotidienne et la consommation ne sont pas guidées par une certaine inquiétude environnementale) perçoivent facilement la communication verte des hôtels en général et les cartes vertes en particulier comme *une menace* contre ce qu'ils s'attendent de leur séjour à l'hôtel. Nous allons voir que cela aboutit à l'usage d'une stratégie de politesse double de la part des hôtels.

Nous allons maintenant inscrire ce savoir dans un modèle pour l'analyse des stratégies de politesse des cartes vertes. Dans ce but, nous avons choisi d'utiliser une version révisée de Brown & Levinson (1978) et de Kerbrat-Orecchioni (1992 et 1996). Au lieu de concevoir l'interaction entre l'hôtel et le client comme constituée uniquement de *face threatening acts*, ce qui aboutit à "une conception excessivement pessimiste, voire "paranoïde", de l'interaction" (Kerbrat-Orecchioni 1996 : 53), nous travaillons à la fois avec des *face threatening acts* (les FTAs) et des *face flattering acts* (les FFAs). Et contrairement à Brown & Levinson (1978) et à Kerbrat-Orecchioni (1992 et 1996), nous avons choisi de redéfinir les concepts ambigus de *face négative* et de *face positive* respectivement comme *l'idée que se fait le client de ce à quoi il "a droit"* et *l'image de soi du client*. Pourtant, nous avons gardé les définitions de la politesse négative et positive de Kerbrat-Orecchioni comme étant ou bien abstentionniste/compensatoire ou bien productionniste (Kerbrat-Orecchioni 1996: 54), même si ces définitions ne font pas non plus disparaître l'ambigüité des termes négatif et positif dans la théorie de la politesse.

Puisque nous allons nous concentrer exclusivement sur la politesse orientée vers le destinataire, le modèle d'analyse aura la forme suivante (fig. 4) :

***Fig. 4. Modèle d'analyse***

<table>
<tr><td>L'HOTEL</td><td>Distance sociale<br>Pouvoir</td><td>LE CLIENT</td></tr>
<tr><td></td><td rowspan="2">Politesse négative :<br>- éviter de produire un acte menaçant pour les faces (un FTA)<br>- adoucir la réalisation d'un FTA<br><br>LA CARTE VERTE (INTERACTION VERBALE)<br><br>Politesse positive :<br>- effectuer un acte valorisant pour les faces (FFA)</td><td>L'IDEE QUE SE FAIT LE CLIENT DE CE À QUOI IL "A DROIT"<br><br>Avoir droit à un séjour dans un hôtel, c'est-à-dire :<br>1. un certain endroit (type d'hôtel et de chambre)<br>2. une certaine durée (nombre de nuités)<br>3. un certain confort (room service, serviettes, eau chaude, lumière, chauffage, téléphone, minibar, etc.)</td></tr>
<tr><td></td><td>L'IMAGE DE SOI DU CLIENT<br><br>Image de lui-même comme client</td></tr>
</table>

#### 4.2.1.1 Stratégies de politesse positives (orientées vers le client)

Si nous regardons de plus près comment sont utilisées les stratégies de politesse positive, c'est-à-dire les stratégies consistant à produire un FFA pour les deux faces du destinataire, elles sont surtout présentes dans les *moves* 3 et 6 des cartes vertes. L'hôtel peut par exemple s'adresser au client et le mettre en scène comme un acteur important et responsable quant à la protection de l'environnement :

(6) *Som gæst kan De gøre en forskel!*
*As a guest you can make a difference!*

(7) *De kan hjælpe os med at beskytte miljøet*
*You can help us to protect the environment*

Ou l'hôtel peut représenter le client comme quelqu'un déjà au courant :

(8) *Vi ved alle, at tonsvis af vaskepulver [...]*
*It is a well-known fact that every day an enormous amount of laundry […]*

Finalement, l'hôtel peut bien entendu aussi remercier le client pour sa contribution à la protection de l'environnement :

(9) *Tak!*
*Thank you!*
*Danke Schön!*

(10) *Tak for hjælpen!*
*Thank you for your co-operation!*
*Vielen Dank für Ihre Hilfe!*

#### 4.2.1.2 Stratégies de politesse négatives (orientées vers le client)

Si nous regardons de plus près comment sont utilisées les stratégies de politesse négative, c'est-à-dire les stratégies consistant ou bien à éviter ou bien à adoucir un FTA pour les deux faces du destinataire, elles sont surtout présentes dans le *move* 3 des cartes vertes. Inspirés par les catégories analytiques de Kerbrat-Orecchioni, nous pouvons distinguer entre procédés substitutifs et procédés accompagnateurs :

A. PROCEDES SUBSTITUTIFS

1) Formulation indirecte de l'acte de langage

(11) *Derfor lader vi det være op til Dem*
*The decision is yours!*

(12) *Please decide for your self* (au lieu de *Please decide* ou *Please make your decision*)

2) Pronoms personnels

(13) *De* ou *Sie* (dans les versions allemandes)

B. PROCEDES ACCOMPAGNATEURS

1) Formules spécialisées

(14) *Kære gæst*
*Dear guest*

(15) *Venligst*
*Please*

2) Désarmeurs

(16) *Det er en naturlig del af vor sevice, at De skal have de håndklæder, De har brug for. Men (...)*
*Sie sollen flauschige, saubere Handtücher vorfinden, so viele Sie benötigen! Können Sie sich aber (...)*
*At your disposal are fluffy, clean towels – use as many as you like. But* […].

(17) *Lægger De det på gulvet, bliver det naturligvis skiftet*
*If you leave them on the floor, they will of course be changed*

3) Minimisateurs

(18) *Just one example: It may be possible to use a towel more than once* […]
*Environmental protection is often a matter of little steps. How to do it? Very easy. Just use your towels a second time.*

(16) et (17) sont des exemples de cette stratégie de politesse double déja mentionnée que les hôtels sont forcés à utiliser s'ils souhaient éviter que leurs clients perçoivent la communication verte comme une menace (un FTA) : d'abord, l'hôtel confirme, suivant les attentes traditionnelles, que le client peut utiliser toutes les serviettes qu'il veut, puis suit une séquence (à effet argumentatif) décrivant les effets négatifs qui résulteront de ces "attentes".

Il y a même des hôtels qui vont jusqu'à présenter la carte verte comme faisant partie d'un nouveau service. C'est le cas dans (19) où il est question d'un "changement facultatif de serviettes" :

(19) *Hotel Fredensborg er med til at værne om miljøet. Derfor har vi indført valgfrit skift af håndklæder.*
*We care for our environment. Therefore, change of towels is up to you.*

D'autres hôtels ont choisi de présenter le but du *move* 4, non pas comme un choix entre protéger ou ne pas protéger la nature, mais comme un signal pour indiquer quand on a besoin de nouvelles serviettes :

(20) *Please let us know when you need fresh towels:*
- *Put your towels on the floor to show that you need clean ones.*
- *Leave your towels on the towel rack yto say that they are still being used.*

### 4.2.2 Les stratégies d'argumentation

Jetons enfin un coup d'oeil sur les stratégies d'argumentation, c'est-à-dire les stratégies utilisées par l'hôtel afin de persuader le client et qui sont présentes surtout dans les *moves* 1, 3, 5 et 6. Certains hôtels se contentent d'avoir des séquences argumentatives très courtes, souvent réduites à *pour un environnement propre* (dans les *moves* 1 ou 5). D'autres hôtels donnent une argumentation plus élaborée (dans le *move* 3). D'autres hôtels encore, afin d'être plus sûrs, combinent les deux procédés. Quant à la forme même de l'argumentation, elle est à la fois explicite

(21) *Af hensyn til vort miljø*
*For the sake of our environment*
*Der Um velt zuliebe*

(22) *Hotel Fredensborg er med til at værne om miljøet. Derfor har vi indført valgfrit skift af håndklæder.*
*We care for our environment. Therefore, change of towels is up to you.*

(23) *På hoteller verden over bliver der hver dag vasket mange tons håndklæder. Det betyder, at der bliver brugt store mængder af vaskepulver, som forurener miljøet. Da vi her på hotellet gerne vil værne om miljøet […]*

ou implicite

(24) *Can you imagine how many tons of towels are unnecessarily washed every day in hotels all over the world? The monstrous amount of washing powder needed which pollutes our water? Please decide […].*

## 6. Une conclusion évaluative

Le lecteur a peut-être été étonné par les fautes d'ortographe et de traduction dont on peut faire la constatation dans plusieurs des exemples analysés ci-dessus. Voilà pourquoi nous tenons à souligner que ces fautes ne nous incombent pas, mais sont dues aux hôtels qui ne savent pas toujours produire des textes grammaticalement corrects en danois, en anglais ou en allemand. A cela s'ajoute le fait que les hôtels ne savent pas toujours non plus utiliser les stratégies de politesse et d'argumentation de façon appropriée : dans certains cas (mais rares heureusement), les hôtels communiquent d'une manière à la fois impolie et imprécise.

Plus grave est sans doute le fait que les hôtels danois ne prennent pas en considération l'existence de différences interculturelles dans leurs traductions anglaises ou allemandes. Quand nous avons entamé l'établissement de notre corpus de textes venant de pays différents comme la Suède, la Norvège, la Finlande, la Grande-Bretagne, l'Allemagne, L'Autriche, la France et l'Italie, nous avons très vite pu constater que la communication verte des hôtels n'est pas présente partout. En France par exemple, il a été difficile d'introduire les cartes vertes, parce que les hôtels français préfèrent mettre en relief des valeurs comme le luxe, l'abondance, la discrétion, le charme et le calme, et parce que les clients conçoivent "les économies à caractère écologique comme une sanction supplémentaire" (pour une analyse des différences entre la communication au Danmark et en France, voir Johansen 2001). Néanmoins, les hôtels danois semblent supposer que les préoccupations vertes sont les mêmes partout en Europe. Ils semblent également supposer que l'on est poli de la même façon dans tous les pays européens, ce qui est loin d'être le cas. Comme le soulignent plusieurs chercheurs, par exemple Kerbrat-Orecchioni (1994 : 63-112), il existe différents profils communicatifs ou *ethnolectes* (la manière d'une communauté de se présenter et de se comporter dans l'interaction) : la politesse française se distingue par exemple clairement de la politesse danoise. Pour un client français ayant décidé de visiter le Danmark, un séjour dans un hôtel danois risque donc facilement de devenir une surprise inattendue.

Enfin, il y a un facteur temporel. Dans un avenir proche, les clients européens (y compris les clients danois) auront été confrontés à beaucoup plus de cartes vertes, par le fait qu'ils séjourneront dans de plus en plus d'hôtels verts. Les hôtels seront ainsi obligés de prendre en considération la dynamique générique et de changer le texte même des cartes vertes pour qu'il ne soit pas perçu comme "démodé", problématique à laquelle nous espérons revenir à une autre occasion.

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# ABSTRACT

## For a Healthy Environment
## Genre, politeness and argumentation in the green communication of hotels

Finn Frandsen et Winni Johansen
Ecole des Hautes Etudes Commerciales d'Aarhus
Aarhus, Danemark

The purpose of this article is to show how the ongoing 'greening' of western societies has produced new types of communication, including new text genres and a new rhetoric. After a short contrastive presentation of the political green discourse of political parties and environmental movements and the commercial green discourse of companies, a longer section is devoted to the description of the green communication of Scandinavian hotels and the text corpus we have established in order to analyse this new type of communication. We examine one of the new genres produced by the hotels, the so-called green cards inviting the hotel guests to protect nature by using the hand towels more than once. The analysis is based on genre analysis (Swales 1990, Bhatia 1993), Goffman's theory of 'territories' and a revised version of the theory of linguistic politeness elaborated by Brown & Levinson (1978) and Kerbrat-Orecchioni (1991 and 1996). A total of 17 different green cards is analysed with reference to discourse community, communicative purpose, move structure and rhetorical strategies. Particular attention is devoted to analysis of rhetorical strategies as they materialise in politeness and argumentation strategies used by the hotels to prevent their guests from conceiving the new green communication as a face-threatening act not justifying the traditional expectations of a hotel stay.

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# Diachronic Analysis of the Visuals in the Research Paper: A Corpus-Based Study of the Strategies and Semiotics of Visual Representation in Nutrition Biochemistry

Anne Magnet
University of Burgundy
Dijon, France

## 1. Introduction

There has been relatively little examination of the visuals used in the scientific research paper, as opposed to studies of written texts, in the field of ESP. Johns (1998:183) explains :

> There are at least two reasons for this concentration upon the written word. One, certainly is that applied linguists and compositionists are more interested in, and comfortable with, written language. Most of us are trained in the humanities, where words are central to disciplinary values and argumentation. A second, related reason is that in some academic classrooms and disciplines, such as literature, graphs, charts and other visual representations are not central to disciplinary values.

However, Huckin (1987), Bazerman (1989), Berkenotter & Huckin (1993), Myers (1995), and more especially Miller (1998) and Johns (1998) have committed themselves to the study of visuals in the scientific article, as part of their professional involvement, in the disciplinary culture. It could however be argued that non-verbal communication has enjoyed an explosion of interest and use in the second half of the XXth century, due to the exponential development of image technology. Visuals should therefore be present in the research paper as they are in any other media, and there is certainly no neglect of visual representation in other disciplines. Yet, the issue of how scientists use non-verbal elements emerges as a pertinent area of research in ESP and more specifically in the study of the research paper since :"visual elements in the form of figures, tables occupy from one third to one half of the page of a typical research article" (Miller, 1998 : 29) and since,

over the years there has been a noticeable increase in the size and importance of visual elements. (Bazerman, 1989, Huckin, 1987, Myers, 1994).

The aim of this paper is thus to report the results of a corpus-based analysis of visual representation in the research paper, in the form of figures, tables, charts, graphs, diagrams and photographs with a diachronic prospect. This work was undertaken in the light of two theoretical foundations offered by the sociology of scientific knowledge represented mostly by the socio-constructivist authors (Latour & Wolgar, 1979, Knorr-Cetina, 1981, Latour, 1990, Lemke, 1998) and a socio-linguist (Martin, 1996) and the social semiotic theory of representation initially borrowed from linguistics. Quantitative data are briefly reported and the basic concepts of social semiotics are recalled before being used as tools for the present analysis and the discursive strategies underlying the use of visual representation in the research paper are also disclosed.

## 2. The data sample

The data for this study was drawn from a corpus built around the single biochemical research theme of *Essential Fatty Acids* (EFA), as investigated by a community of biochemists and nutritionists from the earliest paradigm set up on the theme in 1929, which established that the consumption of fat is necessary to the survival of mammals. The selection of 72 articles was carried out through multiple processing :

- Sorting of the authors : only papers published by laboratories located in English-speaking countries were chosen.
- Sorting of the journals : only articles published in the top 5 Biochemistry and Nutrition Journals, according to the Science Citation Index (SCI) were kept.
- Representativity of the articles : the 240 papers selected by the ESP linguist were submitted to 2 scientific specialists for selection on a content-based procedure (for details on the constitution of the electronic corpus : Magnet, 2001a, forthcoming).

The most represented journals in the corpus are : *The Journal of Nutrition, The American Journal of Clinical Nutrition, The British Journal of Nutrition, Lipids, The Journal of Lipid Research, the Journal of Biological Chemistry,* which all enjoy high ranking according to the SCI. The 72 articles were then grouped into periods named «before 1960», « the 60s», « the 70s», « the 80s» and « the 90s», to give the corpus a 5-entity outlook and thus a more user-friendly approach, knowing that the results reported here can only give

evidence of trends in the use of visuals over the 70-year period studied, within the specific field of nutrition biochemistry.

## 3. Discursive strategies underlying the use of visuals in scientific discourse

Diachronic studies are making a shy come back in linguistics and emerge in ESP (Salager-Meyer, 1997, 1999) to show that if the Scientific Experimental Article is to be understood and analyzed as a genre, it should not be inferred from it, that such a format is a stable genre, with unchanging and immutable laws and conventions. A diachronic study may make it possible to account for the dynamic process involved in scientific writing within a specialist community. The scientific research paper is not only made up of continous verbal information. The text is interspersed with graphic representation such as tables, curves, diagrams and possibly photographs, mathematical formulae or equations. Non-verbal features are widely used by specialists and one single question to be raised about them is : «what drives scientists to choose *visual* rather than *verbal* communication skills in a paper, since either is available ?». The quick answer points to genre conventions, which may satisfy a «how-question», but not the «why-question», to paraphrase philosophers of science ( Lambert & Shurz, 1994).

Another possible explanation is to interpret non-verbal representation in terms of efficiency. Lemke (1998:87) states that science essentially requires the use of various media to operate :

> The concepts of science are not solely verbal concepts, though they have verbal components. THey are semiotic *hybrids*, simultaneously and essentially verbal, mathematical, visual-graphic and actional-operational. The actional, conversational and written textual genres of science are historically and presently, fundamentally and irreducibly, multimedia genres. [...] Language as a typologically oriented semiotic resource is unsurpassed as a tool for the formulation of difference and relationship, for the making of categorical distinctions. It is much poorer in resources for formulating degree, quantity, gradation, continuous change, continuous co-variation, non-integer ratios, varying proportionality, complex topological relations of relate nearness or corectedness, or nonlinear relationships and dynamic emergence (which I refer to as the *topological* dimensions of meaning).

Graphic representation transposes scientific discourse towards different symbolic media. The decision to use it or not, the choice of its positioning through the text or in various sections of the paper, the specific type of representation selected as well as the information delivered or supported, all

play active part in the «construction of the scientific fact». The use of visuals in the research paper can be interpreted as one of the discursive strategies displayed by the specialist in the composing process of the research paper (Latour, 1979). This amounts to identifying the specialist as an active participant in the making of science and not as a faithful but passive observer of reality. The scientist actually «constructs» the visual elements in the same way as he/she «builds an ideal experiment» reported in the research paper.

However these items should *not* be understood as *images* or *illustrations*, as is the case in other media. Although these terms are used frequently by semiologists, they will not be used here since they could be misleading in relation to the nature of the scientifc paper. In fact, visuals are to be considered as the *hard core* of the experimental article in science, which allows researchers to «create order from disorder» (Latour, 1979: 235), or to «rearrange initial chaos represented by the data produced in the laboratory during the numerous experiments which will not all be reported, or more widely represented by the sum of knowledge of the community on the same theme» (Prigogine & Stengers, 1984 : 239-266). This is nicely summed up by Miller (1998: 31): «when messy nature is reduced to figures and numbers, it can be described with more precision and confidence». Latour (1990:39), describing the activity of a research laboratory, underlines the absolute necessity for the research team to produce graphic inscriptions from the manipulation of reality :

> No matter what scientists talk about, they start talking with some degree of confidence and being believed by colleagues, only once they point at simple geometrized two-dimensional shapes. The 'objects' are discarded or often absent from laboratories. Bleeding and screaming rats are quickly dispatched. What is extracted from them is a tiny set of figures. This extraction.... is *all that counts*. Nothing can be said about the rats, but a great deal can be said about the figures.

The biochemists and nutritionists who wrote the corpus articles on the theme of Essential fatty acids (EFA) are not different from other scientists and they seem to follow a similar mode of action : what counts is the extraction of quantitative data thanks to which *visual persuasion* tools can be produced.
They are not only to be understood as an essential component of the research paper but more so as the hub around which the text is organized. Huckin (1987:5) notices that some expert readers begin by deciphering the visuals before deciding to read on :

> When I asked the scientists to demonstrate how they customarily read a newly published article in their field, they all displayed a reading pattern dominated by the search for new information. First they read the title, then the abstract, then they looked for most important data, usually in graphs, tables, drawings and other visual aids.

Let us now proceed with the evolutionary description of the space, number and nature of visuals and the analysis of these tools in the corpus presented above.

## 4. Evolution of non-verbal elements in the research paper on the EFA theme (1929-1999)

### 4.1 Space assigned to visuals

Visuals take up from one third to one half of each page of scientific papers in the journals *Science* and *Nature* (Miller, 1998:29). Lemke (1998) reports an average use of six visuals per page in *Science.* Huckin (1987), Bazerman (1989) and Myers (1984) all noted increased size and number for visuals in scientific information. The increased use of visuals over the years is however not observable in our corpus.

***Table 1 :*** *Evolution of the Text/Visuals/ Bibliography Distribution in the Research Paper on the Theme of EFA from 1929 to 1999*

| ***Corpus (72 articles)*** | ***Text (% of article)*** | ***Visuals (% of article)*** | ***Bibliography (% of article)*** | ***Article (average length in words)*** |
|---|---|---|---|---|
| Before 1960 | 64.5% | 27.8% | 7.7% | 4056 ± 2320 |
| 1960s | 61.7% | 30.2% | 8.1% | 3490 ± 1030 |
| 1970s | 65.4% | 26.3% | 8.3% | 3818 ± 1241 |
| 1980s | 58.4% | 30.1% | 11.5% | 3593 ± 772 |
| 1990s | 60.3% | 25.5% | 14.2% | 5071 ± 1613 |

Indeed, visuals already represented 27.8% on average of each article in the period before 1960. The space occupied by these elements in relation to the paper as a whole varied between 25 and 30% and still represented more than a quarter of the article in the 90s' corpus. If no significant fluctuation is observed, it is due to the already large space allotted to these elements from the beginning of the corpus. It is interesting to notice that in the 60s and 80s,

this percentage went up to more than 30% of the article, in spite of the urge by publishers to limit the use of visuals, obviously for cost reasons :

> Authors are urged to economize on space used for tables and figures. These should fit one column width (2 5/8 inches) or when necessary, two column widths (5 1/2 inches). **A charge will be made** for that space used for tables and figures which exceeds one-half of the space used for the manuscript exclusive of tables and figures. *The Journal of Nutrition, Guide for Contributors to the Journal, volume 7, 1960.*

The corpus presented here is thus largely characterized by a strong presence of non-verbal elements. The increasing importance assigned to the bibliography section and references in the article led to the shortening of the written text (only 58.4% of the total article in the 80s), but was without effect on the space allocated to visuals (30.1% of the total article in the 80s). This heavy use of non-verbal elements needs to be taken into account as one of the tools for the construction of the scientifc fact through the scientific paper. The results shown in Table 1 go beyond the examination by Myers (1995:113), and therefore justify his point in an even stronger manner :

> Scientific articles may have as much as a fifth of their space taken up by 'pictures'. Clearly these 'pictures' are doing more than just illustrating, supplementing and breaking up the dense blocks of text and attracting the attention of any reluctant readers.

### 4.2 Number of visuals in the research paper

If the space granted to non-verbal elements has remained high and relatively stable in the course of the last seventy years, it might also be revealing to investigate whether their number in each article has evolved or not. Indeed, the space used may not actually reflect the number of visuals, owing to the variations observed in the size and scale chosen by the authors or the publishers of the journals.

***Table 2** : Evolution of the Number of Visuals in the Research Paper on EFA from 1929 to 1999*

| | **Before 1960** | **1960s** | **1970s** | **1980s** | **1990s** |
|---|---|---|---|---|---|
| Number of Visuals (mean /article) | 7.2 ± 3.2 | 6.5± 2.9 | 6.15± 3.12 | 5.7± 5.8 | 7.2± 2.69 |
| Tables | 3.8± 2.78 | 3.3± 2.4 | 4.9± 3.2 | 4.2± 1.81 | 3.7± 2.05 |
| Figures/Diagrams | 3± 2.79 | 2.7± 1.18 | 1.38± 1.68 | 1.3± 1.20 | 3 ± 2.49 |
| % of Tables relative to all Visuals | 52.7% | 50.7% | 79.6% | 73.6% | 51.3% |

Our corpus exhibits an average of 7.2 ± 3.2 visuals per article in the period before 1960 and 7.2 ± 2.69 in the 90s, with a slightly lower number in intermediate decades (around 6 per article). These results agree with those observed by Lemke (1998) in the Journal *Science*. The biochemists and nutritionists who wrote the corpus articles seem to be representative of the larger scientific community in their use of what seems a rather conventional number of visuals in the research paper. Through this, scientists appear to follow a basic strategy in their activity : what counts is the extraction of figures, thanks to which they achieve visual persuasion . The various modes of visual inscription selected by the specialists to convince their peers of the validity of their scientific claim now deserve investigation.

### 4.3 Nature of the Visuals in the research paper

Once evidence of the essential and constant presence of visuals throughout the corpus has been brought, a more intriguing question needs to be addressed concerning the types of visual representation chosen by the community of specialists on EFA, the reasons for these choices and the function of visual representation in this specialized discourse. Tufte (1983:13) made an inventory of the possible types of graphical displays and attributed various roles to them :

Graphical displays should

- show the data,
- induce the viewer to think about the substance rather than about the methodology, graphic design, the technology of graphic production, or something else,

- avoid distorting what the data have to say, present many numbers in a small place,
- make large data sets coherent,
- encourage the eye to compare different pieces of data,
- reveal the data at several levels of detail, from a board of overview to the fine structure,
- serve a reasonably clear purpose : description, exploration, tabulation, or decoration,
- be closely integrated with the statistical and verbal description of the data set.

This investigation applies to the delivery of an informative or didactic message but it does not take into account the polemic and agonistic value of scientific discourse. Within the framework of a socio-constructivist approach, visuals can be understood as a way not only to show but to demonstrate, not only to describe but to bring evidence:

> Visuals in academic articles provide data to convince the reader of the validity of the findings and allow the readers to see how the data were obtained and to interpret the data themselves. These visuals are impregnated by theory to show not only that they are anchored in the literature but that they have wider implications (Miller, 1998:31).

In our corpus, visuals take the form of (in the decreasing order) :

- Tables, reporting mathematical results derived from selected experiments (not all) carried out in the laboratory.
- Diagrams, representing mathematical data turned into graphs to emphasize the correlations or the changes.
- Bar charts, which demonstrate the evolution of the parameters chosen and enable their comparison.
- Photographs, (in the period before 1960) providing evidence of the physical and physiological consequences of EFA deficiency at the level of tissues or cells. Later, photographs became scarce and were used to highlight the high degree of precision obtained in the separation and isolation of various molecules through chromatography.
- Autoradiography or prints obtained on a photographic emulsion by radioactive products.

Visual representation in our corpus is mostly in the form of tables and figures which are mainly bar charts (as early as 1930) and curves. These two types of

visuals (tables and figures) represent at least 92% of all non-verbal items, the remaining part being photographs or diagrams. Unlike other fields of research in science (Bazerman, 1989:172-173), nutrition, and the specific theme of EFA in particular, does not show any shift from the use of tables to that of diagrams. Tables displaying mathematical results remain the leading non-textual medium (3.8±2.78 tables before 1960 and 3.7±2.05 in the 90s). The number of figures, mainly bar charts and curves used in the research paper has varied along the years but we see in the 90s (3±2.49) a return to the numbers used before 1960 (3±2.79). However this relative stability should not be interpreted as a sign of stagnancy in the strategies underlying scientific activity at work in the research paper. Closer investigation needs to be brought to the contents of these preferred visual aids.

### 4.4 Role assigned to visuals in a socio-constructivist approach

#### 4.4.1 Role versus nature of the visuals

Before 1960, the production of quantitative data was limited, due to the difficult production of reliable data for technical reasons. This was of course not only characteristic of the research on EFA, but of all biochemical investigations. The development of laboratory technologies made available to biologists and biochemists should have led, in the research paper, to an extensive display of the results, obtained through sophisticated methods of isolation and purification of the molecules studied, i.e. : essential fatty acids. However, around the 70s, what became essential to scientists was the *number of papers* published in order to promote their careers which were assessed in these terms. The tendency grew towards splitting the results of a single experiment into several articles. In other words, it became more rewarding to publish results in a number of articles containing each an average of 3/4 tables rather than a single article containing 10 tables. Besides, in the *Guide to Authors* of the Journals mentioned above, the publishers kept urging scientists to limit the number of figures and photographs for obvious financial reasons. Moreover, the cost of publication born by the publishing laboratory strictly depends on the number of pages of the paper, which is also a good incentive to keep space-consuming visuals within sensible limits. Cost constraints also account for the absence of colour in the visuals of most scientific journals (*Science* and *Nature* being strong exceptions in this respect).

The predominance of tables, followed by diagrams and bar charts in our corpus is also due to the specificity of the theme. EFA only draw their existence by being brought to the fore through laboratory assays and tests and therefore by their quantification, after separation or isolation from other tissue or blood components. And even more particular to the theme, due to

the relation of competition between the various fatty acids observed in the metabolism of mammals, any variation of one parameter is followed by changes in others, which drives specialists to produce the whole set of values and not only those on which the experimenter focuses. The field experts consulted to build the corpus were of the opinion that the tables presented in a scientific paper are used as a reference, as a control by future experimenters. If values obtained in a laboratory under the same experimental conditions differ too much, they will be checked over and over in order to consider a possible controversy over one of the community's paradigms. This would result in a new scientific claim. The large amount of mathematical data shown in tables, induced by the specificity of the theme, and also an illustration of general science in the course of the XXth century explains the recourse to tables as a privileged data display tool. Tables represent an *intermediate form* between text and pure graphics. A table does not call for compulsory linear deciphering, and yet it tends to imply the conventional reading move from left to right, line after line.

The display of numerous data in tables also confers another specificity to the EFA specialist community. Unlike other scientists who start their reading of a scientific paper by browsing through the visual aids, biochemists and nutritionists specialized in EFA, tend to read the Abstract and the Results section which bring to the fore the most striking facts, before perusing the visuals.

### 4.4.2 Role versus positioning of the visuals

The diachronic prospect of this study makes it possible to view the strategies developed by a specialist community as a dynamic process. To our knowledge, no investigation of the distribution of visuals through the various sections of the article has been done. If visuals are to be considered as the *hard core* of the paper, their arrangement throughout the article and among its various sections may not be haphazard and the study of this arrangement is probably of interest in the understanding of general discursive strategies.

It should first be recalled that authors rarely decide where visuals will be placed within the article. Indeed, they are asked to produce all the visuals on separate sheets and to note where they wish to have these elements inserted. The final decision falls to the publisher of the journal. Should the role of visuals be only to give the results a mathematical or graphic inscription, they would only appear in the Results section of the article, but Table 3 displays a wider distribution of non-verbal items throughout the article, which calls for more investigation.

***Table 3*** *: Evolution of the Distribution of Visuals in the Research Paper on EFA (expressed in % ) from 1929 to 1999*

| Section of the article | Before 1960 | 1960s | 1970s | 1980s | 1990s |
|---|---|---|---|---|---|
| *Introduction* | 1.4% | 0% | 0% | 5.8% | 2.5% |
| *Materials & Methods* | 32% | 9.2% | 12.5% | 15.8% | 15.9% |
| *Results* | 41.7% | 52.4% | 67.5% | 43.4% | 55.8% |
| *Results & Discussion* | 20.8% | 33.8% | 8.75% | 10.8% | 0% |
| *Discussion* | 4.1% | 4.6% | 11.25% | 24.2% | 25.8% |

First and contrary to what might be expected, the Introduction sometimes contains visuals (in 10 articles/72, before 1960, in the 80s and 90s). In a few cases, the table providing the compositions of diets and their EFA contents in a kind of experiment called «mediated dietary experiments» by the specialists, has obviously been displaced from the Materials & Methods section to the Introduction for editorial reasons. But in other articles, the presence of a diagram providing a schematic visualization of biological metabolisms in the Introduction serves a particular purpose. It represents the condensed *macrotext,* that is the knowledge shared and referred to by the specialist community at a given time (Martin, 1996:17). The use of such a figure in the Introduction enables scientists to efficiently focus the reader's attention on a selected paradigm. It bars the reader's way to other possible choices of scientific interpretation on the specific theme of the article. This observation needs to be confirmed in other fields of research. Visuals can be construed in a scientific environment as a way to *materialize* and thus *reify* objects and processes. This accounts for the constant presence of visuals in both sections : (1) Materials & Methods and (2) Results. The contents of the first two tables, generally found in the Materials & Methods section, but sometimes placed at the beginning of the Results section, aim to assure the reader that the experiment has been done according to the procedural conventions of the community. They exhibit the data likely to be checked by other experimenters, such as the animals' weights, the composition of the diets tested, the length of the dietary protocols, etc. The last 2 or 3 tables placed in the Results section represent the *nucleus* of the paper, and the parameters reported justify the originality of the experiment. Thus, the importance or dramatization of the data is constructed and accentuated through the succession of visuals. Table 3 indicates a particularly strong presence of visuals in the Results section (41.7% before 1960 to 55.8% in the 90s). The increasingly heavy use of tables and bar charts in the Results section through the corpus also explains the regression of written text in this section. Visual representation of the results is more efficient and requires less effort in the selection of values for the process of *foregrounding*. A negative

correlation is observed thanks to the diachronic investigation of the topographical use of visuals in the research paper. Actually, of the total number of visuals in any research paper, the percentage found in the Materials & Methods section halved from 32% before 1960 to 15.9% in the 90s. Over the same period, the percentage of visuals in the Discussion section increased dramatically from 4.1% before 1960 to 25.8 % in the 90s. This evolution might be due to the shortening of the text in the Results section, which renders the insertion of visuals difficult in this part of the article, but it may also be justified in terms of discursive strategies. The increased presence of visuals in the Discussion section and more particularly that of tables which display the most important parameters justifying the strongest scientific claim, stresses the fact that visuals actively support the construction of the argumentation in the strategy of persuasion. They are placed where they are the most effective, that is where they can be used as convincing pieces of evidence. They are used to prompt the community to ratify the answer to the hypothesis raised, and incorporate it into the macrotext, which is the major function of the Discussion in the article.

## 5. Semiological approach of non-verbal elements in the research paper

### 5.1 From object representation to process epitome

Survey of the corpus gives evidence of a striking aspect in the evolution of the use of visuals over a 70-year period : the move from object representation in the visuals to that of processes. Photographs were sometimes included in the articles published before 1960 (from half a page to a complete page). These photographic visuals represent one of the *external allies*, ( Latour,1987) and are used as a guarantee (Bastide, 1985:137) :

> Dans le double mouvement des illustrations au texte et du texte aux illustrations, la photographie joue le rôle de garantie et assure l'enchaînement des différentes étapes du dispositif de visualisation, de sorte que celui-ci apparaisse linéaire et homogène.

In the 40s and 50s, articles also included pieces of realia such as follow-ups of patients or drawings of the body parts of children affected by EFA deficiency. This type of visual representation gave a genuine touch of true life to the scientific report. This type of authentic document extracted from real life disappeared almost totally from the corpus after the 60s. Photography became a rare visual tool in the corpus (5 occurrences for the rest of the corpus) and its nature changed. From the genuine representation of reality through visual exhibition of lesions due to EFA deficiency, it shifted to the manipulation of reality, as shown in electron microscopy photographs of cells or radioactive tracings printed on film, which require the use of sophisticated laboratory techniques. From the evidence of an *object* brought

through photography, the laboratory work presented in the article has become the display of a process. The photographed physiological results of EFA deficiency have also been replaced, since the 60s, by the production of mathematical averages of a large amount of data provided in the form of columns of figures in a table, considered as a much more convincing piece of evidence in the persuasion strategy. A photograph is to be interpreted as the substantiation of a theory from one single case and therefore raises the question of possible generalization. Mathematicized results processed so as to build up tables or charts are less easily questionable and represent a more reliable and resistant *ally*, in the construction of *hard* scientific facts (Latour, 1979) :

> Photographs, while persuasive, are seen as unique examples of the phenomenon studied. The combination of visual and iconic however, make for a powerful argument (Miller,1998:36).
>
> The differences between photograph and diagram can be resolved by associating the photograph with the unique, situationally specific, perspectival, instantaneously, and particular aspects of the thing under examination while the diagram brings into relief the essential, synthetic, constant, veridical, and universally present aspects of the thing 'itself'. (Lynch,1990:163).

### 5.2 From description to the building of relationships

In the articles from the beginning of the corpus up to the 60s, scientists literally described their experiments and for instance each rat was *named* (e.g.: ‡ rat 29 541) and the values relative to each rat were reported in tables or represented in charts *individually*. From the 60s on, only means of values for parameters measured in groups of generally 5 rats are provided. The aim pursued by scientists has become the production of numerous compressed data and the comparison and the correlation of the various parameters chosen, in order to establish strict relationships between them, as Bertin (1981:176) states : «The aim of tables and graphics is to make relationships among previously defined sets appear». The numerical data displayed are therefore a simplified representation of reality. Some mathematical means may even be the mean of means, as indicated in the caption of a table :

*The results are given as the mean ± S.E. of the mean for 8 rats on each diet.* (*Biochemica Biophysica Acta*, 1988:504)

or of several experiments in another caption :

*Values are means from two experiments* . (*Lipids* : 1980:843).

Parallel to the sophistication of the data provided in visuals, the written text *inside* tables has been receding to the benefit of symbolic and numerical notations. For instance, the notation of linoleic acid, an essential fatty acid, was first replaed in tables and diagrams with LA and then with 18:2 *n-6*, or *18:2 ω6.*, which makes understanding of the tables for a non-specialist totally impossible. For instance, in a table taking up more than half a page, only 4 (compound) lexical items can be found (*The Journal of Nutrition*, 1980:1700, table 4), all the remaining signs being symbolic and numerical.

The shift from object description to relationship building can also be observed in the *titles* of tables and diagrams. Correlation appears through the heavy use of the term : *effect of* , (39 titles of visuals in the corpus), followed by *relationship(s), influence of, correlation(s), comparison of, changes in* , *response to* , *percentage distribution of, differences in*, and also, to a lesser extent : *plot of observed changes, concentrations versus predicted changes*. The interest for the process, rather than for the object is illustrated by the coining of the titles of visuals such as : *incorporation of* , *time course of, regression lines representing changes in, inhibition of,* which all indicate interference of the specialists with the object studied.

### 5.3 Semiotics tested in the research article on EFA

#### 5.3.1 The referential power of visuals

Using traditional semiological criteria to make an inventory of, classify and describe the sign language offered by non-verbal representation, it is possible to study the function of these items more effectively by trying to understand what they refer to. According to the Paris School of Semiotics and more specifically to Barthes's theory (1964), image in the wider sense uses *indexical* reference, that is built on a direct link with the *referent*; index is understood as the apparent sign that something exists. An index would thus be: «the sign through which a sequential or causal relationship is built between *signifier* and *signified* »(Dyer, 1982:125). The function of image is thus to demonstrate, to bring evidence. The process of autoradiography as used in the corpus of the 80s, and 90s is a classical example of this type of reference used in biology. It enables visualization of molecules through photographic impression of a radioactive isotope.

Reference can also be *iconic*, that is based on resemblance. The *icon* can be seen as the sign in which the 'signifier-signified' relationship is a link of similarity or homology. Resemblance can be real as in photographs or stylized as in conventionalized signs.

Reference can lastly be *symbolic*, that is, built on conventions accepted by a community. This is the case, in our corpus, of the notation system of fatty acids as already observed in Tables. The diachronic investigation of non-verbal elements in the corpus shows limited use of indexical reference in the form of photographs, occurring mostly before 1960. Once the very existence of EFA had been accepted by the community, the purpose of the experiments evolved into demonstrating the origin, the variations in contents and the role of EFA in the metabolism of mammals.

Iconic reference is rather scarcely used since it is poorly suited to the description of dynamic processes. To conclude, symbolic reference is by far the most widespread referential process behind visuals used in the corpus. It is increasingly present, since symbols are constantly being created by the community, which thus builds its own code of communication. This evolution is probably not proper to the research paper on EFA, but it is precisely the gradual change from indexical to symbolic reference over the period studied that largely contributes to making the scientific article esoteric.

### 5.3.2 Social Semiotics applied to the research article

Another way of looking at the semiotics of scientific discourse is represented by what Halliday & Martin (1993) called S*ocial Semiotics.* This analysis methodology developed from systemic linguistics can be applied to non-verbal investigation as Halliday (1985, 1993) and more recently Miller (1998:31-40) have done. Three functions of messages can be distinguished : - *ideational metaf unction*, 'which involves referential meanings either in the world or in our minds and is what most people associate the field with'; - *interpersonal metafunction*, 'which deals with the relationship between writer and reader'; - *textual metafunction*, 'which serves to organize the messages in the other metafunctions into a coherent whole'.

#### 5.3.2.1 The ideational metafunction

In the light of such conceptualization, it appears that text and image are not interchangeable. One of the built-in advantages of visuals as compared to text is that they enable scientists to *show* what is difficult or too long to describe in or around an experiment. In the case of our corpus, the essential referential metafunction of non-verbal elements is to highlight the multiple relationships between variables observed or produced by the specialist.

The very high occurrence of symbolic reference in tables (e.g.: the *n-3* fatty acid family versus the *n-6* fatty acid family in tables) and even more in diagrams (e.g.: ,•, O,•) also allows the information to be densified or

compressed, these two discursive processes being used again as allies in the persuasion strategy.

> By far the most prominant use of visuals in the academic texts is to highlight the logical relations of comparison among variables organized in such a way as to imply a cause and effect relationship. [...] The multiple comparisons that can be made are endless. In these visuals, the individuality of each creature has been suppressed to highlight the logical comparative relations of comparison among types.[...] Visuals with a very condensed aspect contain much more information per square inch than the written text. (Miller, 1998:36-37).

This evolution towards more symbolic reference clearly ends up in the 90s by discarding almost all text from diagrams and figures. A definite advantage of symbolic reference is the efficiency acquired by the reader who can peruse the important results at a glance.

#### 5.3.2.2 The interpersonal metafunction

Visuals in scientific discourse enable the results to be checked by peers. Validation of the results depends more on what is *shown* than on what is *said.* The community behaves as doubting Thomas : seeing is believing, which infers that visuals are a sort of prerequisite to building credibility in the eye of the specialist community. Apart from presenting data, they also organize information. This is not too obvious in the articles before 1960, in which the experiment is totally reported, but from the 60s on, diagrams and especially bar charts were built with a view to supporting argumentation and anticipating dispute. It can be admitted however that the organization of information gradually became a convention, a characteristic of the genre. Curves and bar charts present the clear advantage of being able to display the «fourth dimension», that is *time,* even and perhaps above all, if it is the *reconstructed time* of the experiment, which occurs in the article. A figure may translate time into spatial dimension, and it is conventionally deciphered from left to right. It is therefore represented by convention on the abscissa of the curve. Representation of time brings dynamics into figures, which, in other types of visuals, is expressed as an assembly of arrows or a cascade of reactions.

#### 5.3.2.3 The textual metafunction

This metafunction refers to two processes first described in systemic linguistics as *theme* and *rheme,* or more simply through a binary return move to *given* or *new* information. The layout of visuals itself may fulfill a theme

function, just like a caption under a table or a figure will provide the orientation or theme of a visual. Indeed, the layout of a visual tends to orientate the reader. Kress & Van Leeuwen (1996 :187) define the status of information according to the positioning inside the visual, which states that 'left' is *given*, that is supposedly known by the reader, and 'right' is *new*, or at least not yet accepted as a paradigm and therefore to be considered with special attention :

> When pictures or layouts make significant use of the horizontal axis, positioning some of their elements left, and other different ones right of the centre, the elements placed on the left are presented as Given, the elements placed on the right as New. For something to be Given means that it is presented as something the viewer already knows, as a familiar and agreed-upon point of departure for the message. For something to be New means that it is presented as something which is not yet known, or perhaps not yet agreed upon by the viewer, hence as something to which the viewer must pay special attention. Broadly speaking, the meaning of the New is therefore 'problematic', 'contestable', the information "at issue"; while the Given is presented as commonsensical, self-evident.

The positioning of given/new information actually supports natural deciphering (at least in Indo-European languages) in a left to right movement. This is all the truer in the field of nutrition, where chronology plays an important part in the interpretation of the results and where therefore curves represent time on the abscissa, making reading from left to right compulsory. Chronological representations of experiments in curves represent almost a third of the corpus visuals. Yet, even in the visuals which do not use chronology in their layout, the left side reports the initial parameters or *controls*, whereas new or major information, or the solution brought to a question are placed on the right. Another interesting observation is the adequation between the table title key-words and the far right column results in tables. However, at the end of the 80s and in the 90s, with the development of symbolic reference, the EFA specialist community started using a layout based on a rising or descending order to report the results obtained on the various fatty acids. Fatty acids are thus ordered in the symbolic notation according to the number of carbon atoms, double bonds and the positioning of the last double bond (from 16:0 to 22: 6*n-3*). In that case, even when data obtained on a single fatty acid constitute the new or major information, this result is not displaced towards the right side of the tables or graphs. Another symbolic notation has developed from this logical

account of data. The most significant results are signalled by a superscript letter [a], [b], or [c] , which are generally explicited in the caption :

> [a] Significant effect of linolenate deficiency, when data from both groups of linolenate-supplemented animals are combined and compared with data from both groups of linolenate-deficient rats (The Journal of Nutrition, 1980: 1501-1503, tables 2 to 8).

Quick information retrieval from the research paper on EFA will therefore be efficiently performed either by skimming the right-hand side of visuals or by scanning data highlighted by superscript letters.

## 6. Conclusion

Visual understood as non-verbal elements are shown to be a constant convention in the discourse of specialists on the specific theme of EFA. The corresponding macrotext is characterized by a relative stability of the number of visuals and by privileged recourse to tables, curves and bar charts, in decreasing order of presence. Visuals represent one of the most obvious traces of the upstream work done in the laboratory before the writing of the article. Unlike visuals displayed in scientific vulgarization magazines, they are not meant to attract the reader, and besides their dryness, the tendency to accumulate more and more data and the rising use of symbols make their reading a daunting task, at least to the layman. The diachronic prospect shows that no true type of visual representation has appeared; the widespread use of computers has only made the production of data easier, quicker and has therefore led to the amplified treatment and display of quantitative measurements, while photography, a more expensive and less rewarding tool has almost totally disappeared. Visuals are not totally built on the facts established in the article. They also include some already validated scientific facts. They are supposed to be interpretable independently from the text. Yet the study of the visual/text relationships shows interaction and especially the anchoring function of the linguistic message to visuals. The consultation with specialists of the field investigated here, leads to the opinion that the densified information in the visuals prompts the specialized reader to change strategies. There is a trend towards using the author's mediation as exposed in the text of the Results section, which focuses on the major findings. The most obvious signs of evolution in the visuals is on one hand the number of symbolic and semi-symbolic systems and on the other hand, the shift from visuals that describe to visuals that relate.

These results could lead to more general conclusions as to the use of visuals in scientific communication as a whole, but they need to be confirmed by other studies of the same type in other fields of scientific research.

**Appendix:**

A complete list of the papers analyzed here can be found in the annexes of the PHD thesis entitled : "Etude diachronique de l'article scientifique de recherche en anglais : le cas de la nutrition", defended at the University of Burgundy on january 10, 2000 by Anne Magnet, or can be obtained by contacting the author by e-mail to anne.magnet@u-bourgogne.fr. The total corpus has been computerized and is available on request.

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# ABSTRACT

## Diachronic Analysis of the Visuals in the Research Paper: A Corpus-Based Study of the Strategies and Semiotics of Visual Representation in Nutrition Biochemistry

Dr. Anne Magnet
Université de Bourgogne
Dijon, France

**Key-words:**
Visuals / Research paper / Diachrony / Corpus-based /
Socio-constructivism Semiotics / Nutrition Biochemistry.

This article reports a diachronic analysis of the visuals as used in the scientific research paper over a 70-year period (1929-1999). The corpus-based (72-articles) study investigates the strategies of specialists in nutrition biochemistry publishing on a single biological theme : essential fatty acids (EFA). It provides data on the various kinds of visuals as well as an inquiry into the size, positioning, nature and function of visual representation within the scientific paper considered as a genre, over the years. Based on the theoretical principle of semiotics, it then proceeds with an analysis of the concept move which underlies the use of visuals, conceived as the *hard core* of the paper. Readability of a scientific document depends on the number of symbolic and semi-symbolic systems at stake. A scientific visual is constructed as the article itself : It is built as a stratagem, an ambush with no way out. Visuals are used to convince. They are also the only *evidence* of laboratory work. Semiotic analysis shows that the descriptive nature of the visuals used in the corpus changes after the 60s to become the display of multiple relationships. It also analyzes how the techniques of *foregrounding* and *backgrounding* can apply to the study of non-verbal items in the research paper.

Social semiotics gives another light on the use of visuals by showing that a scientific paper does not only contain *new* information. Based on the *theme/rheme* concepts, borrowed from systemic linguistics, the study of visuals in the corpus and especially that of tables, demonstrates that what is already known by the community (*given)* tends to be produced on the left-hand side of the tables, whereas the *new* information is placed on the right. There is also adequation between the title key-words of the tables and the right-hand side results found in these tables. However, due to the development of symbolic representation over the years, the results concerning the research theme in the 80s and 90s tend to follow logical

ordering. Thus, the results about essential fatty acids (EFA) are presented or *staged* in an order according to their chemical composition. Significant results in this case do not appear on the right, but are signalled by special symbols. Specialists can thus very efficiently find the results of interest through this deciphering process, while the layman is more and more at a loss when trying to understand the data represented in visuals.

This paper stresses the interest of a diachronic prospect in the study of the visual characteristics of the scientific article, by showing that if visuals are a constant feature, and even constitute the *hard core* of the article, they should not be considered as stable traits in the research paper contemplated as a genre and their evolution points to changing persuasion strategies pursued by the scientific community represented here.

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# Zur Hermeneutik als Verstehenshilfe bei Rechtstexten

Ingrid Simonnæs
Institutt for språk
Norges Handelshøyskolen
Bergen, Norge

## 1. Einleitung

Dieser Artikel behandelt das Verständlichkeitsproblem von Fachtexten, genauer Rechtstexten, unter besonderer Berücksichtigung der Hermeneutik.[1] Daneben soll das Verständlichkeitsproblem aus der Sicht der Linguistik beleuchtet werden[2], wobei das sprachliche Gebaren in der fachexternen Kommunikation analysiert wird, um festzustellen, mit welchen Mitteln sich der Textproduzent auf den Rezipienten einstellt, um eine Verständlichkeit seiner Botschaft zu sichern.

Der Produzent der hier zu untersuchenden Texte sind Juristen, und zwar der Gesetzgeber, der das Recht 'gesetzt' hat und der Richter, der sich mit seinem Richterspruch an einen Nicht-Juristen wendet und ihm die Gesetzeslage bezogen auf die vorliegende Sachlage darlegen muss. Wie (allgemein)-verständlich können solche Rechtstexte sein, bzw. wie fachsprachlich dürfen sie (noch) sein, ehe mit Kommunikationsproblemen zu rechnen ist?

Es geht also darum, zu klären, wie ein Rechtstext verstanden werden kann, wenn der Rezipient nicht das gleiche Vorwissen mitbringt, wie ein Fachkollege.

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[1] Vgl. hierzu u.a. Larenz über die verschiedenen Kriterien für die Auslegung von Gesetzen (Larenz 1995:141-168); ebenso Esser (1975:124-128) zu den einzelnen Auslegungsmethoden, den sogenannten Canones.

[2] Vgl. für nützliche bibliographische Hinweise exemplarisch Biere (1991) mit weiterführenden Hinweisen dort und Biere (1998). Vgl. auch Hoffmann (1984) zur Verständlichkeit bei Mehrfachadressierung sowie Heringer (1984), der unter kommunikativem Ansatz Leitsätze und Leitfragen zur Textverständlichkeit aufgestellt hat.

Das Verstehen eines Textes erfordert bekanntlich, dass der Rezipient in der Lage ist, den Text auszulegen, und dafür gibt es ein wissenschaftliches Verfahren, die 'Hermeneutik'. Da es sich um Rechtstexte handelt, die zur Erzielung eines Verstehens auszulegen sind, soll hier aufgezeigt werden, wie die juristische Hermeneutik zum Verstehen beitragen kann. - 'Rechtstexte' sollen hier beschränkt bleiben auf Gesetzestexte einerseits und richterliche Entscheidungen andererseits.

## 2. 'Verstehen' aus der Sicht der Rechtswissenschaft

Karl Larenz, Autor des seit Jahrzehnten in Deutschland verwendeten und in vielen Auflagen erschienenen Lehrbuches *Methodenlehre der Rechtswissenschaft*, weist auf die allgemein anerkannte Einsicht hin, worum es in der Rechtswissenschaft weitgehend geht, nämlich um das Verstehen von sprachlichen Äußerungen bzw. deren **normativer Bedeutung** (Larenz 1995:25f). Verstehen erfolgt wiederum unreflektiert oder reflektiert, nämlich durch Auslegen.[3] Die Tätigkeit des Auslegens wird erst dann erforderlich, wenn der Sinn oder die Bedeutung[4] eines Textes für den Rezipienten zu einem Problem geworden ist, was ohne weiteres nachvollziehbar ist. Vermittels des Auslegens ist der Rezipient in der Lage, unter den möglichen Deutungen[5] zu entscheiden, welche Deutung (Interpretation) im gegebenen Kontext als die richtige(re) erscheint. Wichtig ist dabei, dass es niemals **die richtige** Interpretation geben kann, wie Fischer (1984:60) schreibt. Für die Hermeneutik gelte nicht das Verifikationsprinzip, sondern sinnvoll sei der Falsifikationsnachweis, dass es sich um eine unmögliche Interpretation eines Textes handele (ebd.).

Die Rechtswissenschaft hat also als wichtigen Aufgabenbereich mit der Auslegung von Rechtstexten, besonders von Rechtsnormen und Rechtssätzen, zu tun. Dabei wird die Anwendung des Gesetzes auf den konkreten Rechtsfall, Aufgabe der richterlichen Entscheidung, als **das** Problem der juristischen Hermeneutik gesehen (vgl. hierzu u.a. Rittner 1968; ähnlich auch Gadamer 1960:XIII und 307). Der Zweck der Auslegung wird in der Hilfe für die juristische Praxis, hier die Rechtsprechungsorgane, gesehen.

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[3] Vgl. übrigens die andere Auffassung bei Gadamer, für den "Verstehen immer Auslegung" ist (Gadamer 1960:291)**,** vgl. auch Fischer 1984:54.

[4] Zu den unterschiedlichen Verwendungsweisen von 'Sinn' und 'Bedeutung' s. unten.

[5] Zur Kritik an der Verwendung von 'Deutung' als inkorrekte Ausdrucksweise für 'Auslegung' vgl. Hatz (1963:38).

## 3. Überblick über die Entwicklungsgeschichte der Hermeneutik und Abgrenzung

Als Begründer der modernen Hermeneutik gilt Dilthey (1833-1911). Für ihn ist die Hermeneutik, die "Kunstlehre der Auslegung von Schriftdenkmalen" (Dilthey 1957:320). 'Auslegung' – er spricht auch von 'Interpretation '– wiederum ist nach Dilthey das "kunstmäßige Verstehen von dauernd fixierten Lebensäußerungen" (op.cit.:318), wobei die 'Lebensäußerungen' sehr weit gefasst sind, da er diese vom Lallen des Säuglings bis zu Kants *Kritik der reinen Vernunft* reichen lässt (ebd.). Unter 'kunstmäßiges Verstehen' soll hier 'an Regeln gebundenes Verstehen und Verständlichmachen' heißen[6].

Im 20. Jahrhundert scheint die Diskussion darüber 'Was ist Hermeneutik?' erneut in der Frage einer Unterscheidung von 'Verstehen' einerseits und 'Auslegen' andererseits gespalten zu sein. Besonders die philosophische Hermeneutik, vertreten durch Gadamer, hat sich mit dem 'Verstehen' auseinandergesetzt. Für Gadamer ist die Hermeneutik nicht eine Methodenlehre der Geisteswissenschaften, sondern der "Versuch einer Verständigung über das, was die Geisteswissenschaften über ihr methodisches Selbstbewußtsein hinaus in Wahrheit sind und was sie mit dem Ganzen unserer Welterfahrung verbindet" (Gadamer 1960:XV). Nach Gadamer hat die philosophische Hermeneutik die Bedingungen aufzuklären, unter denen Verstehen stattfindet, da Verstehen "Teilhabe am gemeinsamen Sinn" sei (Gadamer 1959:25).

Von anderen wird die Hermeneutik als Auslegungslehre verstanden, als "allgemeine Methodik der Geisteswissenschaften", so in Anlehnung an den Titel von Bettis Schrift (1972). Der italienische Jurist Betti nimmt eine terminologische Abgrenzung von 'Verstehen' und 'Auslegen' vor. Er knüpft dabei an die für Juristen bekannte Unterscheidung zwischen Handlung und Erfolg, Verfahren und Ergebnis des Verfahrens, an, wo Auslegen für Betti ein Verfahren ist, "dessen Erfolg und [...] Ergebnis ein *Verstehen* ist" (ebd.:11; Kursivierung im Original). Die Möglichkeit des Verstehens dagegen hängt für Betti davon ab, sich auf das Wesen des Wortes zu besinnen, bzw. wie es bei ihm heißt:

> Als Lehre vom Verstehen muß Hermeneutik darum Lehre vom Worte sein: eine Lehre, für die das Verstehen eröffnende Wort konstitutiv ist mit Hinblick auf die Aufgabe von Orientierung an Sachverhalten."
>
> (Betti 1972:36)

[6] Vgl. hierzu die Definition von 'Auslegung' bei Wach (1926:5).

Auf die 'Aufgabe an Orientierung an Sachverhalten' wird nachher bei der Analyse von Beispielen zurückzukommen sein.

Da in diesem Artikel die Rolle der Hermeneutik als Verstehenshilfe bei Rechtstexten ('Text' hier im Sinne von geschriebener Text) näher analysiert werden soll, wird auf die Definition von 'Hermeneutik' als 'Auslegungstechnik' und als 'Lehre vom Verstehen eines Textes' zurückzukommen sein, wobei der Verstehensbegriff der Hermeneutik des 20. Jahrhunderts[7], vertreten u.a. durch Gadamer, am Rande miteinbezogen wird.

## 4. Die Hermeneutik in der Rechtswissenschaft

### 4.1 Die Rechtswissenschaft als Teil der Geisteswissenschaften

Wenn man der traditionellen – jedoch nicht unumstrittenen – Gliederung der Wissenschaften in nomothetische Naturwissenschaften und idiographische Geisteswissenschaften (Bezeichnung nach Windelband) folgt, gehört die Rechtswissenschaft zu den Geisteswissenschaften.[8] Wenn dem zuzustimmen ist, spielt diese Zweiteilung auch für die Methoden des Erkennens eine wichtige Rolle, da in den Geisteswissenschaften die hermeneutische (verstehende) und die mit ihr verbundene kritische Methode zum Erkennen führe, während die Erkenntnisformen in den Naturwissenschaften, die aus Aufdecken von Gesetzmäßigkeiten, von Kausalität und Verallgemeinerung von Erkanntem bestehen, dem geisteswissenschaftlichen Zweck des Verstehens nicht gerecht würden, so in Anlehnung an Mader (1990:569).

Dieser vermeintliche Gegensatz zwischen den Erkenntnisformen der Naturwissenschaften einerseits und den der Geisteswissenschaften andererseits kann jedoch überbrückt werden, wenn man sich der Auffassung anschließt, dass jedes 'Erklären', das Dilthey als besonderes Kennzeichen der Erkenntnisform der Naturwissenschaften beschrieben hat, ein 'Verstehen' voraussetzt. Auch der naturwissenschaftliche Forscher muss das von ihm untersuchte Einzelphänomen 'verstehen', oder wie Coreth sagt "in seiner Eigenart [...] – wenigstens vorläufig – erfassen, bevor er es kausal 'erklären'

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[7] Zur Gliederung der Hermeneutik vgl. u.a. Gilje (1987) und Seiffert (1992). Gilje und Seiffert benutzen jedoch unterschiedliche Kriterien für ihre Gliederung. Gilje spricht von "traditioneller Hermeneutik", "philosophischer Hermeneutik" in den 30er - 60er Jahren des 20. Jahrhunderts und der sogenannten "Tiefenhermeneutik" in den 60er Jahren des 20. Jahrhunderts, zu dessen Vertreter er Habermas und Ricoeur zählt. Seiffert gliedert die Hermeneutik je nach Gegenstandsbereich, mit der sie sich befasst, in "dogmatische Hermeneutik", die sich mit der Interpretation von Texten, u.a. juristischen Texten, befasst, "historische Hermeneutik" und "Hermeneutik des Lebens".

[8] Über Unterschiede und Gemeinsamkeiten der Natur- und Geisteswissenschaften, vgl. u.a. Dilthey (1957: 242-258) und Windelband (1907:199). Vgl. hierzu Dilthey (1957:144): "Die Natur erklären wir, das Seelenleben verstehen wir."

kann." (op. cit.: 1969:60). Wie von u.a. Bollnow überzeugend dargelegt werden konnte, gibt es in den Natur- und Geisteswissenschaften sowohl verstehende als auch erklärende Leistungen, wenn auch mit unterschiedlichem Gewicht. "Immer aber ist das Verstehen die ursprünglichere und elementarere Leistung [...]", betont er (Bollnow 1949:95). Daraus lässt sich dann schließen, dass der Unterschied zwischen den erklärenden Naturwissenschaften und verstehenden Geisteswissenschaften dennoch nicht so eindeutig vorhanden ist, wie oben angedeutet wurde, denn auch die naturwissenschaftliche Forschung setzt ein "Verstehen von Sinngehalten der Natur voraus", die alsdann zu erklären sind. Und, wie Coreth schreibt (op.cit.:71), "jeder Schritt der Erklärung muß wiederum verstanden werden, sonst erklärt er nichts." Seine Schlussfolgerung sagt, dass es kein Erklären ohne Verstehen, aber auch kein Verstehen ohne Erklären gebe (ebd.). Dem ist zuzustimmen.

### 4.2 Besonderheiten der juristischen Hermeneutik

Da Recht bekanntlich nicht mit oder neben der Sprache, sondern **in** der Sprache ist, ist Rechtswissenschaft die Wissenschaft vom Verstehen des in der Sprache lebenden Rechtsstoffes. Hieraus folgt, dass die Hermeneutik für die Rechtswissenschaft eine zentrale Rolle spielen muss, da das Ziel des juristisch-hermeneutischen Verfahrens das Verstehen eines Sinnes ist, der in einem Rechtssatz ausgedrückt ist. Vereinfacht gesagt, befasst sich die juristische Hermeneutik mit der Interpretation des jeweils geltenden Rechts. In diesem Zusammenhang weist Hatz (1963:17f) auf die besondere Art der juristischen hermeneutischen Methode hin, die danach fragt, was dem vorliegenden Rechtsbegriff[9] "im Zeitpunkt seiner Anwendung" zu entnehmen ist. Diese Methode ist als grundsätzlich verschieden von der philologischen Methode des Verstehens zu sehen, da diese danach fragt, was der Autor mit seinem Text zur Zeit seiner Abfassung sagen wollte (ebd.). Die Berücksichtigung des historischen Aspekts entfällt für die juristische Methode der Hermeneutik und gehört in das Aufgabengebiet der Rechtsgeschichte.

Im Gegensatz zur allgemeinen Hermeneutik[10], bei der das Verstehen auf alles, was der Text bedeutet, abzielt, verfolgt die juristische Hermeneutik jedoch eine engere Zielsetzung: Es geht ihr meist darum, einen (Rechts)text so zu verstehen, dass er für einen bestimmten Sachverhalt erheblich ist (Mayer-Maly 1969:414). Allerdings macht Busse darauf aufmerksam, dass dieser analytische Vorgang, der von dem Gesetz, dem Normtext, wie es bei Busse

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[9] Zur Definition von 'Rechtsbegriff', s. u.a. Engisch (1958).

[10] Vgl. hierzu Schleiermacher, nach dem es noch keine **allgemeine** Hermeneutik der Kunst des Verstehens gab, sondern nur mehrere **spezielle**, wie bei Wach (1926:110f) zu lesen ist.

heißt, ausgeht, um dann zu seinen "fallbezogenen Ausfächerungen" zu gelangen, eine **Idealisierung** darstellt, die der tatsächlichen Behandlung durch die Juristen in der "alltäglichen Entscheidungspraxis" nicht entspricht. Dort werde vielmehr vom gegebenen Fall ausgegangen, um den Normtext bzw. die Normtexte zu erschließen, der/die für die rechtliche Lösung eben dieses Falles herangezogen werden kann/können – also das umgekehrte Verfahren von der Idealisierung (Busse 1992:327). Wie unten noch zu zeigen sein wird, geschieht dieses Verstehen eines bestimmten Sachverhaltes aber auch immer gleichzeitig mit dem Vorwissen (Gadamers 'Vorverständis') um den/die Normtexte, das implizit beim Juristen vorhanden ist.

Wie schon erwähnt, geht es in diesem Artikel darum, das Verständlichkeits-problem sowohl aus rechtswissenschaftlicher als auch aus linguistischer Sicht zu betrachten. Das Verstehen von Rechtstexten darf allerdings nicht mit dem Verstehen in der Philologie gleichgesetzt werden, wie dies bereits von anderen behauptet worden ist, u.a. Hatz, auf  den bereits hingewiesen wurde. Juristische Interpretationen zielen eben nicht darauf ab, zu einemVerständnis oder eventuell einem besseren Verständnis eines Rechtstextes zu kommen, indem versucht wird, festzustellen, was der Autor (exemplarisch der Gesetzgeber) bei der Abfassung des Textes gemeint hat, sondern darauf, eine "Entscheidung herbeizuführen" (Busse 1992:269). Das dem nicht so sein kann, ist leicht einzusehen: Gesetzestexte müssen so formuliert sein, dass sie anpassungsfähig sind an die Entwicklungen, die im Laufe der Zeit in einer gegebenen Gesellschaft stattfinden. Erst wenn sich die Entwicklungen sehr weit vom ursprünglichen Rechtszustand entfernt haben, ist eine Gesetzesnovelle erforderlich (exemplarisch die Rechtsstellung nichtehelicher (früher 'unehelicher') Kinder heute und vor 1970, als das neue Gesetz in Kraft trat).

Somit sind auch die Kriterien des **richtigen Verstehens** verschieden: Beim philologischen Interpretieren wird die Fähigkeit, eine passende Paraphrase[11] des interpretierten Textes formulieren zu können,  als das Kriterium des richtigen Verstehens angesehen. Bei juristischen Interpretationen ist dagegen das Kriterium des richtigen Verstehens das "'richtige' (angemessene, akzeptierte) Handeln", das aus der Interpretation des Textes folgt (Busse 1993:291).

Es gilt als bekannt, dass in den vergangenen Jahrhunderten unter den Juristen lange die Auffassung herrschte, dass sich die Rechtsfindung in einer bloßen Gesetzesanwendung erschöpfe, in der Subsumtion, die sich auf die *Wenn X*,

[11] Zu den Definitionsschwierigkeiten von 'Paraphrase' s. u. Garvin et al. (1967), Ungeheuer (1969) und Rath (1975).

*dann Y-Formel* zurückführen lasse. Bei einer solchen Auffassung nimmt der Rechtsanwendende, der Richter – bezogen auf die Gerichtsurteile, die hier als Textmaterial herangezogen werden – ausschließlich eine Zuordnung von Gesetz und Fall vor. Gesetz und Fall werden als objektive Größen gesehen, die beim Verfahren der Zuordnung durch das erkennende Subjekt (den Richter) keiner Änderung unterliegen (sogenannter rechtswissenschaftlicher Objektivismus) (Kaufmann 1984:89). Der Richter ist hier dann nichts anderes als "*la bouche de la loi*".

Diese Formulierung, die heute oft als Metapher für die richterliche Tätigkeit, so wie sie im Sinne des Rechtspositivismus verstanden wird, verwendet wird, stammt ursprünglich von Montesquieu. Die Auffassung, der Richter sei nichts anderes als "der Mund des Gesetzes" ist verschiedentlich kritisiert worden, da es gar nicht möglich sei, dass der Richter das Recht nur **anwende**, wenn es ihm um das Recht gehe; gefordert wird dagegen vom Richter ein aktives und kreatives **Verstehen** von dem Sinn des Gesetzes bezogen auf einen konkreten Lebenssachverhalt, das über den Wortlaut, die gängige Interpretation und die Judikatur hinaus gehe (Fuchs 1984:10).

Auch Kaufmann weist nach, dass die Auffassung vom Richter als "Mund des Gesetzes" für die neuere juristische Hermeneutik nicht gilt. In der neueren juristischen Hermeneutik werden nämlich Gesetzesnorm und der "amorphe" Fall als Rohmaterialien betrachtet, die durch Verstehen erst "aufbereitet" werden müssen. Das Aufbereiten kann wiederum nur in einem "zirkelhaften" – hier klingt Gadamers "Zirkel vom Verstehen"[12] an – Hin- und Herüber-wechseln vom Gesetz zum Fall und vom Fall zum Gesetz geschehen, wobei das Vorverständnis sowohl vom Gesetz als auch vom betreffenden Fall, dem Sachverhalt, zum Verstehen einen wichtigen Beitrag leisten und sich gegenseitig ergänzen (Kaufmann 1984:93).

## 5. Konkretisierung anhand von Beispielen

Im Folgenden werden konkrete Beispiele herangezogen, deren Interpretation (Auslegen bzw. Verstehen) auf der Grundlage des geltenden Rechts erfolgt sowie auf der Grundlage des vorgegebenen individuellen (Lebens)sachverhaltes. Als erstes folgt ein Beispiel für die Interpretation eines im Urteil herangezogenen Paragraphen. *[vgl. Anhang]*

[12] Vgl. hierzu den Hinweis bei Wach, dass das, was in der Literatur als 'hermeneutischer Zirkel' bekannt ist, erstmals wohl von Ast beschrieben worden ist. Die Grundlage alles Verstehens und Erkennens ist nach Ast, "aus dem Einzelnen den Geist des Ganzen zu finden und durch das Ganze das Einzelne zu begreifen". (Wach 1926:41)

## 5.1 Interpretation des geltenden Rechts – Strafrecht

### 5.1.1 Allgemeines

Mit Recht darf behauptet werden, dass die Interpretation strafrechtlicher Paragraphen in der Regel einfacher ist als die Interpretation zivilrechtlicher Paragraphen. Der Grund hierfür ist darin zu sehen, dass das strafrechtliche Gesetz (im Sinne eines einzelnen Paragraphen) in der Regel bereits die einzelnen Tatbestandsmerkmale enthält, während im Zivilrecht mit dem Bürgerlichen Gesetzbuch (BGB) als besonders wichtiger Rechtsquelle, das einzelne Gesetz in der Regel auf weitere andere Gesetze (immer im Sinne eines einzelnen Paragraphen) rekurriert, die erst zusammen das Verstehen ermöglichen.

Die Tatbestandsmerkmale sind in mancher Hinsicht mit den Merkmalen (den Semen) eines Begriffes in der Merkmalsemantik zu vergleichen, die die lexikalische Bedeutung des betreffenden Begriffes erschließen. Wenn z.B. von ‘rechtswidriger Handlung’ die Rede ist, lässt sich dies zurückführen auf das Hyperonym ‘Handlung’ mit dem einschränkenden Merkmal ‘rechtswidrig’. Dies ist die klassische aristotelische Art zu definieren, indem die *spezies* durch die Angabe des *genus proximum* mit den *differentiae specificae* definiert wird.

Handwerker (1988:23) hat m.E. zutreffend darauf hingewiesen, dass ein Bereich, auf den sich die mit distinktiven Merkmalen arbeitende (Wort)Semantik gut anwenden lässt, eben der Bereich der Terminologien der Fachsprachen ist. Die Begründung ist darin zu sehen, dass eine Terminologie (im Sinne von Gesamtheit des für ein besonderes Fachgebiet vorhandenes Fachvokabulars) zur Benennung von außersprachlichen bzw. außersprachlich festgestellten Unterscheidungen verwendet wird. Diese Unterscheidungen lassen sich in Merkmalen festhalten. – Wie zu zeigen sein wird, ist die Terminologie, der Fachwortschatz, der Dreh- und Angelpunkt, wenn ein Fachtext verstanden werden soll. Dies gilt als Gemeinplatz, darf aber nicht unerwähnt bleiben.

### 5.1.2 Beispiel

‘Diebstahl’ ist eine Bezeichnung, die im alltäglichen Sprachgebrauch verwendet wird und von der man annehmen kann, dass ihre Bedeutung dem deutschen Sprachbenutzer bekannt ist[13]. Der Wortlaut des betreffenden

[13] Vgl. hierzu auch Busse (1992), der eben diesem Paragraphen ein ganzes Kapitel (Kap. 4) gewidmet hat. Auf annähernd 100 Seiten legt er ausgehend vom Wortlaut und der linguistischen Struktur des Normtextes und nach Aufzeigen des Kotextes und der

Paragraphen aus dem Strafgesetzbuch (StGB) wird zwar **nicht** in der Urteilsformel (dem Tenor) wiedergegeben, sondern in einem eigenen Teiltext (zweiten Grades) unmittelbar nach dem Tenor.[14] *[vgl. Anhang]*

Eine Definition nach dem klassischen Muster "Diebstahl = widerrechtliche Wegnahme einer fremden beweglichen Sache in Bereicherungsabsicht" ergäbe als Oberbegriff die 'Wegnahme' mit den einschränkenden Merkmalen 'widerrechtlich', 'fremde bewegliche Sache' und 'in Bereicherungsabsicht'.

Im Folgenden soll jedoch untersucht werden, wie der Jurist den Paragraphen auslegt. Um verstehen zu können, was der Gesetzgeber unter dem Tatbestand (i.S.v. 'Straftat') 'Diebstahl' versteht, ist der Tatbestand in seine einzelnen Merkmale zu zerlegen, wobei dies im Strafrecht nach objektiven und subjektiven Tatbestandsmerkmalen geschieht.[15]

### 5.1.3 Zu den objektiven Tatbestandsmerkmalen

Beginnen wir mit den objektiven Tatbestandsmerkmalen. Es geht hier um eine 'fremde bewegliche Sache', an der der Gewahrsam gebrochen wird. Für die juristische Erklärung des Begriffs 'Sache' wird i.d.R.[16] auf das BGB rekurriert, wo in § 90 BGB 'Sache' als 'körperlicher Gegenstand' definiert wird, wobei dies für die Abgrenzung "im Sinne des Gesetzes" (ebd.) gilt. Wichtig ist auch, dass für den Gesetzgeber 'körperliche Gegenstände' als unabhängig von ihrer Erscheinungsform, ob flüssig, fest oder in Gasform, gesehen werden. Dies im Gegensatz zum normalen Sprachverständnis.[17] Ebenso wenig sind Tiere Sachen im Sinne des Gesetzes, obwohl sie doch als

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verschiedenen textuellen Bezüge seine Interpretation erst aus juristischer Sicht, dann aus linguistischer Sicht dar.
Vgl. auch Langer et al. (1974), die ebenfalls den Diebstahlsparagraphen in ihren Untersuchungen zur Verständlichkeit herangezogen haben; außerdem Wunderlich (1980:97f); Luttermann (im Druck) hat ebenso diesen Paragraphen zum Gegenstand ihrer rechtslinguistischen Analyse gewählt.

[14] Zur Definition von 'Teiltext' s. 5.3
Diese Regelung dient zur Entlastung der Urteilsformel, da dieser Teil **nicht** als Bestandteil der Urteilsformel angesehen wird (vgl. Kroschel/ Meyer-Goßner (1994:58)).

[15] Zur Definition von 'Tatbestand' vgl. u.a. Seiffert (1992:121).

[16] Vgl. jedoch hierzu den Hinweis bei Busse (1992:128), dass ein anderer Kommentar zum StGB zwar schreibt, "Der strafrechtliche Sachbegriff wird in der Regel dem zivilrechtlichen (§ 90 BGB) entsprechen; **notwendig** ist das aber nicht." (Hervorhebung von IS)

[17] Obwohl Gas eine 'Sache' im Sinne des Gesetzes ist, wird elektrische Energie, da sie ein 'Zustand' sei, explizit nicht als Sache im Sinne des Gesetzes aufgefasst – übrigens anders als in Österreich, wo die elektrische Energie als Sache erklärt worden ist (Hinweis bei Schönke/Schröder 1970:1257). Nach deutschem Recht ist daher nur eine "unbefugte Entziehung elektrischer Kraft" unter Strafe gestellt (§ 248c StGB).

körperlicher Gegenstand wahrnehmbar sind; anderseits sind auf sie "die für Sachen geltenden Vorschriften entsprechend anzuwenden, soweit nicht etwas anderes bestimmt ist" (§ 90a BGB).

'Beweglich' wird im StGB anders abgegrenzt als im Zivilrecht (BGB); nach dem StGB gilt als bewegliche Sache eine jede Sache, die fortbewegt werden **kann**. Explizit gehören hier u.a. auch Teile von unbeweglichen Sachen, die zwecks Wegnahme losgelöst werden (exemplarisch gestochener Torf, wie Schönke/Schröder mit Verweis auf ein höchstrichterliches Urteil anführen (1970:1208)).

'Fremd' wiederum ist auf der Grundlage des Eigentumsbegriffs des BGB zu entscheiden. Somit ist Diebstahl von herrenlosen Sachen ausgeschlossen, da diese entweder in niemandes Eigentum stehen (z.B. wilde Beeren), in niemandes Eigentum stehen können (z.B. Luft, Wasser) bzw. das Eigentum an ihnen rechtswirksam vom bisherigen Eigentümer aufgegeben worden ist.
Die Wegnahme erfolgt dadurch, dass sich der Dieb 'Gewahrsam' an der Sache verschafft, und zwar ohne den Willen des (bisherigen) Gewahrsamsinhabers. [Wenn in unserem Beispiel das Rind von der Weide des NN weggeschafft wird, ist das ein Gewahrsamsbruch.] 'Gewahrsam' ist "ein tatsächliches Herrschaftsverhältnis, das von einem Herrschaftswillen" getragen wird (Schönke/Schröder 1970:1209). Hier mag der Laie daran denken, wie 'Besitz' in der Gemeinsprache verwendet wird, wo i.d.R. zwischen 'Besitz' und 'Eigentum' nicht unterschieden wird, oder – je nach Kenntnisstand – daran, wie 'Besitz' im BGB definiert wird, nämlich als 'tatsächliche Herrschaft über eine Sache'. Der strafrechtliche Gewahrsam ist jedoch **nicht gleichbedeutend** mit 'Besitz' im Sinne des BGB, wie bei Schönke/Schröder (ebd.:1212) nachzulesen ist. Da von 'Wegnahme' die Rede war, bedeutet dies dementsprechend, dass das tatsächliche Herrschaftsverhältnis des NN über die Sache gebrochen wird, sogenannter 'Gewahrsamsbruch', und neuer Gewahrsam hergestellt wird. Der neue Gewahrsamsinhaber ist dann der Dieb.

### 5.1.4 Zu den subjektiven Tatbestandsmerkmalen

Nachdem soeben die objektiven Tatbestandsmerkmale der Reihe nach ausgelegt worden sind und somit ein Verstehen ermöglicht haben, ein Verstehen, das einen weiten Wissensrahmen aufgedeckt hat, der beim normalen Sprachbenutzer kaum vorausgesetzt werden kann, werden nunmehr die subjektiven Tatbestandsmerkmale desselben Paragraphen einer entsprechenden Analyse unterzogen.

Die subjektiven Tatbestandsmerkmale in § 242 StGB sind "Vorsatz und die Absicht rechtswidriger Zueignung". Obwohl es keine gesetzliche Definition

von ‘Vorsatz’ gibt, wird der Begriff des Vorsatzes in den Kommentaren allgemein definiert als “Wissen und Wollen der zum gesetzlichen Tatbestand gehörenden Merkmale”. Bezogen auf den § 242 StGB heißt dies in erster Linie das Wissen und Wollen über die Wegnahme einer fremden beweglichen Sache. Hinzu kommt dann noch das Merkmal ‘in der Absicht rechtswidriger Zueignung’.

Wie ist ‘Absicht’ zu interpretieren? Für den Juristen ist ‘Absicht’ erkennbar als eine Form des direkten Vorsatzes (Schönke/Schröder 1970:493) und wird als zielgerichtetes Handeln verstanden, unabhängig davon, ob das Handeln von Erfolg gekrönt ist oder der Erfolg nur angestrebt wird (ebd. mit Hinweis auf die Zueignungsabsicht in § 242 StGB).

Die ‘Zueignung’ wird im Gesetzeskommentar erklärt als “Anmaßung einer **eigentümerähnlichen** Herrschaftsmacht über die Sache” (Schönke/Schröder 1970:1217; Hervorhebung von IS). Wichtig ist dabei, dass mit der Formulierung ‘eigentümerähnlich’ an den juristischen Begriff ‘Eigentum’ angeknüpft wird (vgl. §§ 903ff. BGB über den Inhalt von ‘Eigentum’). ‘Zueignung’ hat als Merkmale zum einen das Enteignen (des bisherigen Eigentümers) und zum anderen das Aneignen, d.h. die widerrechtliche Inbesitznahme.

Das zielgerichtete Handeln (‘Absicht’) ist in § 242 StGB die Wegnahme der fremden beweglichen Sache zwecks Aneignung (widerrechtlicher Inbesitznahme) bzw. der Versuch davon.

Die Folge des so interpretierten Paragraphen ist eindeutig: Wenn die soeben aufgezählten einzelnen Tatbestandsmerkmale gegeben sind, liegt ein (einfacher) Diebstahl vor mit der vom Gesetzgeber vorgesehenen Rechtsfolge einer zeitigen Freiheits- bzw. Geldstrafe.

### 5.2. Juristische Interpretation des Lebenssachverhalts

Nachdem soeben der ‘Tatbestand’ des Diebstahls, d.h. “die abstrakte Formulierung einer Gegebenheit” wie Seiffert (1992:121) formuliert, unter Bezugnahme auf Schönke/Schröder, den anerkannten Kommentar zum Strafgesetzbuch, interpretiert und ein Verstehen des Rechtsinstituts ‘Diebstahl’ erarbeitet worden ist, muss auch der Lebenssachverhalt einer genauen Analyse unterzogen werden, um festzustellen, wo Tatbestand und Sachverhalt konkret aufeinander bezogen werden können. Es kann allerdings bereits jetzt festgestellt werden, dass Busse beizupflichten ist, wenn er schreibt, dass die juristische Explikation der ‘Gesetzesbedeutung’ sehr viel weiter geht, als mit dem außerjuristischen Begriff der ‘Interpretation’ (‘Bedeutungsfeststellung’) noch bezeichnet werden könne, da bei diesem

Vorgehen ein juristischer Wissensrahmen konstituiert wird, der den gängigen linguistischen Begriff von 'Bedeutung' sprengt (Busse 1993:326f).[18]

Im Beispielsfall liegen die Dinge wie folgt (vgl. AZ 5-21/95): Dem Angeklagten wird u.a. Diebstahl und Tötung von einem Rind, das dem NN gehört, vorgeworfen. D.h. die 'bewegliche Sache', die hier widerrechtlich weggenommen wird, wird als 'Rind' konkretisiert. Wie bereits erwähnt, sind Tiere keine Sachen im Sinne des Gesetzes; dennoch können die für Sachen geltenden Vorschriften entsprechend auf sie angewandt werden, soweit nicht etwas anderes bestimmt ist. Da es keine entgegengesetzte Vorschrift gibt, ergibt sich daraus antithetisch, dass ein Rind gestohlen werden kann. Ein Rind gehört bekanntlich zu der Gattung der Tiere.

Außerdem war die bewegliche Sache eine 'fremde' bewegliche Sache, wie aus den Akten hervorgeht.

Die **Wegnahme** (und Tötung, die im weiteren außer Betracht gelassen wird) des Rindes des NN, die der Angeklagte bestritten hat, wird durch Aussage des Zeugen $NN_1$, dessen Wagen zum Abtransport benutzt worden war, bestätigt "[...] der Angeklagte habe ein Rind [...] erschossen, das Tier sei dann auf der Ladefläche verstaut [...] worden [...]. Allerdings sei das Rind nicht ausgewachsen gewesen, es sei vielleicht noch ein Kalb gewesen". Das Gericht ist nach den Zeugenaussagen zur Überzeugung gekommen, (1) **dass** ein Tier weggenommen worden ist, da die Eingeweide des Tieres auf der Weide nachgewiesen werden konnten, und (2) dass das Tier dennoch ein Rind, und nicht ein Kalb gewesen ist, und zwar aufgrund der nachträglich festgestellten Gewichtsangabe und der Zerlegung des Tieres, die erforderlich gewesen war, damit das Tier auf der Ladefläche des Geländewagens, der dem Zeugen $NN_1$ gehörte, abtransportiert werden konnte.

Erst nachdem auf diese Weise die Konkretisierung des Sachverhalts erfolgt ist, können Sachverhalt und gesetzlicher Tatbestand zueinander in Bezug gesetzt werden. Dies geschieht, indem der Angeklagte in der Urteilsformel

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[18] Es mag dahingestellt bleiben, ob die Formulierung 'gängig' zutreffend ist, gilt es doch als bekannt, dass 'Bedeutung' – wie manche andere zentrale Begriffe in der Linguistik – recht unterschiedlich definiert wird. Eine umfassende Liste von verschiedenen Definitionen von 'Bedeutung' findet sich bei Ogden/Richards (1974:218f). Für eine ausführliche Diskussion über die von ihnen vorgenommene Gliederung in drei Gruppen von Definitionen sei auf die Seiten 219-243 verwiesen.
Vgl. auch Erdmann (1966), Coseriu (1973) und Wunderlich (1980) sowie aus etwas anderer Sicht: u.a. Frege (1892) und Putnam (1990).
Wenn im Folgenden von 'Bedeutung' gesprochen wird, ist dies im Sinne von 'Bedeutung im engeren Sinne'.

des Diebstahls von dem Rind – übrigens unter Anwendung einer Schusswaffe – oder wie es im Urteilsspruch heißt "[...] wegen Diebstahls mit Waffen in Tateinheit mit der Ausübung der tatsächlichen Gewalt über eine Schußwaffe [...]"– für schuldig befunden und zu einer Freiheitsstrafe verurteilt wird.

## 5.3 Interpretation aus linguistischer Sicht

### 5.3.1 Der Diebstahlsparagraph aus linguistischer Sicht

Nachdem oben dargelegt worden ist, wie der Jurist den Diebstahlsparagraphen auslegt, um zu einem Verstehen von sowohl Tatbestand als auch Lebenssachverhalt zu gelangen, soll im Folgenden aufgezeigt werden, inwiefern sich das **linguistische Verstehen** von dem juristischen Verstehen unterscheidet. Hierbei hilft das Analysieren von Texten, das in das Aufgabengebiet der Textlinguistik fällt, die im Laufe der letzten Hälfte des 20. Jahrhunderts verschiedene Ansätze entwickelt hat. Es kann im Rahmen dieser Arbeit jedoch weder auf die verschiedenen Ansätze innerhalb der Textlinguistik noch auf die zahlreichen Definitionen von 'Text' eingegangen werden. In Anlehnung an Brinker (1997:12ff) mag hier der Hinweis auf die heute allgemein akzeptierte Zweiteilung der Definitionen von 'Text' genügen, einerseits Definitionen, die aus der sprachsystematisch orientierten Textlinguistik stammen, dem älteren Ansatz, und anderseits Definitionen, die aus der kommunikationsorientierten Textlinguistik stammen, die jüngeren Datums ist.

Ausgehend vom sprachsystematischen Ansatz, bei dem Texte[19] als kohärente Satzfolgen verstanden werden, lässt sich der zitierte Diebstahlsparagraph (§ 242 StGB) wie folgt analysieren:

Von der Oberflächenstruktur des Textes lässt sich in Satz 1 erkennen, dass die Tatbechreibung für jedermann gelten soll, da das verallgemeinernde Relativum 'wer' verwendet wird. – Übrigens entspricht der Gebrauch des verallgemeinernden Relativum 'wer' statt 'Person, die' dem juristischen Definitionsstil, besonders in Legaldefinitionen.[20] – Der Gebrauch des unbestimmten Artikels in 'eine fremde bewegliche Sache' weist darauf hin, dass hiervon in diesem Text bisher nicht die Rede gewesen ist. Im 2. Teilsatz trägt die Wiederaufname von 'fremde bewegliche Sache' in der Form des Demonstrativum 'dieselbe' eindeutig zur Kohäsion bei. Der bestimmte Artikel 'der' (Versuch) in Satz 2 des Textes ist mit den Worten von Linke eine "Suchanweisung" nach einem Bezugselement im umgebenden Text (Linke et

[19] Vgl. hierzu Isenbergs Definition von 'Text': "Ein TEXT ist eine Folge von Sätzen, die **mindestens** einen Satz enthält" (Isenberg 1974:18; Hervorhebung von IS)
[20] Hinweis bei Lemberg (1998:140).

al. 1996:219) . Das Bezugselement ist hier der erste (Ganz)Satz, nämlich das 'Wegnehmen von ....'.

Ausgehend vom kommunikativen Ansatz, bei dem Texte mit Hilfe von text-internen und textexternen Merkmalen gegliedert werden, liegt im herangezogenen Beispielstext, d.h. der Urteilsakte, ein Rechtstext vor, der sich in verschiedene Teiltexte gliedert. 'Teiltexte' sind in Anlehnung an Gülich/Raible (1975:146) funktionelle Teile eines Textes. Heinemann/Viehweger (1991:252) fassen Teiltext auf als eine "Komponente des Gesamttextes, die sich intentional und semantisch als Teileinheit des Makro-Textes erweist und sowohl vertikal (hierarchisch) als auch horizontal (sequentiell) mit anderen Teiltexten in Beziehung steht". Bezogen auf eine gerichtliche Entscheidung betrachten Gülich/Raible ihre Gliederung als eine Gliederung in vier Teiltexte ersten Grades, "die für alle deutschen Textvorkommen dieser Art kanonisch sein dürften" (Gülich/Raible 1975:189). Im Folgenden schließe ich mich dieser Auffassung an, da sich deren Vorkommen empirisch leicht feststellen lässt.[21]

Bezogen auf den hier zu analysierenden Text ist die gesamte Urteilsakte der Makro-Text, der in weitere Teiltexte zerfällt. Auf der ersten horizontalen Ebene der Teiltexte ersten Grades finden wir (1) die Urteilsformel (den Tenor) (2) die Darstellung des vorliegenden Falles, (3) die Beurteilung des vorliegenden Falles und (4) die Urteilsgründe *[vgl. Anhang]*.

Das Besondere an dem Teiltext ersten Grades Urteilsformel ist, dass die angewendeten Vorschriften, z.B. hier § 242 StGB und § 244 Abs. 1, Nr. 1 StGB, in einem eigenen Teiltext (zweiten Grades) enthalten sind, auf den also die Analyse ausgedehnt werden muss. Charakteristisch ist, dass nicht der gesamte Wortlaut des Paragraphen zitiert wird, sondern nur mit Ziffern auf den/die betreffenden Paragraphen hingewiesen wird. Zum Verständnis ist der Rezipient also auf einen Text, das Strafgesetzbuch, verwiesen, der außerhalb der zu analysierenden Kommunikationssituation vorhanden ist.

Hinsichtlich der semantischen **Bedeutung** des (Teil)textes – 'Bedeutung' i.e.S. – ist § 242 StGB ein gutes Beispiel dafür, dass sich nur ein Teil seiner Bedeutung erschliessen lässt, da die Bedeutung der einzelnen Einheiten, wie exemplarisch 'fremde bewegliche Sache' nicht ohne weiteres aus dem Text,

[21] Die Gliederung in vier Teiltexte ist nur dann richtig, wenn 'Urteilsformel' i.w.S. verwendet wird und Urteilskopf (Rubrum ) sowie Urteilsformel (Tenor) umfasst. Normalerweise wird jedoch 'Urteilsformel' i.e.S. als selbständiger und wichtigster Teil des Urteils angesehen, vgl. mit weiteren Hinweisen hierzu Kroschel/Meyer-Goßner 1994:9.

genauer Kotext, sondern erst von einem weiteren Kontext her verständlich wird. Der weitere Kontext ist in diesem Fall, wie schon oben erwähnt, ein anderer Text, das BGB bzw. das Weltwissen[22] des Lesers. Mit anderen Worten ist hier für die Bezeichnung 'fremde bewegliche Sache' keine Kohärenz vorhanden.

Wenn die semantische Bedeutung der einzelnen Lexeme offengelegt werden soll, ist es linguistisch gesehen leicht erkennbar, dass 'fremde bewegliche Sache' ein Hyponym von 'Sache' (*genus proximum*) ist, das durch die Merkmale 'fremd' und 'beweglich' (*differentiae specificae*) näher eingegrenzt wird. Die (denotative) Bedeutung von 'Sache' ist dem deutschen Sprachbenutzer als 'Ding', 'Gegenstand', 'Etwas' bekannt (so exemplarisch im Duden, Bd.6). Ebenso ist 'bewegliche Sache', wenn auch aus der Rechtssprache stammend, in der Gemeinsprache im selben Sinne wie in der Rechtssprache, nämlich als Gegensatz zur Immobilie, dem Grundstück, bekannt. Was dem Linguisten jedoch nicht bekannt ist, ist, wie oben aufgezeigt wurde, die weitere Auslegung von 'beweglich' im StGB, im Sinne von 'was fortbewegt werden **kann'**. - Das Merkmal 'fremd' dürfte leicht verständlich sein, im Sinne von 'einem anderen gehörend' (so beispielsweise im Duden, Bd. 3).

Schauen wir uns an, wie es sich mit der Bedeutung von den Rechtsfolgen 'mit Freiheitsstrafe bis zu fünf Jahren' bzw. 'mit Geldstrafe' verhält. Die Bedeutung ergibt sich durch intertextuellen Bezug zu anderen Teiltexten des StGB, und zwar den §§ 38-40 StGB:

> Die Freiheitsstrafe ist zeitig [...]
> Die Geldstrafe wird in Tagessätzen verhängt. [...]

Was eine 'Freiheitsstrafe' ist, erschließt sich dem Laien u.a. durch Hinweise im Wörterbuch als 'Strafe des Freiheitsentzuges'. Im Alltag würde man wahrscheinlich von 'Gefängnisstrafe' sprechen.

Die Tat, um die es sich hier dreht, das 'Wegnehmen', ist eine Handlung, und es besteht ein intertextueller Bezug zwischen 'wegnimmt' und § 8 StGB:

> Eine Tat ist zu der Zeit begangen, zu welcher der Täter [...] **gehandelt** hat [...]. (Hervorhebung von IS)

[22] Zu den verschiedenen Formen von 'Wissen', die in der Textproduktion bzw. -rezeption zum Tragen kommen vgl. Viehweger (1984:279f).

Für die Bedeutung von ‘rechtswidrig’ gibt es im StGB nur eine Bezugsstelle, nämlich den Vierten Titel über Notwehr und Notstand. ‘rechtswidrig’ wird dort nicht definiert, sondern negativ abgegrenzt, vgl. exemplarisch hierzu § 32 StGB:

> Wer eine Tat begeht, die durch Notwehr geboten ist, handelt nicht rechtswidrig.

‘rechtswidrig’ bedeutet ‘wider das Recht’, also ein Verstoss gegen das Recht.

### 5.3.2 Der Lebenssachverhalt aus linguistischer Sicht

Der Teiltext, der die gerichtliche Beurteilung enthält, die Urteilsgründe, gilt als der schwierigste Teil des Erkenntnisses, geht es doch darum, dass alles Wesentliche darin enthalten ist, während Überflüssiges ausgelassen werden soll. Die Urteilsgründe sind bekanntlich so abzufassen, dass eine eventuelle Nachprüfung durch das Rechtsmittelgericht möglich ist, anderseits müssen die Urteilsgründe aber auch für seinen Adressaten, den unmittelbar vom Urteil Betroffenen, verständlich sein. In diesem Abschnitt setzt der Richter den Lebenssachverhalt in Bezug zur Gesetzesnorm, was – mit wenigen Ausnahmen – durch gemeinsprachliche Formulierungen erfolgt.

Der Angeklagte verneint die Teilnahme am Diebstahl. Dieser Aussage schenkt das Gericht jedoch keinen Glauben, da die Aussage des $Zeugen_1$ vom Gericht als “stimmig” gesehen wird und seine Aussage sich mit der Aussage des $Zeugen_2$ deckt “[...] insbesondere deckt sie [die Aussage des $Zeugen_1$] sich hinsichtlich des Tatortes [...] genau mit der Aussage des $Zeugen_2$ zu dem Standort [...], wo die Eingeweide des Tieres gefunden worden sind”. Das non-verbale Verhalten des $Zeugen_1$ (Schweißausbruch und bleiche Gesichtsfarbe) ist vom Gericht als zusätzliche Bestätigung der Richtigkeit der Aussage interpretiert worden, zumal der Zeuge sich durch seine Aussage über das Verladen des Tieres in seinem Wagen “selbst belastet hat”, wie es im Urteil heißt.

## 6. Schlussfolgerungen

Ich habe in diesem Artikel versucht, aufzuzeigen, wie die juristische Hermeneutik zum Verstehen von Rechtstexten (hier Gesetzestexten und gerichtlichen Entscheidungen) beitragen kann. Verstehen soll hier heissen, die Bedeutung von einem Text erfassen. Hier liegen enge Berührungspunkte zwischen der Rechtswissenschaft und der Linguistik vor, da der Begriff 'Bedeutung' bekanntlich für die Linguistik – besonders die Semantik, aber auch die Pragmatik – eine zentrale Rolle spielt.

Es wurde gezeigt, wie der Jurist vorgeht, wenn er einen Text auslegt, um sich dessen Bedeutung zu erschließen und daraus sein Handeln ableitet. Der Jurist (hier Richter) schaut - mit einem vorgegebenen (Lebens)sachverhalt als 'Vorverständis' - bei seiner Auslegung auf die sprachliche Form des vorliegenden (Gesetzes)textes. Wenn der Originaltext nicht unmittelbar die Bedeutung hergibt, muss der Jurist auf sekundäre Texte ausweichen. Dies sind, wie gezeigt wurde, i.d.R. Gesetzeskommentare, in denen die herrschende Meinung und/oder frühere Gerichtsentscheidungen – meist oberster Gerichte – eine Abgrenzung vorgenommen haben, welche Bedeutung ein konkreter sprachlicher Ausdruck – zum Zeitpunkt der Drucklegung – hat. Es ist somit nicht mehr ausschließlich der Originaltext des Gesetzes, sondern eine rechtsdogmatische **Erklärung** des Originaltextes, die das geltende Recht beschreibt, aus deren Sicht der Richter schließlich den Lebenssachverhalt sieht und bewertet sowie danach handelt.

Das Verstehen, das Erfassen der Bedeutung, aus der Sicht des Linguisten ist demgegenüber völlig anders. Für den Linguisten gilt als Kennzeichen des Verstehens, dass er in der Lage ist, denselben Sinn/Inhalt zu vermitteln, indem er einen bestimmten Text mit anderen sprachlichen Mitteln als den ursprünglichen bildet, das was man im weitesten Sinne des Wortes eine Paraphrasierung nennen kann.

Es geht somit beim juristischen Verstehen um weit detaillierteres Verstehen der einzelnen Lexeme, als eine linguistische - insbesondere semantische - Analyse zu ergeben vermag. Das gesamte Fachwissen wird mit einbezogen. Der Richter /Jurist bedient sich dieses weiten Rahmens, um zu einem Verständnis zu gelangen, das im Einklang mit der “herrschenden Meinung” steht. Bei abweichendem Verständnis bedarf seine Erklärung, welche Bedeutung das Lexem X eventuell aufgrund eines Bedeutungswandels im vorgegebenen Fall hat, einer besonders gründlichen Argumentation – was allerdings im Beispiel des hier behandelten Sachverhalts nicht der Fall war.

Anderseits kann mit Hilfe der Textlinguistik ein Text erklärt werden, indem die Textlinguistik die Analyseinstrumente bereitstellt, um die Oberflächenstruktur zu beschreiben und zu erklären sowie die unter der Oberflächenstruktur vorhandenen Relationen offenzulegen. Eine semantische Wortanalyse legt die Grundlage für eine adequate Paraphrasierung.

Eine Schlussfolgerung aus meiner Analyse ist, dass die Arbeit mit und an Rechtstexten, wenn es darum geht, das Verstehen nachvollziehbar offenzulegen, ein äußerst komplexes Verfahren ist, für welches sicheres Sprach- **und** fundiertes Sachwissen unbedingt erforderlich sind. Allgemeiner formuliert kann gesagt werden, dass Verstehen und Erklären für jegliche

Fachkommunikation, wenn diese gelingen soll, unabdingbare Voraussetzungen sind.

**

**Anhang:**

[Anmerkung: In meiner Analyse ist nur ein Teil – nämlich (die Tötung) und der Diebstahl des Rindes -herangezogen worden, während die Urteilsformel alle Straftaten, deren der Angeklagte für schuldig befunden wurde, mit aufzählt. Daher auch die vielen Verweise auf 'angewendete Vorschriften'.]

Auszug aus den Urteilsakten 5-21/95, Landgericht Saarbrücken

[...] für Recht erkannt:

Der Angeklagte wird wegen versuchten Diebstahls, wegen Diebstahls mit Waffen in Tateinheit mit der Ausübung der tatsächlichen Gewalt über eine Schußwaffe, wegen versuchter Anstiftung zu schwerer räuberischer Erpressung, wegen versuchter Anstiftung zum Raub, wegen der Ausübung der tatsächlichen Gewalt über eine halbautomatische Selbstladewaffe mit einer Länge von nicht mehr als 60 cm, wegen der Ausübung der tatsächlichen Gewalt über eine Schußwaffe und wegen der Ausübung der tatsächlichen Gewalt über eine Schußwaffe, die ihrer Form nach geeignet ist, einen anderen Gegenstand vorzutäuschen, unter Einbeziehung der durch das Urteil des Amtsgerichts [...] vom 22.12.1994 (5- 428/94) erkannten Freiheitsstrafe zu einer Gesamtfreiheitsstrafe von drei Jahren und wegen Diebstahls sowie wegen Versuchs der Anstiftung zur Falschaussage unter Einbeziehung der durch das Urteil des Amtsgerichts [...] vom 27.09.1995 (5 – 519/94) erkannten Freiheitsstrafe zu einer Gesamtfreiheitsstrafe von einem Jahr und drei Monaten verurteilt.

Der Angeklagte trägt die Kosten des Verfahrens.

- *Angewendete Vorschriften:* §§ 242, 243 Abs. I Nr. 1, 244 Abs. I Nr. 1, 255, 253, 250 Abs. I Nr. 1, 249, 159, 153, 30 Abs. I, 22, 23, 49 Abs. I, 52, 53 StGB; §§ 37 Abs. I Nr. 1 c, 53 Abs. I S. 1 Nr. 3 a, a und Abs. III Nr. 1 a und 3 WaffG –

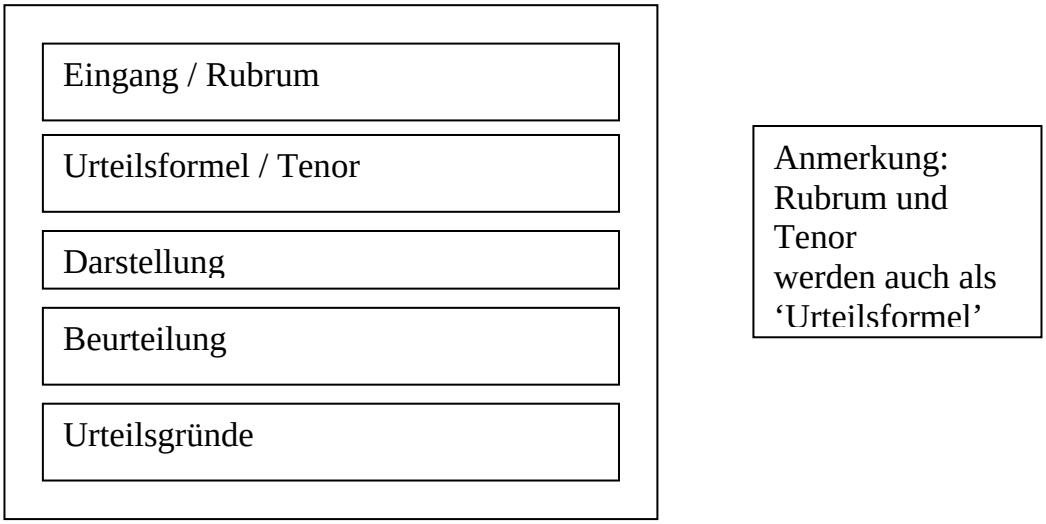
###

§ 242 StGB
(1) Wer eine fremde bewegliche Sache einem anderen in der Absicht wegnimmt, dieselbe sich rechtswidrig zuzueignen, wird mit Freiheitsstrafe bis zu fünf Jahren oder mit Geldstrafe bestraft.
Der Versuch ist strafbar.

§ 244 StGB
Mit Freiheitsstrafe von sechs Monaten bis zu zehn Jahren wird bestraft, wer einen Diebstahl begeht, bei dem er oder ein anderer Beteiligter eine Schußwaffe bei sich führt, [...]

###

URTEILSAKTE als Makro-Text
Gliederung in Teiltexte




**

**Literatur:**

[Anmerkung: hochgestellte Ziffern vor Jahreszahl beziehen sich auf die jeweilige Auflage: Beispiel: Betti, Emilio ($^{2}$1972) = 2. Auflage]

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# ABSTRACT

## Zur Hermeneutik als Verstehenshilfe bei Rechtstexten

Ingrid Simonnæs
Institutt for språk
Norges Handelshøyskolen
Bergen, Norge

This paper deals with the comprehensibility of legal texts (judgements) in a hermeneutic setting. The comprehensibility depends on understanding, here seen as 'to apprehend the meaning of a text'.

For this purpose we first look back on the history of modern hermeneutic from the 19th century (Dilthey) before the role of the hermeneutic in law is discussed. In the modern legal hermeneutics – 20th century - the judge is no longer seen as *bouche de la loi* (Montesquieu) who subsumes only, but instead laws and particular cases are seen as 'raw data', which have to be interpreted, before a decision can be made.

To illustrate this approach, a rule and an actual case from a judgement are analyzed in depth. The rule in question is the section about theft in the German Penal Code (§ 242 StGB). The legal interpretation of this section is elaborated first from a legal and then a linguistic point of view. Then the interpretation of the particular case is investigated, again from both a legal and a linguistic point of view. Special attention is given to the problem of the underlying semantic meaning.

Based on the analysis, we can state that the meaning of 'understanding' is not identical to the linguist and the legal expert. As for the legal expert, 'understanding' embodies much more than what is derivable from a linguistic – i.e. semantic – analysis only. It is concluded that the understanding of legal texts requires reliable linguistic and well-founded legal knowledge. From a more general point of view one can consequently conclude *mutatis mutandis* that both linguistic and thorough field knowledge is a necessary prerequisite for LSP-communication.

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**REPORT:**

# DANTERM as a provider of IT solutions to the communication and knowledge handling needs of Danish companies

Research Director and Project Manager
Bodil Nistrup Madsen
DANTERMcentret
Copenhagen, Denmark

As a result of Danish society's transition from an industrial to a knowledge society, new demands arise for quality assurance and efficiency of technical communication, clarification of technical concepts in connection with such things as project management, knowledge organisation and knowledge handling, as well as the automatic handling of large quantities of information, for example when searching for information on the Internet.

DANTERM – the Danish Centre for Terminology is one of the few centres that combines competence in terminology and the terminological working method, knowledge organisation and data structuring, plus the development of terminology-related IT applications, especially term bases. The centre's knowledge of terminology, as well as clarification and systematisation of technical concepts, is indispensable when developing other IT systems, such as systems for searching, storage and exchange of information. By this we mean, for example, systems for digital document handling, e-commerce and electronic health care records. The unambiguous determination and systematic description of concepts within such a system's field of operation is an important precondition for the successful development of the system and for usable results.

It is precisely this expertise that lays the foundations for DANTERM's ability – independently and in collaboration with technological service organisations and consultancy firms – to contribute to the solution of business-related tasks that are also necessary for society at large by:

- promoting quality assurance and the efficiency of technical communication
- developing IT systems for searching and exchange of information

and in this way

- contributing to the development of competence and the international competitiveness of Danish companies
- playing an important part in the innovation of Danish research and development activities in terminology and knowledge handling
- building bridges between Danish research organisations and Danish business

DANTERM is a commercial foundation, which was set up by the Danish Terminology Group, based on the development and research work that has been taking place for many years in the Department of Terminology and the Department of Computational Linguistics at the Copenhagen Business School. DANTERM works closely with the Copenhagen Business School. The centre's board is composed of representatives from institutions and organisations that have a particular interest in the work that the centre carries out. These include The Confederation of Danish Industries, The Danish Board of Trade, The Danish Bankers' Association and the Danish standards institute (Dansk Standard ).

In 1998, DANTERM came in as the administrator of a so-called "centre contract project" with the title: "Development of methods and tools for the creation and operation of companies' internal term banks". Within the framework of this project, DANTERM has built up a number of areas of competence, which can contribute to the promotion of Danish companies' innovation and international competitiveness.

It has been crucial for DANTERM's role in building up and disseminating knowledge, which characterises the centre contract project, that the centre is very closely linked to the Department of Computational Linguistics at the Copenhagen Business School, which is one of Denmark's leading institutes for research into the formalisation of technical language for the purposes of data processing.

DANTERM has a crucial role in building bridges between research institutions and business. The collaboration has given the companies that take part in the centre contract, access to the most recent research, and at the same time, the collaboration has contributed to innovation in research and teaching.

The centre's staff have a solid background in the management of language

technology projects, and they follow developments in these areas. A close collaboration with the leading research institutions in Denmark, and strong ties to most European terminology centres gives direct access to the newest developments in the field.

## Quality assurance in technical communication

Standardisation and quality assurance are unavoidable demands when it comes to a company's products. Corresponding demands hold for a company's technical communication, that is to say that the company must set down standards and allocate resources to quality assurance of all types of texts, if the company is to be able to compete effectively with other national and international companies. It can cost an individual company – and society as a whole – considerable sums of money when technical messages are not understood or, even worse, are misunderstood.

This means that all the company's texts, such as manuals and brochures – in Danish as well as foreign languages – must be framed in clear and correct language that is consistent in its use of technical expressions. A precondition for achieving this is that the company's staff – subject field experts as well as translators – have knowledge of, and access to, the relevant **IT tools and methods**.

## Clarification of technical concepts

One of the most important factors in technical communication is the common understanding and use of terms, including technical concepts. It is therefore important to clarify the content and delimitation of technical concepts, and to register this in a systematic way, in order to enable quick retrieval. This can be achieved by using **IT applications** to handle language and knowledge, for example **terminology and knowledge bases**, which build on such things as well-defined and well-described concept apparatuses, for example concept systems, ontologies and domain models.

**Concept systems**, which are used when elaborating terminology and putting it into a term base, give a systematic overview of the concepts and terms within a particular subject field. Concept systems show the relations between technical concepts, which can be determined by analysing the characteristics of the concepts (concept contents), and they are used, among other things, to help devise definitions and determine the equivalence of concepts in two languages. Most often, there are super-/subordination relations, where subordinate concepts are subtypes of a superordinate concept, but concept systems can also contain other relations, for example partitive, temporal and causal relations.

In connection with methods for the organisation and handling of knowledge – **knowledge management** – one refers to systematic descriptions of concepts within specific subject fields such as **ontologies** or **domain models**. These are based on broadly the same principles as concept systems, and are likewise a way of bringing order to the concepts in a subject field, and of ensuring unambiguous communication.

One of the most important language technology tools one can use when producing and translating texts is **term bases**. A term base can be used to store a company's terminology electronically, so that staff have easy access to the company's technical language, including Danish and foreign language terms, grammatical information about the terms, text examples, definitions and relations between the technical concepts that the terms express. Term bases can, for example, be made available on a company's intranet. A company's term base can indicate which term, out of a number of synonyms, is the preferred term to use in this company's texts. This is a way of achieving consistency in both Danish and foreign language texts.

However, term bases are not just useful tools for translators, but for all the employees in a company who produce texts about the company's products, or who need to understand a text in a foreign language.

### Knowledge organisation and knowledge handling: key concepts in the use of IT applications for information storage and retrieval

The use of many types of IT applications for information storage and retrieval demands the unambiguous definition of concepts. It is, of course, helpful if the various IT systems also use the same designations for the concepts, but the most important thing is the determination of the concepts' technical content.

### Automatic handling of large quantities of information

Systematic definitions of concepts within a specific subject field are also essential for the automatic handling of large quantities of information, for example when searching for information in an information database, or when searching for relevant information on the Internet.

### Basic concepts in connection with project management applications

When carrying out large projects, such as building hospitals, bridges (the Øresund and Great Belt bridges) and metro systems, there is a great need for efficient applications for project management. Such applications must be based on a number of well-defined concepts, since communication between

the various parties (the owner of the building, the building contractor, the suppliers etc.) would otherwise be impeded.

## DANTERM's areas of competence: terminology and knowledge organisation – methods and IT applications

DANTERM's competence lies in areas such as those mentioned below, which fall into two main categories.

The first category concerns methods that are absolutely crucial when constructing language technology and other IT applications:

- characteristics of different languages
- terminological working method
- concept modelling and concept definitions
- classification and thesauri
- knowledge organisation and knowledge modelling
- data analysis and data structuring

The second category concerns the development of IT applications, both language technology and other applications:

- development of language technology tools and terminology-related IT systems, especially terminology and knowledge bases
- development of other IT systems for information storage and retrieval
- development of target group-oriented user interfaces

## Consultancy, advice and courses

DANTERM offers help with creating term bases, and with integrating them with language technology tools such as electronic dictionaries, machine-assisted translation (including translation memory systems) and spelling and grammar checkers. Moreover, DANTERM helps companies to devise language policies and to lay down strategies for the use of term bases integrated with other language technology tools.

In the early summer of 2001, DANTERM plan to launch a subscription scheme where, for a fixed annual charge, companies can receive information and services from DANTERM. The services will include an annual report and newsletters, plus discounts on courses and other events, as well as consultancy to assist in integrating linguistic information technology in the company.

DANTERM arranges a number of courses on the following subjects: creation and use of term bases, use of various aids such as dictionaries, term bases and texts on the Internet, and systems with a translation memory.

Furthermore, DANTERM presents papers at conferences and seminars. In January 2001, DANTERM held two seminars on quality in language production, which were attended by a large number of important Danish companies.

**Participation in national and international networks**

DANTERM has participated in two projects under the EU's MLIS (Multilingual Information Society) programme. **TDCnet** (European Terminology Documentation Centre Network) and **NORDTERM-Net**. DANTERM has also produced Danish **terminology on the subject of the environment** for the EU's EURODICAUTOM term bank.

In collaboration with Danish and foreign institutions and companies, DANTERM has contributed to a number of proposals and applications, including some to the EU's framework programmes, for example a knowledge base for the health sector, a Nordic concept network with a view to intelligent information retrieval, machine translation, ontologies for use when browsing (e.g. in connection with e-commerce) and a system for editing dictionaries.

DANTERM has taken the initiative for a collaboration with the Danish Language Council (Dansk Sprognævn) and a number of companies, institutions and associations, with a view to devising proposals for **Danish IT terminology**. The project, whose background includes the Danish Culture Minister's initiative for a Danish language policy, started in the spring of 2000. DANTERM will construct and administer a database, which will be available to all Danish citizens via the Internet.

DANTERM participates in Danish and international standardisation concerning the content and structural description of lexical data collections, medical information science, and terminology and computer-assisted terminology work.

**DANTERM's interaction with Danish business**

With its technical background, its close contact with leading research environments and the experience it has acquired building bridges between research institutions and business, DANTERM has the best qualifications to

play an important part as adviser and sparring partner for Danish companies, including smaller companies.

With its special competence, DANTERM will be able to contribute to the continuing increase in quality development and quality assurance.

*http://www.danterm.dk*

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**NB!**

**In next number of LSP and Professional Communication:**

**A report from one of DANTERM's collaborative partners: Nordea**

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# ABSTRACT

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As a result of Danish society's transition from an industrial to a knowledge society, new demands arise for quality assurance and efficiency of technical communication, clarification of technical concepts in connection with such things as project management, knowledge organisation and knowledge handling, as well as the automatic handling of large quantities of information, for example when searching for information on the Internet.

DANTERM – the Danish Centre for Terminology is one of the few centres that combines competence in terminology and the terminological working method, knowledge organisation and data structuring, plus the development of terminology-related IT applications, especially term bases. The centre's knowledge of terminology, as well as clarification and systematisation of technical concepts, is indispensable when developing other IT systems, such as systems for searching, storage and exchange of information. By this we mean, for example, systems for digital document handling, e-commerce and electronic health care records. The unambiguous determination and systematic description of concepts within such a system's field of operation is an important precondition for the successful development of the system and for usable results.

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# BOOK REVIEW:

**Language, Text, and Knowledge:**
**Mental Models of Expert Communication**
Edited by Lita Lundquist & Robert J. Jarvella
Berlin, New York, Mouton de Gruyter 2000
ISBN 3-11-016724-7

**Reviewed by:**
Vijay K. Bhatia
Department of English and Communication
City University of Hong Kong, Hong Kong

*Language, Text, and Knowledge* is an interesting attempt to put together a number of insightful studies of mental models of interaction between language and knowledge to construct specialist communication often associated with a number of professional contexts. Although in a number of ways this edited volume may seem to be a typical European response to one of the most important issues in discourse studies, what constitutes specialist expertise as against lay knowledge, and how this expertise is reflected in the interpretation of technical communication; in fact, it is more than one would expect from a typical continuation of text-linguistic tradition in discourse analysis. This edited collection of 12 papers represents some of the interesting investigations of the development of socio-cognitive frameworks for the study of communicative behaviour in typical LSP sites. Underlying the three concepts of Language, Text, and Knowledge is the notion of structure, which is further shown as grounded in LSP contexts, which makes some of these studies truly insightful. By organising papers in an order which gives a sense of historical, and at the same time, analytical development of the field as the volume progresses from word meanings to discourse semantics and to disciplinary and cultural variations in discourse interpretation, the editors have added an interesting dimension to the collection. The book is a good attempt to extend research on the use of mental models to understand specialist texts often associated with professional contexts. The textual range focused on in this excellent

collection of papers may not be wide, but the book gives a good indication of the validity and usefulness of the investigative procedures to understand professional communication in wider contexts. The book contains an interesting range of theoretical approaches to the study of language use, some which include text-linguistics, translation theory, LSP, and psycholinguistic models of discourse comprehension. Missing however in much of this is some the recent work on critical discourse and genre studies, which in my opinion, has contributed very significantly to our understanding of specialist discourse in disciplinary cultures. Probably this omission can be explained by somewhat heavy and obviously intended emphasis on cognitive models of knowledge construction and use in specific disciplinary contexts.

The papers focus on a range of different levels of linguistic and textual knowledge, from lexicogrammar and textual knowledge, on the one hand, to structures of knowledge, on the other, using a variety of textual frameworks. Pierre-Yves Raccah, in the opening paper to the collection, makes use of the lexico-semantic notion of topoi to discuss some of the interesting aspects of differences between ordinary and specialist meanings of words. In the next paper Jan Engberg explores the relationship between ordinary words and their legal meanings. In this excellent paper, rich in the analyses of textual data, Engberg demonstrates how the German word *Beweis* (meaning 'proof') derives its special extended interpretation partly from its use in legal genre of judgement, and partly from the setting it is embedded in. To explain such an extension of semantic configuration, Engberg uses representation of memory structures in the form of (static) frames, and representation of (dynamic) discourse structures in the form of mental spaces. As a continuation of research on the use of lexico-grammatical features in professional texts, Henrik Hoeg Muller identifies interesting distinctions between relational and non-relational nominals on the basis of individual conceptualisations of the world one is familiar with or operates in. At a somewhat similar level, Lita Lundquist studies the use of NP anaphors demonstrating how experts and non-experts use different kinds of knowledge to make sense of such structures, which she explains in terms of underlying cognitive structures at a number of levels, including specialist lexico-grammar, textual structures and background knowledge. In this context, Ase Almlund's very detailed study of semantic roles in expert communication is very interesting. Based on her quite comprehensive analysis of Danish TV judgements, she interestingly enriches her analysis of patient roles by bringing in the use of completive and interrogative clauses, on the one hand, and the knowledge of legal genre, on the other.

With Anne Lise Kjaer's paper on "The structure of legal knowledge: The importance of knowing legal rules for understanding legal texts", this book

moves into higher realms of macro-structures in specialist communication. Using a cognitive model of legal reasoning, she makes a good attempt to connect the social reality of law to the real world of facts. Based on her detailed analysis of legal rules, she rightly concludes that knowledge of rules plays an important role in the comprehension and interpretation of a variety of legal genres. Extending Kjaer's concern for the use of legal knowledge in the comprehension of legal judgements, Dorte Madsen attempts to map out the complexities of legal text structures in Danish Judgements in terms of *schema* and *scenario*, integrating static aspects of legal structures with dynamic aspects of legal situations. These two papers together offer interesting insights to the way some of the interesting processes of construction and interpretation are used in every day legal practices.

For those who believe that cross-cultural elements have a relatively minor role in expert communication, Annely Rothkegel approaches this issue from the point of view of translation. Taking data from the dissemination of information on pharmaceutical products to German and American consumers, this paper brings into focus aspects of universal and more localised text structures in healthcare products. The next paper by Lene Palsbro is a very interesting study of inference-making by expert and novice readers, especially focusing on their reasoning. The paper confirms some of the conclusions in earlier papers, especially those making a strong link between mental models of knowledge representations and textual inferences differently drawn by expert and non-expert readers.

In the area of disciplinary knowledge representation, the study by Leo Noordman, Wietske Vonk and Wim Simons adds another dimension to the book's collection. Based on a number of experiments, these authors investigate the structure of disciplinary knowledge in expert economists and relatively non-experts in the discipline. Contributing to this aspect of the book, Robert Jarvella and Suzie Mathieu report experimental results from their study of interaction between general linguistic knowledge and textual knowledge to make sense of specialised texts. These two sets of experimental studies add a necessary and useful dimension to a volume which otherwise is largely based on linguistic and textual analyses of expert texts and their intended and lay readers.

In the final contribution on "Risk portrayal and risk appreciation as a problem in language use", Anthony Sanford and Linda Moxey add another interesting and useful dimension to the construction and comprehension of specialist discourse particularly by lay readers. The use and interpretation of numbers, expressions of probability, certainty, and frequency all have very interesting

implications for those interested in information design in a variety of public domains.

If this is what the whole collection is about, what will be of value in it for those interested in professional communication? It has a large variety of studies focusing on areas of lexico-grammar, textual organisation, cognitive structures, discourse processing, comprehension of specialist communication by expert and lay readers, a range of knowledge domains, and many more. It will be of immense interest to those interested in various forms of legal discourse, where a number of studies in the volume get their data from, especially legal judgements. Other disciplinary concerns, especially economics, and healthcare have interesting contributions to make. Although there is a heavy emphasis of lexico-grammar of specialist communication, discourse organisation and cognitive structures have not been ignored. Knowledge structures form a central theme in the book, but experimental studies do have their due place in it. There seems to something for every one here. But one must not get the impression that it goes in every conceivable direction lacking focus. Far from it, the volume has a strong sense of unity, in that it attempts to relate models of mental representations in the study of specialist communication. However, this unity comes with a cost. Investigation of communication, as we know, is a multifaceted, multidimensional and multidisciplinary activity, and any effort to focus narrowly must necessarily be at the expense of a wider vision.

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# PUBLICATIONS RECEIVED:

## ADLA NYT

Association Danoise de Linguistique Appliquée (Foreningen for anvendt lingvistik i Danmark) 2/2000, oktober. Formand: Anne Holmen, Danmarks Pædagogiske Universitet, Emdrupvej 101, DK-2400 København NV.
E-mail: anho@dpu.dk

## AILA NEWS

International Association of Applied Linguistics, Vol.1 No.5 November 2000. New Series of AILA News to be compiled in Australia. The Applied Linguistics Association of Australia has agreed to work with AILA to produce the Newsletter twice a year. The electronic version of the Newsletter may be found on Internet at the following address: http://www.brad.ac.uk/acad/aila/.

## COPENHAGEN STUDIES IN LANGUAGE

No. 25. "Contrastive Studies in Syntax" edited by Alex Klinge.
Series editor: Niels Davidsen-Nielsen. Editing board: Gyde Hansen, Michael Herslund, Finn Sørensen. Published by Samfundslitteratur, Rosenørns Allé 9, DK-1970 Frederiksberg C, Denmark. Tel.: +45 38 15 38 80. ISSN 0905-9857.

## COPENHAGEN WORKING PAPERS IN LSP

No.9, 1999/2000: "El slvaje y nosotros Signos del latinoamericano: Una hermenéutica del otro" edited by Jan Gustafsson.
Information: Copenhagen Working Papers in LSP, Institute for FIRST, Copenhagen Business School, Dalgas Have 15, DK-2000 Frederiksberg, Denmark. Tel.: +45 38 15 32 50. E-mail: vr.tysk@cbs.dk . ISSN 1396-1888.

## ENGLISH TEACHERS' JOURNAL

No.53, October 2000 (Israel). Editor: Judy Steiner. Editorial Board: English Teachers' Journal, English Inspectorate, Ministry of Education, Jerusalem 91911, Israel. Production: Eltan Communication Services Ltd.

## ESP FRANCE NEWSLETTER

Vol.16, No.1, February 2001. Editorial Address: David Bank, 2, Rue des Saules, F-29217 Plougonvelin, France. ISSN 0998-3058.

**FACHSPRACHE**
International Journal of LSP, 22. Jahrgang/Volume Heft 3-4/2000.
Internationale Zeitschrift für Fachsprachenforschnung, -didaktik und Terminologie. Manuskripte können in Deutch, Englisch oder Franzözich abgefasst sein. Herausgeber: Univ.-Prof. Dr. Rudolf Beier, RWTH Aachen, Eilfschornsteinstraße 15, D-52062 Aachen / Univ.-Prof. Dr. Peter Bierbaumer, Universität Graz, Institut für Anglistik, Heinrichstraße 36, A-8010 Graz / Univ.-Prof. Dr. Dieter Möhn, Universität Hamburg, Institut für Germanistik, von-Melle-Park 6, D-20146 Hamburg. ISSN 0256-2510.

**HIGHER EDUCATION IN EUROPE**
Vol. XXV, No. 3, 2000: "Transnational Educational Provisions: Enabling Access or Generating Exclusion?" (Offre d'enseignement transnational: donnant l'accès ou engendrant l'exclusion?). A UNESCO-CEPES Publication. The review is published in three language versions – English, French, and Russian. English, French and Russian versions are accessible, free of charge, online at the following web-address: http://www.cepes.ro/publications
Main editor: Leland Conley Barrows, Centre européen pour l'enseignement supérieur (CEPES), 39, rue Ştirbei Vodă, R-70732 Bucarest, Roumanie. Tel.: (40-1) 313 08 39 / (40-1) 312 04 69 Fax: (40-1) 312 35 67 E-mail: Leland@CEPES.RO . WWW: http://www.cepes.ro . ISSN 0379-7732.

**LE SENS DES MOTS**
Travaux du C.R.T.T (Centre de Recherche en Terminologie et Traduction, Université Lumière Lyon2). Sous la direction de Henri Béjoint et Philippe Thoiron. Ce volume collectif rassemble onze articles consacrés aux problèmes du sens en terminologie. L'ensemble des contributions fait apparaître l'émergence d'un nouveau type de recherche terminologique fondée sur l'exploitation des corpus, éventuellement multilingues. Cette nouvelle terminologie se démarque de la tradition pas ses méthodes et ses objectifs. Elle tend à devenir descriptive plutôt que normative et s'inscrit désormais dans le cadre d'une approche ouvertement linguistique. Presses universitaires de Lyon, 2000. 80 boulevard de la Croix-Rousse, BP 4371, F-69242 Lyon cedex 4. ISBN: 2-7297-0641-0.

**ODENSE WORKING PAPERS IN LANGUAGE AND COMMUNICATION**
No.22, January 2001: "Pædagogik og læring i fremmed- og andetsprog". Edited by Johannes Wagner.
General editor: Stefen Nordahl Lund (snl@language.ou.dk).
Published by Institute of Language and Communication, University of Southern Denmark, Main Campus: Odense University, Campusvej 55, DK-5230 Odense M. E-mail: lfn@language.sdu.dk

**SPRACHREPORT**
Heft 1/2001 17.Jahrgang. Informationen und Meinungen zur deutschen Sprache. Herausg.: Institut für Deutsche Sprache, Postfach 10 16 21, D-68016 Mannheim, Germany. Web: http://www.ids-mannheim.de/pub/sprachreport/ (D 14288)

**SPROG & ERHVERV**
Nr. 2, februar 2001 og nr. 3. marts 2001. (http://www.esf.dk/indhold/Sprog_og) Medlemsblad for Erhvervssprogligt Forbund. Bladet er tilsluttet Dansk Fagpresseforening. Redaktion: Birgitte Jensen (ansvarshav.), Anna Dalsgaard (red.), Mette Kierulff-Mortensen (sekr.). EsF, Skindergade 45-47, Postboks 2246, DK-1019 København K, tlf.: +45 33 91 98 00, fax: +45 33 91 68 18, e-mail: esf@esf.dk Web: http://www.esf.dk ISSN 0107-2706

**SPROGFORUM**
Febr. 2001, Nr. 19 "Det mangesprogede Danmark". Tidsskriftet udgives af Informations- og Dokumentationscentret for Fremmedsprogspædagogik ved Danmarks Pædagogiske Bibliotek i samarbejde med Foreningen for anvendt Sprogvidenskab i Danmark (ADLA). Redaktion: Karen Lund, Michael Svendsen Pedersen, Karen Risager, Elsebeth Rise (ansv.) og Peter Villads Vedel. Redaktionens adresse: Sprogforum, Danmarks Pædagogiske Bibliotek, Emdrupvej 101, Postboks 840, DK-2400 København NV. Tlf. +45 39 69 66 33 (lok. 2310/2311), fax: +45 39 55 10 00, e-mail: sprogforum@dpb.dpu.dk Web: http://www.dpb.dpu.dk/infodok/Sprogforum. ISSN 0909-9328

**SPROGÅR**
Nr. 1, februar i Det Europæiske Sprogår 2001.
Udgivet af Undervisningsministeriet i anledning af Det Europæiske Sprogår 2001. Redaktion: Olivier Lesenecal (ansvarshav.red.), Christine Høstbo, Tina Gottlieb, Georg Schørring. E-mail: Olivier.Lesenecal@uvm.dk Tlf.: +45 33 92 57 18 Web: http://www.europasprog.dk

**TRANSST**
No. 35, 2000 (web: http://spinoza.tau.ac.il/~toury/transst/), An International Newsletter of Translation Studies (New Series). Published by the M. Bernstein Chair of Translation Theory and the Porter Institute for Poetics and Semiotics, Tel Aviv University (Israel). Edited by Gideon Toury. Editorial and administrative address: The M. Bernstein Chair of Translation Theory, Tel Aviv University, Faculty of Humanities, Tel Aviv, Israel. Tel.: +972-3-6407022; fax: +972-3-6422141 or +972-3-6408980; e-mail: toury@spinoza.tau.ac.il . ISSN 0792-058X.

**ZEITSCHRIFT FÜR ANGEWANDTE LINGUISTIK (ZfaL)**
Heft 33, August 2000. Herausgegeben: im Auftrag der Gesellschaft für Angewandte Linguistik (GAL) von Gerd Antos, Josef Klein, Walter F. Sendlmeier. Redaktion: Prof. Dr. Joseph Klein, Institut für Germanistik, Universität Koblenz-Landau, Abt. Klobenz. Rheinau 1, D-56075 Koblenz. Tel.: +49 0261 9119 205 und 9119 231, Fax: +49 0261 9119 209,
E-mail: jklein@uni-koblenz.de. ISSN 1433-9889.

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# CONFERENCE CALENDAR:

## *- 2001 -*

**April 18-20 (2001) – Bristol (Great Britain)**

3rd International Symposium on Bilingualism.
**Information:** Jeanine Treffers-Daller, 3rd International Symposium on Bilingualism (ISB3), University of the West of England, Centre for European Studies, Faculty of Languages and European Studies (LES), Coldharbour Lane, Bristol, BS16 1QY, Great Britain. Fax: +44 117 3442820 E-mail: ISBERG@uwe.ac.uk
Web: http://www.uwe.ac.uk/facults/les/research/bilingual/frames.html and list of colloquia: http://www.uwe.ac.uk/facults/les/research/bilingual/colloquia.html

**May 3-4 (2001) – Nancy (France)**

4ème Rencontres TIA – 2001 (Terminologie et Intelligence Artificielle). Thèmes: Théories du sens et la question des textes spécialisés, Terminologie et ontologies, Exploitation de l'extraction de termes en corpus, Terminologie et modélisation/formalisation des connaissances , Bases de connaissances terminologiques, Ressources terminologiques pour la recherche d'information, Problèmes de la terminologie multilingue, Réutilisabilité en ingénierie linguistique et ingénierie des connaissances, Outils et applications.
**Information:** Patricia Gautier ou Jean Royauté, URI–INIST-CNRS, 2 allée du Parc de Brabois, F-54514 VANDOEUVRE Cedex. Tél : +33 (0)3 83 50 46 70
E-mail: tia2001@inist.fr Web: http://www.inist.fr/TIA2001/index.htm

**May 14-15 (2001) – Sherbrooke/Quebec (Canada)**

"La représentation de la norme dans les pratiques terminologiques et lexicographiques", colloque spécial dans le cadre du 69e congrès de l'Association canadienne-française pour l'avancement des sciences (ACFAS).
**Information:** Acfas, 425, rue De La Gauchetière Est, Montréal (Québec), H2L 2M7, Canada. Tel.: (514) 849-0045 Fax: (514) 849-5558 E-mail: congres@acfas.ca
Web: http://www.is.mcgill.ca/Acfas69/Coll303.htm (ou http://www.acfas.ca/congres )

**May 18 (2001) – Barcelona (Spain)**

I Jornada de Terminologia i Serveis Lingüístics.
**Information:** Institut Universitari de Lingüistica Aplicada, Universitat Pompeu Fabra, La Rambla 30-32, E-08002 Barcelona, Spain. Tel.: +34 935 422 322 Fax: +34 935 422 321
E-mail: jornada.termdoc@grup.upf.es Web: http://www.iula.upf.es/jterslca.htm

**May 21-22 (2001) – Uppsala (Sweden)**

Nordic Conference in Computational Linguistics (NODALIDA '01). The conference is open for all branches of computational linguistics. Topics: computational semantics, computer-assisted language learning, machine translation, and speech technology.
**Information:** NoDaLiDa '01, Dept of Linguistics, Box 527, SE-751 20 UPPSALA, Sweden. E-mail: nodalida@ling.uu.se Web: http://stp.ling.uu.se/nodalida01

**May 22-26 (2001) – Quebec (Canada)**

Critical Link 3 – 3rd International Conference "Interpreting in the Community: The Complexity of the Profession"
**Information:** The Columbia Communications Group Inc., 1350, Sherbrooke St. West, suite 1500, Montreal (Quebec) Canada H3G 1J1.
Tel.: +1 (514) 987-1707 Fax: +1 (514) 987-7392 E-mail: registration@columbia.ca
Web: http://www.rrsss06.gouv.qc.ca/colloque/index2.html

**May 24-27 (2001) – Quebec (Canada)**

The Canadian Association of Applied Linguistics (CAAL) Conference / Congrès de l'association canadienne de linguistique appliquée (ACLA).
**Information:** Web: http://www.aclacaal.org/congres.html

**May 25-27 (2001) – Chicago Illinois (USA)**

22nd Annual Meeting and Educational Conference of the National Association of Judiciary Interpreters and Translators.
**Information:** NAJIT, 551 Fifth Avenue, Suite 3025, New York NY 10176, Tel.: (212) 692-9581 Fax: (212) 687-4016 E-mail: headquarters@najit.org
Web: http://www.najit.org/conference/index.php

**May 26-28 (2001) – Quebec (Canada)**

14th Annual Congress of the Canadian Association for Translation Studies (CATS). Theme: "Translation and Censorship".
**Information:** Denise Merkle, Département de traduction et des langues, Casier 30, Faculté des arts, Moncton (Nouveau-Brunswick) E1C 5E6, Canada. Tel.: (506) 858-4214
Fax: (506) 858-4166 E-mail: merkled@umoncton.ca
Web: http://www.uottawa.ca/associations/act-cats/congress.htm

**June 2-7 (2001) – Pittsburg, PA (USA)**

Technologies 2001: 2nd Meeting of the North American Chapter of the Association for Computational Linguistics (NAACL). Theme: Computational Linguistics and Language Technologies.
**Information:** General Conference Chair: Lori Levin (Carnegie Mellon University), e-mail: lsl@cs.cmu.edu; Program Chair: Kevin Knight (USC/Information Sciences Institute), E-mail: naaclpgm@isi.edu . Web: http://www.cs.cmu.edu/~ref/naacl2001.html

**June 13-16 (2001) – Gustavelund, Tusby (Finland)**

NORDTERM 2001: ”Current events in the field of terminology in Nordic countries”.
**Information:** Lena Jolkkonen, The Finnish Centre for Technical Terminology (TSK), Albertinkatu 23 A 12, FIN-00120 Helsinki, Finland. Tel.: +358 9 2709 1060 Fax: +358 9 608 859 E-mail: lena.jolkkonen@tsk.fi (or tsk@tsk.fi )
Web: http://www.tsk.fi/nordterm/2001/index_en.html

**June 15-17 (2001) – Edinburgh (Scotland)**

European Year of Languages Conference.
**Information:** Marketing Dept, Institute of Linguists, Saxon House, 48 Southwark Street, London SE1 1UN, UK. E-mail: stephen.eden@iol.org.uk Web: http://www.iol.org.uk

**June 17-20 (2001) – Groningen (The Netherlands)**

First Conference of the European Association for the Teaching of Academic Writing (EATAW): ” Teaching Academic Writing across Europe”.
**Information:** EATAW Conference, attn. drs. J.F. van Kruiningen, Faculteit der Letteren, Postbus 716, NL-9700 AS Groningen, Nederland. Fax: ++31.503636855
E-mail: eataw.conference@let.rug.nl Web: http://odur.let.rug.nl/projects/asv/extern/

**June 18-22 (2001) – Surrey (England)**

E-Commerce and Communication – Recent Developments in Language, Law and Finance. Short course for professional translators.
**Information:** Gillian James, Professional Short Course Administrator, Centre for Translation Studies, Dept. of Linguistic & International Studies, School of Language, Law & International Studies, University of Surrey, Guilford, Surrey GU2 7XH, England. Tel: +44 (0)1483 879969 or 879967 Fax: +44 (0)1483 879528
e-mail: g.james@surrey.ac.uk Web: http://www.surrey.ac.uk/LIS/CTS/

**June 25-29 (2001) – Odense (Denmark)**

Graduate Summer School: Course in Computer Mediated Communication. Lectures and workshops in "Computer Assisted Language Learning" (Carol Chapell; Iowa State University) and "Online communication, language styles and social identity" ( Caja Thimm; University of Bonn) will be given and conducted.
**Information:** Karl-Heinz Pogner, Dept. of Intercultural Communication & Management, Copenhagen Business School, Dalgas Have 15, DK-2000 Frederiksberg C, Denmark. E-mail: kp.ikl@cbs.dk Web: http://www.sdu.dk/Hum/GraduateSchool/summerschool

**June 28-30 (2001) – Berlin (Germany)**

3rd European Language Council Conference: ” Multilingualism and New Learning Environments”.
**Information:** European Language Council, Freie Universität Berlin, ZE Sprachlabor, Habelschwerdter Allee 45, D-14195 Berlin, Germany.
Tel: +49-30-838.3718 Fax: +49-30-838.3717 E-mail: elc@zedat.fu-berlin.de
Web: http://www.fu-berlin.de/elc/BerlinConf/index-en.htm

**July 1-6 (2001) – Monte Verita - Ascona (Ticino, Switzerland)**

ASCONA II: ”Complex Cognitive Processes: Simultaneous Interpreting as a Research Paradigm”.
**Information:** Barbara Moser-Mercer, Ecole de traduction et d'interprétation, Université de Genève: Barbara.Moser@eti.unige.ch (http://www.unige.ch/eti/interpretation) or Dominic W. Massaro, Department of Psychology, Univ. of California, Santa Cruz: massaro@fuzzy.ucsc.edu (http://mambo.ucsc.edu/psl/dwm)
Web: http://mambo.ucsc.edu/ascona/

**July 2-6 (2001) – Barcelona (Spain)**

3rd International Summer School of Terminology / III Escuela Internacional de Verano de Terminología.
**Information:** Institut Universitari de Lingüìstica Aplicada, Universitat Pompeu Fabra, La Rambla 30-32, E-08002 Barcelona, Spain. Tel.: +34 935 422 322 Fax: +34 935 422 321
E-mail: escola.term@grup.upf.es Web: http://www.iula.upf.es/ee/eeeuk.htm

**July 5-7 (2001) – Halden (Norway)**

13th ENCoDe conference. The conference theme is"Life-long Learning in Business and Industry - Information and Communication Technology as vehicle and tool" and will focus on the increasing need for staff and management to improve language and communication skills.
**Information:** Conference coordinator: Ingrid Neumann, Østfold University College, HiØ, avd. SF, Os Allé 9, N-1757 Halden, Norway. Secretariat: Connie Heuberger, E-mail: encode2001@hiof.no Fax: +47 69215202 Web: http://www.encode2001.com

**July 6-11 (2001) – Toulouse (France)**

ACL-EACL 2001: 39th Annual Meeting of the Association for Computational Linguistics.
**Information:** Patrick Saint-Dizier, Université Toulouse 1 (UT1), Place Anatole France, F-31042 Toulouse Cedex, France.
Tel.: +33 (0)5 61 63 35 00 e-mail: acl@irit.fr
Web: http://www.irit.fr/ACTIVITES/EQ_ILPL/aclWeb/acl2001.html

**July 10-13 (2001) – Barcelona (Spain)**

3rd International Symposium on Terminology: ”Specialised knowledge sources” / III Simposio Internacional de Terminología: ”Fuentes del conocimiento especializado”.
**Information:** III Simposio Internacional de Terminología, Institut Universitary de Lingúistica Aplicada, Universitat Pompeu Fabra, Rambla Sta Monica 32, E-08002 Barcelona, Spain. Tel.: +34 935 422 322 Fax: +34 935 422 321
E-mail: simposi.term@grup.upf.es Web: http://www.iula.upf.es/ee/eesuk.htm

**July 23-27 (2001) – Bello Horizonte (Brazil)**

8th Brazilian Translation Forum / 2nd International Translation Forum. Translating the New Millenium: Corpora, Cognition and Culture.
**Information:** VIII Encontro Nacional / II Encontro Internacional de Tradutores; PosLin – Programa de Pós-Graduação em Letras Estudos Lingüísticos; FALE, 4.andar; Av. Antônio Carlos, 6627; Campus UFMG, Pampulha; Bello Horizonte, MG, Brazil; 31270-901.
E-mail: entrad@letras.ufmg.br Web: www.letras.ufmg.br/entrad/

**July 28-30 (2001) – Zagreb (Croatia)**

International Symposium on Language Planning and Lexicology.
**Information:** Professor Christer Kiselman, Department of Mathematics, Uppsala University, P. O. Box 480, SE-751 06 Uppsala, Sweden.
Tel.: +46 18 4713216 Fax: +46 18 4713201 e-mail: kiselman@math.uu.se

**August 8-10 (2001) – Seoul (Korea)**

The 2001 Asian Association for Lexicography (ASIALEX 2001) Biennial Conference. Theme: "Asian Bilingualism and the Dictionary."
**Information:** AISALEX Conference, Centre for Linguistic Informatics Research, (Lexicographical Center), Yonsei University, Seoul 120-749, Korea
Tel: +82-2-2123-3511, 4197 Fax: +82-2-393-5001 e-mail: asialex@lex.yonsei.ac.kr
Web: http://asialex.yonsei.ac.kr

**August 20-24 (2001) – Vaasa (Finland)**

**13th European Symposium on Language for Special Purposes: "Porta Scientiae".** Themes: Studies of special language concerning such central aspects as: Theories and Methods; Modern Media; Synchronic and Diachronic Studies; Oral and Written Discourse, Didactics; LSP of Medecine, Law, Technology, Sociology, Linguistics, etc.; Terminology, Multilingualism.
**Information:** LSP2001, Dept. of Scandinavian Languages, University of Vaasa, P.O.B.700, FIN-65101 VAASA, Finland. Fax +358-6-3248820
E-mail: lsp2001@uwasa.fi Web: http://www.uwasa.fi/lsp2001

**August 29-September 1 (2001) – Helsinki (Finland)**

Symposium on Linguistic Perspectives in Endangered Languages organised by the Linguistic Association of Finland.
**Information:** E-mail: el-organizers@ling.helsinki.fi
Web: http://www.ling.helsinki.fi/sky/el.html

**August 29-September 1 (2001) – Nijmegen (The Netherlands)**

EUROCALL 2001 (European Association for Computer Assisted Language Learning). The Conference main theme and title is: ”e-learning”. It thus comprises almost all matters related to Language Learning and Assessment in a Digital Environment.
**Information:** Conference secretariat: President of the organizing committee, Dr Everhard Ditters, TCnMO, University of Nijmegen, PO Box 9103, 6500 HD Nijmegen, The Netherlands . E-mail: eurocall.pr@let.kun.nl Web: http://www.kun.nl/eurocall

**August 30-September 1 (2001) – Copenhagen (Denmark)**

3rd International Congress of the European Society for Translation Studies (EST): Claims, Changes and Challenges in Translation Studies. The Congress aims at providing an international forum for scholars, teachers, and practitioners involved in Translation Studies.
**Information:** Vivi Rønne, EST Congress 2001, Copenhagen Business School, Dalgas Have 15, DK-2000 Frederiksberg.
Tel.: +45 3815 3250 Fax: +45 3815 3860 E-mail: vr.tysk@cbs.dk
Web: http://www.cbs.dk/EST/

**September 3-7 (2001) – Aalborg (Denmark)**

7th European Conference on Speech Communication and Technology.
**Information:** Center for PersonKommunikation, Aalborg University, Fredrik Bajers Vej 7, DK- 9220 Aalborg, Denmark. Tel.: +45 96 35 86 40 E-mail: pd@cpk.auc.dk
Web: http://eurospeech2001.org

**September 5-7 (2001) – Phnom Penh (Kingdom of Cambodia)**

5th International Conference on Language and Development.
**Information:** DP Cambodia, No. 46, St 214, Sangkat Boeung Raing, Khan Daun Penh, PO Box 860, Phnom Penh, Cambodia. Tel: 855-23-724204 / 725540 / 212113
Fax: 855-23-426608 E-mail: info@phnompenh.idp.edu.au
Web: http://www.idpcambodia.org/conference/

**September 6-8 (2001) – Reading (UK)**

The 34th Annual BAAL meeting (British Association for Applied Linguistics): " Unity and Diversity in Language Use".
**Information:** BAAL 2001, c/o Dovetail Management Consultancy, PO Box 6688, London SE15 3WB, UK. E-mail: admin@baal.org.uk (att.: Jeanie Taylor)
Web: http://www.baal.org.uk/baali2001.htm

**September 18-22 (2001) – Santiago de Copostela (Spain)**

8th Machine Translation Summit.
**Information:** E-mail: summitVIII@eamt.org Web: http://www.eamt.org/summitVIII/

**September 27-29 (2001) – Passau (Germany)**

32. Jahrestagung der GAL: "Sprache transdisziplinär".
**Information:** Prof. Dr. Rudolf Emons, Lehrstuhl für Englische Sprache und Kultur, Universität Passau, Innstrasse 40, D- 94030 Passau. Tel.: 0851/509-2801 (Sekretariat) Fax: 0851/509-2802 E-Mail: GAL2001@uni-passau.de
Web: http://www.germanistik.uni-halle.de/gal/aktuell.htm

**October 3 (2001) – Biel (Switzerland)**

VALS/ASLA 2001 – Journée thématique de l'Association suisse de linguistique: "Les biographies langagières" (organisée à l'occasion de l'Année européenne des langues).
**Information:** Jean-François de Pietro, IRDP, Faubourg de l'Hôpital 43, CH-2000 Neuchâtel, Suisse. Tel.:032 - 889.86.06 E-mail: Jean-Francois.DePietro@irdp.unine.ch
Web: http://www.romsem.unibas.ch/vals_asla/tagung01.htm

**October 19-20 (2001) – Bergamo (Italy)**

2nd CERLIS (Centro di Ricerca sui Linguaggi Specialistici) conference: "Conflict and Negotiation in the Language of Specialized Texts".
**Information:** CERLIS office c/o the Dept of Linguistics and Comparative Literature, University of Bergamo, Via Salvecchio 19, I-24129 Bergamo, Italy.
Fax: +39 (0)35 246443 E-mail: cerlis@unibg.it
Web: http://www.unibg.it/cerlis/sem-cerlis-2.htm

**October 29-31 (2001) – Barcelona (Spain)**

5th International Conference on Translation Interculturality and Translation: "Less-Translated Languages".
**Information:** Departament de Traducció i d'Interpretació, Universitat Autònoma de Barcelona. E-mail: cg.traduccio2001@uab.es (or cgtraduccio2001@uab.es )
Web: http://www.fti.uab.es/ti2001

**November 23-24 (2001) – Copenhagen (Denmark)**

8th NIC Symposium (Nordic Network in Intercultural Communication): " Language in Intercultural Communication".
**Information:** NIC Organazation Committee, Copenhagen Business School, Department of English, DK-2000 Frederiksberg C, Denmark. E-mail: NIC2001@cbs.dk
Web: http://www.cbs.dk/conference/nic2001

# *- 2002 -*

**April 4-6 (2002) – Gent (Belgium)**

Sociolinguistics Symposium 14. Theme: Discourse resources: the sociolinguistics of access, availability and distribution.
**Information:** Sociolinguistics Symposium 14, c/o English Department, University of Gent, Rozier 44, B-9000 Gent, Belgium. Tel: 32-9-264-3788 Fax: 32-9-264-4179
E-mail: ss14@bank.rug.ac.be Web: http://bank.rug.ac.be/ss14

**May (2002) – Iasi (Romania)**

8th International Conference of the International Academy of Linguistic Law. Theme: "Law and Language: The theory and the practise of linguistic policies"
**Information:** Pr. Genoveva Vrabie, Principal, Universitatea "Mihail Kogalniceanu", Str. Balusescu nr. 2, Iaşi, 6600 Romania. Tel.: + 0040.32.21.24.16 Fax: + 0040.32.27.98.21.
E-mail: fcsmold.@mail.dntis.ro (or Prof. Dr. Joseph-G. Turi, Secretary-General, IALD/ AIDL: academyturi@attglobal.net )

**December 16-21 (2002) – (Singapore)**

**13th World Congress of Applied Linguistics (AILA 2002):** "Applied Linguistics in the 21st Century: Opportunities for Innovation and Creativity". Theme: Globalisation, creativity and the infusion of Information Technology in the 21st Century.
**Information:** AILA 2002 SINGAPORE, c/o Conference & Travel Management Associates Pte Ltd, 425A Race Course Road, Singapore 218671.
Tel: (65) 299 8992 Fax: (65) 299 8983 E-mail: ctmapl@singnet.com.sg
Web: http://www.aila2002.org

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# LANGUAGE NEWS:


**The European Year of Languages 2001** is a celebration of Europe's linguistic diversity and promotes language learning and related skills. It is organised by the European Union and the Council of Europe.

Most of the participating countries have already organised or planned events and activities within the framework of the European Year of Languages (EYL).

Information regarding the EYL project may be found on the following web-sites:

- European Year of Languages:
  http://www.eurolang2001.org
- The European Commission:
  http://europa.eu.int/comm/education/languages/actions/year2001.html
- The Council of Europe:
  http://culture.coe.int/AEL2001EYL/index.html

Furthermore, each participating country has chosen a national co-ordinating body to organise the European Year of Languages. The European Commission has published an address list of the different Co-ordinating Bodies at the following web address:

- http://europa.eu.int/comm/education/languages/actions/contact.html

  *Please contact your National Co-ordinating Body for more details.*

In Denmark, the Danish Ministry of Education launched the European Year of Languages by organising an opening conference, which took place in Copenhagen on 15th March 2001. We are publishing below a message from the Secretary General of the Council of Europe addressed to the conference.

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February 2001

## Message from the Secretary General of the Council of Europe

I am very pleased that Denmark is launching its campaign for the European Year of

Languages. This special Year, which is being organised by the Council of Europe and the European Union, involves 45 countries in a wide range of local, national and European initiatives.

Our aim is to encourage more people to learn more languages. Language skills are a necessity for ALL today. No one is ever too old – or indeed too young – to begin and I hope that many in Denmark will take up the challenge to learn a new language in 2001.

'Languages open doors' is one of our slogans – doors to opportunity for employment, study and travel. But language learning does much more. It offers us insights into other societies and cultures, other ways of seeing and doing things. It helps us develop the positive acceptance of diversity which we need to live and work together peacefully in our multilingual and multicultural societies.

In 2001 we celebrate in a special way the linguistic and cultural diversity of Europe. Our other slogan – 'Europe, a wealth of languages' – is a reminder that we should see this diversity as a valuable source of enrichment rather than as a possible barrier to communication and co-operation. The Council of Europe aims to protect and promote our rich linguistic heritage through the European Charter for Regional or Minority Languages and we look forward to more ratifications in 2001.

We have been working with considerable success for three decades to improve approaches to the teaching of modern languages. This year we are launching a Common European Framework of Reference for Languages to assist in setting standards and evaluating results. We are also beginning the process of introducing a European Language Portfolio in our member States. This is a personal document which will support individuals in their life-long language learning and which will give recognition to their linguistic and intercultural experiences at all levels.

I trust that these and other Council of Europe initiatives in 2001 will support your efforts to promote the aims of the European Year of Languages. I thank you for your commitment and wish you a successful and enjoyable Year.

Walther SCHWIMMER

European Year of Languages 2001
Année européenne des langues 2001

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