poor one is not the length of time taken but the *attention and commitment* invested by the translator in the process of translating it.

- *Professionalism* in the field of translation has to do with taking the broadest possible view of the communication context in which our work is situated. Only when we do this can we be sure of providing our clients with what they really need.

- Enormous benefits can be reaped from cultivating our awareness of the *meta-contexts* within which the translating activity unfolds. This means:
- *being aware of the modes of thinking and presuppositions we habitually use,*
- *knowing which other modes are available, and*
- *understanding which are the most appropriate in any given translation context.*

- The *three-part model* of engaging / internalising / releasing described in Part 3 is a first step towards formulating a method that can systematically help us to bring these insights to bear in practice and put the production of quality within our grasp, tangibly and on a practical, day-to-day basis.

HELEN TITCHEN BEETH
BILL FRASER
Translation Service
European Commission

PAMELA FABER

Conceptual analysis and knowledge acquisition in scientific translation

The relation of translation and terminology is analyzed from the perspective of the translator's comprehension of the source text. In specialized translation, this comprehension process necessarily implies a special type terminology management, which can be described as ad hoc as opposed to the systematic variety carried out by terminologists. As is well known, knowledge is encoded in terminology, and the terms within a text are indicative of the specialized knowledge that the translator must acquire in order to understand the message being transmitted. Such knowledge acquisition is necessary in order for the translator to put herself at the same level as the receiver in the source language. The knowledge encoded in terms is both actual (in vivo) and potential (in vitro). Both contexts must be understood for there to be an adequate comprehension of knowledge structures.

1   Terminology management and the translator

It can be said that all translators, whether they are aware of it or not, are to some extent, terminologists, and in this sense, are a bit like MOLIÈRE's *bourgeois gentilhomme*, who made the surprising discovery that he had been speaking in prose all of his life. The specialized terms in a translator's mental lexicon and the conceptual relations that constitute the storage network encode his / her knowledge of that particular domain.

The elaboration of the target text is invariably a reconstruction of meaning. However, what is somewhat less studied is the fact that the comprehension process of the translator is also a reconstruction as well, though of conceptual systems and communicative context. As such, the translator has a double role to fulfill as both text-receiver and text-producer. Though it is evidently much easier to study translation as a product, rather than as a process, part of what is known as *translation competence* undoubtedly lies in the translator's capacity to understand the source text in the same way as the text-receivers in the source language.

In specialized translation, this comprehension process is rather like the reconstruction of the entire skeleton of a brontosaurus on the basis of only a few bones. Starting from the most explicit elements of the text (in a specialized text, this would be its terminology), the translators begin their detective work, first by situating the terms of the text within conceptual systems, and secondly, by expanding their knowledge base to the necessary levels so that these terms will be integrated within previous cognitive structures. More specifically, one of the necessary objectives in specialized translation is the rapid acquisition of expert knowledge and a viable way of achieving this objective is through translation-oriented terminology management.

WRIGHT / WRIGHT (1997:147) underline the difference between systematic terminology management, which is subject-field-driven as opposed to the more *ad hoc* descriptive terminology management, which is text-driven. They represent the most important differences between the two in the following table:

1

Systematic Terminology Management	Ad Hoc Terminology Management
• Collect terms and concepts from global field	• Identify terms occurring in isolated texts
• Construct a concept system or systems	• Create starter term entries
• Craft well-structured definitions	• Document available contexts
• Create term entries	• Research greater context, within time restrictions
• Link entries to conceptual structure, reflecting the concept system(s)	• *If* time and opportunity allow it, reconstruct the concept system based on available fragments.

(WRIGHT and WRIGHT 1997:50)

According to these authors, in order to systematically document terminology in a specialized domain, the terminologist collects the relevant terms by extracting them from a corpus of related texts. These terms designate the concepts within the subdomain. In the construction of concept systems, the terminologist is naturally aided by consultation with experts, as well as a familiarity with larger knowledge structures and the application of previous contexts. A case in point is the subdomain of Lung Cancer (within the field of Medical Oncology), which basically has the same framework as the more general category of disease. Its terminology

thus falls into the following configuration of conceptual categories, which can be applied to virtually all of the subdomains:

1	symptoms	6	diagnostic tests
2	surgical procedures	7	body parts
3	drugs	8	tumors
4	side effects	9	treatments
5	risk factors	10	medical instruments

The terms belonging to each of the above categories are related by conceptual relationships (ISA, HASA, PARTOF). This type of structure can be represented in different ways (tree structure, flowchart, or alphanumerically), but the underlying idea is the same in that the concepts are all represented in hierarchical configurations, which begin at more general levels and taper off into more specific ones. Such a representation should also be enhanced and enriched by other types of non-hierarchical relations in order to offer a multidimensional view of the concept (KAGEURA 1997, BOWKER 1997, WRIGHT 1997).

In contrast to systematic terminology management, *ad hoc* terminology management carried out by the translator is somewhat different. The translator's objective is not to describe the terminology of an entire domain, but just enough of a domain or domains to acquire the specialized knowledge to translate the text at hand. He / she does not start from a corpus of texts, but from one text. The translator takes the text as a model of the world, and uses it to elaborate a partial reconstruction of the underlying conceptual systems within the text. He / she thus extracts the relevant terms from this text, and creates starter entries. Through the documentation of available contexts, he / she makes an effort to locate the term/s in the appropriate conceptual field, and tries to extend contexts as much as possible.

In this process, it is not only necessary to consult experts in the field. A good definition can also be extremely useful in order to foment awareness of conceptual relations. Both the hierarchical and non-hierarchical conceptual relations should be present in a well-structured definition. BEJOINT (1997:20/21) underlines the importance of terminological definitions as indicators of such domain interconnections. Nevertheless, when definitions are analyzed in an effort to derive clear pointers to conceptual relations, the results are often disappointing since the definitions extracted from texts and specialized dictionaries are often lacking in clarity and coherence.

If time permits, the translator may try to reconstruct the concept system. If he / she is going to translate many related texts within the same field, then this type of reconstruction is well worth doing. The elaboration of terminographic entries which systematize related concepts can only facilitate the translation process.
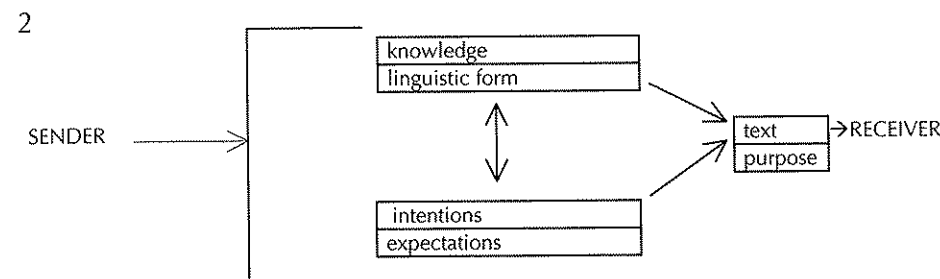
In this article, I am going to examine the relation of translation and terminology from the perspective of the translator's comprehension of the source text. The two sample texts used for exemplification belong to an inventory of texts on CancerNet (www.cancernet.nci.nih.gov), a website which provides information in English and Spanish for doctors as well as patients about different types of cancer, symptoms, causes, treatments and possibilities of survival

Due to considerations of space, only a fragment of this textual inventory has been included in the appendix as an example. Appendix 1 gives the English source texts for patients and doctors respectively, and Appendix 2 is the Spanish translation of these texts, offered at the same website. When references are made to other texts, which are not included in the appendix, the relevant fragment is offered in the example. In the appendix, texts 1A/2A are directed to patients and their families, and texts 1B/2B to health professionals. Obviously on Internet, the text for patients and the text for doctors are not in parallel text format as they appear in the appendix. They are formatted in this way solely to facilitate comparison.

Although both texts are descriptions of small-cell lung cancer, they represent different levels of specialization, as evidenced in their respective terminology because each message is adapted to the needs, knowledge, and expectations of the receivers. The most obvious difference between the two can thus be seen in the knowledge projected onto the potential receivers. This is most evident in the presence / absence of terms in the text, as well as terms that embody different degrees of specialization.

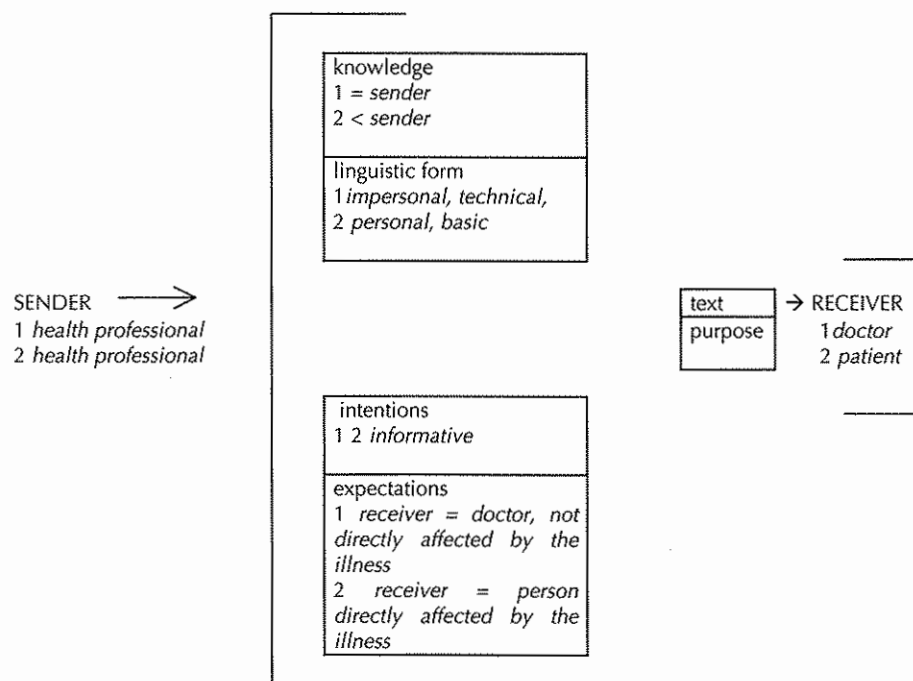## 1.1 *Communicative context in specialized communication*

In a model of scientific communication, the text sender and the receiver are specialists, who are working in the same field. Both form part of a communicative context in which the text sender wishes to transmit a certain message in order to modify the knowledge base of the projected receiver in some way. The frame for scientific communication is represented in the following diagram elaborated by SAGER (1990: 100):

2

The motivation of the text sender is translated into an intention, which in some way becomes an explicit or implicit part of the meaning of the text. In any act of scientific communication, the global intention is to inform. The effect of the message can be limited to modifying, adding to, or confirming what the receiver already knows. Alternatively, its objective may be to evoke linguistic or extralinguistic reactions, such as approval, confirmation, rejection, or other types of modifications in the receiver's behavior.

Based on his / her expectations of the receivers' knowledge and feelings, the text sender selects the elements for the message that will best achieve her goal: more specifically, he / she selects the best level of language, configures the linguistic expressions chosen for the text, and finally transmits the message to the receiver. In informative speech acts, the text sender generally has more knowledge about the topic of discourse than the receiver because otherwise, there would be no effective transfer of information. In order for this transfer to be successful, the receiver must at the same time recognize that the text sender has sufficient authority in the knowledge domain. The selection of content and the way it is encoded depends, at least in part, on the power relation and recognition of expertise existing between the participants in the speech act. If this model is applied to the parallel texts on lung cancer, the following points of contrast become clear:

3

In the text for doctors (appendix 1B/2B), the sender and receiver are both health professionals, who possess the same level of knowledge. This is evident in the extensive use of specialized medical terms, the absence of definitions, and even of any explicative contexts.

In the text for patients (appendix 1A/2A) there is obviously not the same equality, since the sender is a health professional and the receiver, a patient. Consequently, in this text, there are no terminology problems because the text sender takes into account the receiver's lack of expert knowledge. The difference in receiver is also evident in the fact that everything is much more personal from the use of the second person to the detailed description of concepts, such as body parts and diagnostic tests. Throughout the text for patients, there is a very optimistic orientation, and the virtually non-existent possibilities of long-term survival are never mentioned. The author of the text even goes so far as to triumphantly announce the existence of treatments.

4

a   There are treatments for all patients with small-cell lung cancer.

b   Existen tratamientos para todos los pacientes con cáncer de pulmón de células pequeñas.

This optimistic perspective is reinforced by the description of the functions of different treatments:

5

- Surgery (*taking out the cancer*) / cirugía (*extracción del cáncer*)
- radiation therapy (using high-dose x-rays or other high-energy rays *to kill cancer cells*) / radioterapia (uso de rayos X de alta energía u otros rayos de alta energía para *eliminar células cancerosas*)
- chemotherapy (using drugs *to kill cancer cells*) / quimioterapia (uso de medicamentos para *eliminar las células cancerosas*).

The use of predicates such as *take out / extracción* and *kill / eliminar* makes one think, at least subliminally, that the three types of treatment are effective and really do what they are supposed to. For example, something bad which is taken out, normally is not put back in again. In the same way, common sense tells us that something that is killed disappears more or less definitively. In this sense, the use of *eliminar* in the Spanish text is less forceful because it is a verb primarily used in conjunction with inanimate entities, whereas this is obviously not the case with *kill*.

In neither text, is there any further specification or indication of how successful such actions are, and if the implicit result is definitive or not. This is in direct contrast with the text for doctors in which the truth is stated very baldly:

6

a   Without treatment, small cell carcinoma of the lung has the most aggressive clinical course of any type of pulmonary tumor, with median survival from diagnosis of only 2-4 months.

b   Sin tratamiento, el carcinoma de pulmón de células pequeñas tiene el curso clínico más agresivo de todos los tipos de tumor pulmonar, con una supervivencia media desde el diagnóstico de sólo 2-4 meses.

7

a   In small cell lung cancer, the majority of patients die of their tumor despite state-of-the-art treatment.

b   En cáncer del pulmón de células pequeñas, la mayoría de los pacientes muere de su tumor a pesar de recibir los tratamientos más adelantados.

In the text for doctors, the patient is mentioned very generally as an anonymous collectivity. The patients are present, not as people that can experience pain, but strictly in function with their possibilities of survival, percentage-wise.

8

a   Furthermore, about 10% of the total population of patients remain free of disease over two years from the start of therapy, the time period during which most relapses occur. However, even these patients are at risk of dying from lung cancer (both small and non-small cell types). The overall survival at 5 years is less than 5%.

b   Además, cerca del 10% de la población total de pacientes continúa estando libre de enfermedad después de dos años del comienzo de la terapia, el período durante el cual ocurren la mayoría de las recidivas. Sin embargo, aun estos pacientes tienen el riesgo de morir de cáncer de pulmón (tanto del tipo de células pequeñas como del tipo de células no pequeñas). La supervivencia general a 5 años es menos del 5%.

In contrast, in the text for patients, the text sender not only takes into account the receiver's level of knowledge, but also his / her position in the medical event, both in the configuration and structure of the text. For example, instead of describing the subtypes and recent research results, the text inventory for patients focuses on symptoms, diagnostic tests, and treatment options, all of which directly affect the patient.

In the text inventory for doctors, this type of information is naturally superfluous because the health professional is familiar with these tests and knows what they consist of. The fact that such tests are more or less uncomfortable for the patient is not relevant to the specialist, who is logically more concerned with the effectiveness of the results. For example, the description of a *bronchoscopy* is the following:
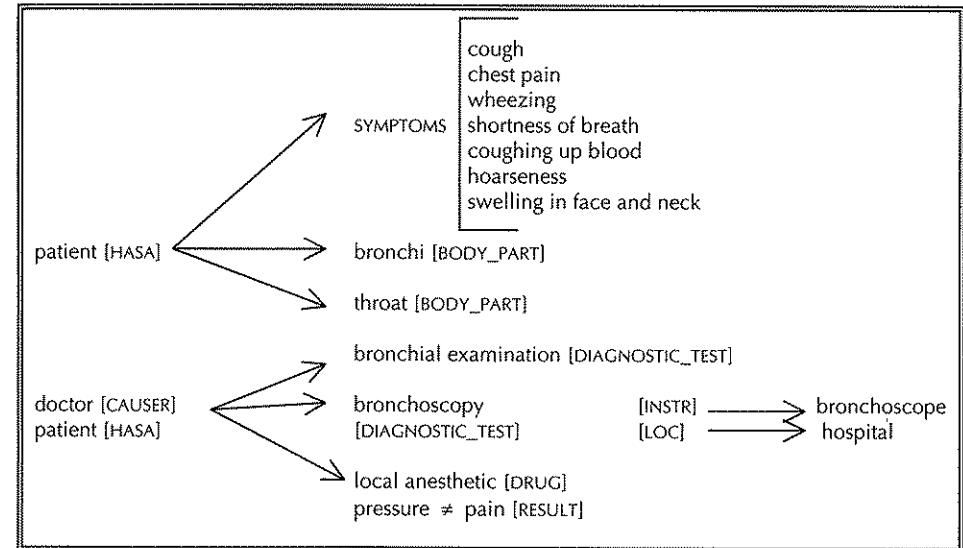
9

If you have symptoms, your doctor may want to look into the bronchi through a special instrument, called a bronchoscope, that slides down the throat and into the bronchi. This test, called bronchoscopy, is usually done in the hospital. Before the test, you will be given a local anesthetic (a drug that makes you lose feeling for a short period of time) in the back of your throat. You may feel some pressure, but you usually do not feel pain.

The fact that the patient in his role of affected entity is the main focus in the text is evident in the predicates throughout the text and the
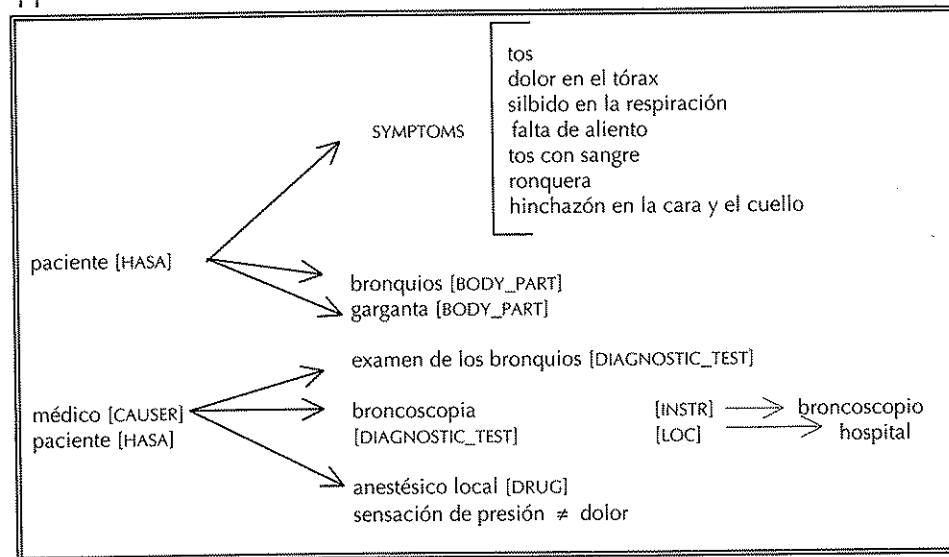
propositional information they encode, which points to the patient as *possessor*.

10

When this information is structured in the form of a conceptual network like 10, the transfer of meaning from one language to another is fairly straightforward through the substitution of conceptual designations in one language to those of another. Even at this very basic level, it also permits us to see which conceptual systems have been activated within the text.

11

In CancerNet, the following Spanish translation is given:

12

Si usted tiene síntomas, el médico puede hacer un examen de los bronquios por medio de un instrumento especial llamado broncoscopio, el cual se desliza por la garganta hasta los bronquios. Esta prueba, llamada broncoscopia, generalmente se lleva a cabo en un hospital. Antes de este examen, se administra un anestésico local (un medicamento que le adormece el área por un período corto) en la parte posterior de la garganta. Durante este examen, Ud puede sentir presión, pero generalmente no sentirá dolor.

In the text for doctors, this type of basic information is not necessary. However, in the case of the patient, it responds to the needs of the receiver, who connects to CancerNet to get information, and thus modify his / her knowledge, adding this information to that which he / she already has. This means a modification of conceptual structures at different levels.

1.2 *Conceptual structures in specialized translation*

In specialized translation, the translator has to define the domains / subdomains within the text, as well as the conceptual systems activated within its content. The degree of specialization in a text is defined by its terminology. Effectively, the terms of a text are what determine the text's domain, and also what gives it its technical content.

As is well known, terms represent concepts. Concepts are organized in a given domain in a structured network or conceptual system, which reflects the perceived reality of a specialized discipline or area of professional activity. Correspondingly, each conceptual system is a structure with various subclasses of concepts, only some of which appear in the text.

In order to understand what a term means, it is also necessary to understand the conceptual system it belongs to and its place within the system in relation to other concepts at the corresponding levels of specialization. This is important because terms can only be accurately used in a discourse, if the text sender has the term and its configuration in his / her knowledge base / memory.

To employ a frequently used metaphor, our memory is like a library, and stored knowledge can be compared to the books on its shelves. Everything that we learn is filed away, and nothing is ever lost. *Knowing* something means being able to efficiently retrieve data related to it, and being able to apply it in the appropriate context. The person with the best memory simply has the most efficient filing system or system of links. That means that intelligence is a matter of being able to accurately establish connections and embed the concept in question within a network of other more established ones. The trick of knowing / remembering is more a question of relational efficiency than of quantity of data.

Everyone's knowledge base is structured with the same sort of links. In a conceptual system, there are two categories of conceptual relations, hierarchical and non-hierarchical (MEYER, ECK and SKUCE 1997:103). Hierarchical relations are the following:

- The relation between a generic term and more specific ones. For example, in the sample texts in the appendix, the most important of the various hierarchical concepts activated is that of MALIGNANT TUMOR.
- Meronymic or part-whole relations. The superordinate concept is the whole and the subordinate concepts are its parts. An example of this type of hierarchy is that of the HUMAN BODY.

Although hierarchical relations have been studied in depth, non-hierarchical relations certainly have not (SAGER 1990:35). This type of relations are of great importance in dynamic knowledge representations because they enhance conceptual structure by enriching networks and codifying the multiple and various relations one concept can have with others. Examples of such relations are the following:

13

Relation	Example
cause-effect	smoking—malignant tumor
activity-place	treatment—hospital
object-form	cancer cell—oat cell
process-method	diagnostic test—bronchoscopy
method-instrument	bronchoscopy—bronchoscope

Notwithstanding, specialized texts never reflect entire systems of concepts, and this is a problem that the translator must inevitably deal with. Such texts are generally written for receivers with expert knowledge, and thus use concepts at more specific levels of the domain without explicitly referring to those at more general levels. Only a fragment of the conceptual system is mentioned in the text, but the translator must reconstruct an important part in order to obtain a comprehension of the content similar to that of the ideal receiver, in this case, a doctor with expert knowledge.

The text sender selects textual content in accordance with his expectations about the ideal receiver. In the text for doctors, the presupposed knowledge is implicit in the extensive use of medical terms without definitions. In the case of specialized communication, the existence of a nomenclature (terms and standardized expressions which the sender knows that the receiver will recognize and understand) is useful to assure shared knowledge.

In the text for doctors, there are various examples of this, such as the enumeration of treatment options (*chemotherapy, surgical resection, radiotherapy*) and the combinations of drugs in chemotherapy (*cyclophosphamide, cisplatin, doxorubicin, vincristine, etoposide*, etc) as well as diagnostic tests and body parts. In 14, the difference of knowledge levels is evident in the description of chemotherapy as a treatment option. The terms are in boldcase, and evidently, there is more specialized knowledge in the text for doctors. Whereas in the text for patients, chemotherapy is described at a very general functional level, the text for doctors is more specific as it describes one type of chemotherapy (*combination chemotherapy*) as well as the drugs, which the different treatments consist of.

14

Treatment options: Patients	Treatment options: Doctors
Chemotherapy is the most common treatment for all stages of small cell lung cancer. Chemotherapy may be taken by pill, or it may be put into the body by a needle in the vein or muscle. Chemotherapy is called a systemic treatment because the drug enters the bloodstream, travels through the body, and can kill cancer cells outside the lungs, including cancer cells that have spread to the brain	**Combination chemotherapy** with one of the following regimens and **chest irradiation** (with or without **PCI** given to patients with complete responses): The following regimens produce similar survival outcomes: **EP** or **EC**: **etoposide + cisplatin** or **carboplatin** [17,18] **CAV**: **cyclophosphamide + doxorubicin + vincristine** [19] **CAE: cyclophosphamide + doxorubicin + etoposide** [20] **ICE: ifosfamide + carboplatin + etoposide** [21]

However, TREATMENT is not the only conceptual category which is more highly specialized in the texts. Another relevant example can be found in the category of the HUMAN BODY. The text for doctors frequently uses very specialized anatomical terms without any sort of explicative context (eg *hemithorax, mediastinum, supraclavicular lymph nodes*), whereas the text for patients even includes explanations of very basic terms such as *lung*.

15

a   The lungs are a pair of cone-shaped organs that take up much of the room inside the chest. The lungs bring oxygen into the body and take out carbon dioxide, which is a waste product of the body's cells. Tubes called bronchi make up the inside of the lungs.

b   Los pulmones dan oxígeno al cuerpo y expulsan el dióxido de carbono, un desecho producido por las células del cuerpo. Los bronquios son unos tubos que forman parte del interior de los pulmones.
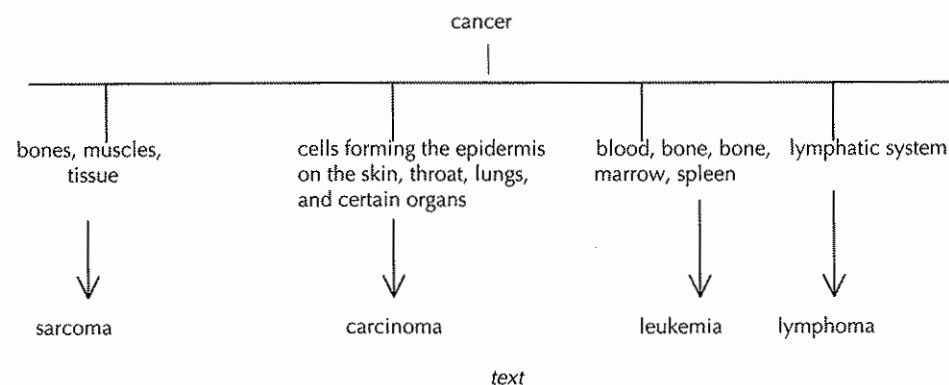
Each term can be said to signal its membership in a particular domain, and refers either implicitly or explicitly to other related terms, as well as to the whole structural configuration of the domain. In both sets of texts, the terms in them activate the following conceptual categories at the appropriate levels.

16

Systems activated: texts for patients	Systems activated: text for doctors	
1(pat) Types of cancer (*cancer, small cell lung cancer*)	1(doc)	Types of cancer (*carcinoma, small cell lung cancer*)
2(pat) Body parts: general level (*lung, brain, lymph nodes*)	2(doc)	Body parts: specific level (*hemithorax, mediastinum, supraclavicular lymph nodes*)
3(pat) Symptoms (*cough, chest pain*)	3(doc)	Ø
4(pat) Diagnostic test (*bronchoscopy*)	4(doc)	Ø
5(pat) Ø	5(doc)	Types de tumor
6(pat) Disease as a process	6(doc)	Tumor as a process
7(pat) Treatment (*surgery, radiation therapy,chemotherapy*solution (*taking out cancer, killing cancer cells*)	7(doc)	Treatment (*surgical resection, radiotherapy, chemotherapy*): negative side effects (*toxicity*)

The systems activated in both inventories are not exactly the same. Even when the systems have the same label, they are different insofar as the level of knowledge encoded. For example, in the text for doctors, system 1(doc) is activated by the term *carcinoma*, and refers to the different types of cancer according to their body location. Further on in the text, this hierarchy expands to more specific levels: it takes the classification of malignant tumors in general as a starting point and works down to those in the lungs. The following diagram shows the section of the hierarchy activated in the text for doctors:
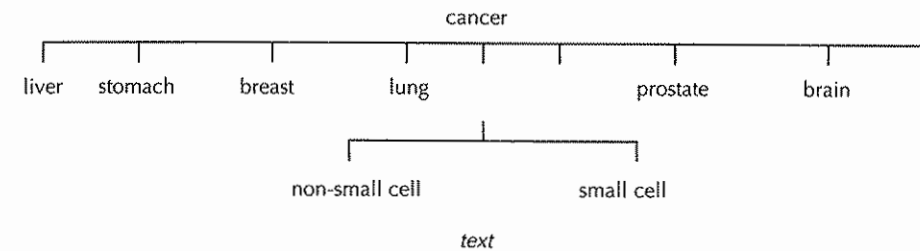
17

text

However, the comprehension of the information necessarily means the reconstruction of the rest of the system in order to situate *carcinoma* in the context of other related concepts. In contrast, in the text for patients, the reference to the illness inevitably remains at the more general level of

the hierarchy, followed by the name of the affected organ, in this case, the lung:

18

text

The knowledge necessary for the comprehension of the text for patients is very basic since the receiver is not an expert. However, in both texts, the process of comprehension is similar because both activate knowledge structures through the use of terms.

2 Terminology and context

It is necessary to distinguish between the term as part of a specialized text and the term as a terminographic entry. DUBUC and LAURISTON (1997: 80) call this the distinction between the term *in vitro* and *in vivo*.

A term is the designation of an object belonging to a specialized field of knowledge, and thus refers to knowledge described by a sublanguage. Many times the boundary between general and specialized language is far from clear, and more than a question of black and white, is more accurately conceived as shades of gray. As the texts show, terms can belong to different degrees of specialization, something that can be seen even at the level of its definition (term *en vitro*).

2.1 Definitions and knowledge representation

It is a little-known fact, but nonetheless true, that a definition is a kind of knowledge representation (FABER / MAIRAL 1999). The patterns underlying the codification of meaning are reflected in lexical-conceptual structure. In this respect, a definition can be regarded as a translation of our perceptions of reality. A definition is an essential part of concept designation because in such a definition, conceptual relations are made explicit. A definition represents a term *in vitro* (as meaning potential) as opposed to a term *in vivo* (as it occurs in an actual text).

2.1.1 The term *in vitro*

A definition signals membership in a specific knowledge domain and is the expression of the set of characteristics of a concept. A terminographic definition should provide the link between the concept and term because through the elaboration of the definition, its reference is fixed, while at the same time, its relations with other concepts are made explicit within the knowledge structure.

Whereas a general or encyclopedic definition describes a concept giving all of its functions in the different domains it can conceivably belong to, a terminographic definition provides the identification of a concept within a specialized domain. For example, *cancer* is a concept that can be considered part of general language, as well as part of general medical terminology, and as such, has two kinds of definitions, one lexicographic and the other, terminographic.

19
Cancer: general language definition

19a *Longman Dictionary of English Language and Culture*
can-cer *n.* (a serious medical condition caused by) a diseased growth in the body, which may cause death. Cancer is a common cause of death in Western countries and is a disease that people are very frightened of getting: *lung cancer.*

19b *Collins Cobuild English Language Dictionary*
cancer. 1. Cancer or a cancer is a serious disease in which cells in a part of a person's body increase in number rapidly in an uncontrolled way, producing abnormal growths. *Nicholas was dying of lung cancer...These rays falling on unprotected fair skin can produce cancer.*
2. A cancer is a situation which you consider to be evil and unpleasant and which is becoming rapidly more common and widespread; a formal use. eg. *What was happening was a sickness, a cancer in society that could not be helped.*

19c *Oxford Advanced Learner's Dictionary*
can-cer n. 1. (a) diseased growth in the body, often causing death; malignant tumour: Doctors found a cancer on her breast. (b) disease in which such growths form: lung cancer ⬚ cancer of the liver. 2. (fig.) evil or dangerous thing that spreads quickly: Violence is a cancer in our society.

19d *DRAE*
cáncer m. *Pat.* Tumor maligno, duro o ulceroso, que invade y destruye los tejidos orgánicos animales y es casi siempre incurable. | 2. n. p. m. *Astron.* Cuarto signo del Zodíaco, de 30° de amplitud, que el Sol recorre aparentemente al comenzar el verano. | 3. *Astron.* Constelación zodiacal que en otro tiempo debió de coincidir con el signo de este nombre, pero que actualmente, por resultado del movimiento retrógrado de los puntos equinocciales, se halla delante del mismo signo y un poco hacia el Oriente. | 4. adj. Referido a personas, las nacidas bajo este signo del Zodíaco.

19e *Vox*
cáncer 1 m. Masa de tejido anormal que se forma en determinadas partes del organismo y que se puede extender a otras partes del cuerpo hasta causar la muerte. 2. *fig.* Vicio o elemento que destruye una sociedad.

As can be observed in 20, the lexicographic definitions in 19 all have basically the same *genus* or nuclear term.

20

Dictionary	Genus	Differentiating information	Pragmatic information
LDEC	medical condition diseased growth	in the body	common cause of death; causes fear in people
CCELD	disease	rapid, uncontrolled growth of cells; production of abnormal growth	
	evil and unpleasant situation	common, widespread	formal use
OALD	diseased growth, malignant tumor		
	disease	production of abnormal growth	
	evil / dangerous thing	quickly spreading	
DRAE	tumor maligno	duro,ulceroso; invade tejidos	casi siempre incurable
	signo del Zodíaco	cuarto [signo], 30° de amplitud	recorrido por el Sol al comenzar el verano
	constelación zodiacal	situada delante de Cáncer, hacia el Oriente	antes coincidía con el signo
	personas	nacidas bajo Cáncer	
VOX	masa de tejido anormal	formada en determinadas partes del organismo	puede extenderse a otras partes del cuerpo hasta causar la muerte
	vicio o elemento	destruye la sociedad	*uso figurado*

Cancer is conceptualized both as a growth and the disease caused by this growth. The general language definition also shows a figurative use in

which *cancer* has been metaphorically extended to designate a evil situation / destructive social element. The differentiating information is indicative of non-hierarchical conceptual relations, such as LOCATION (*in the body / organism*), result (*abnormal growth*), and manner (*rapid, uncontrolled*).

The Spanish general language definitions 19de dramatically exemplify the fact that different lexicographers may have rather different visions of the meaning of a word. The definitions in the *Diccionario de la Real Academia de la Lengua Española* [*DRAE*] 19d indicate the authors' vivid interest in Astronomy and Astrology, as well as the fact that definitional information should be updated periodically. The evaluation of *cáncer* as "casi siempre incurable" [almost always incurable] may have been true at one time in the past, but now is not an accurate reflection of present medical advances.

This divergence of definitional criteria is unacceptable in terminography in which definitions are judged by standards of efficient scientific communication: accuracy, precision, and economy. Nonetheless, it should be pointed out that definitions in specialized dictionaries are far from perfect, and are not always models to follow. The information which they contain is often chaotically presented.

21
Cancer: specialized language definition

21a *Black's Medical Dictionary*
CANCER is the general term used to refer to a malignant tumour, irrespective of the tissue of origin. "Malignancy" indicates that (i) the tumour is capable of progressive growth, unrestrained by the capsule of the parent organ and/or (ii) capable of distant spread via lymphatics or the blood stream resulting in development of secondary deposits of tumour known as 'metastases'. Microscopically, cancer cells appear different from the equivalent normal cells in the affected tissue. In particular they may show a lesser degree of differentiation (i.e. they are more 'primitive'), features indicative of a faster proliferative rate and disorganized alignment in relationship to other cells or blood vessels. The diagnosis of cancer usually depends upon the observation of these microscopic features in biopsies, i.e. tissue removed surgically for such examination.

Cancers are classified according to the type of cell from which they are derived as well as the organ of origin. Hence cancers arising within the bronchi, often collectively referred to as 'lung cancer', include both adenocarcinomas (derived from glandular epithelium) and squamous carcinomas (derived from squamous epithelium). Sarcomas are cancers of

connective tissue, including bone and cartilage. The behaviour of cancers and their response to therapy vary widely depending on numerous other factors such as growth rate, differentiation in cell and characteristics and size at the time of presentation. It is entirely wrong to see cancer as a single disease entity with a universally poor prognosis.

21b *DTCM (Diccionario terminológico de ciencias médicas)*
cáncer Tumor maligno en general y especialmente el formado por células epiteliales. La característica básica de la malignidad es una anormalidad de las células, transmitida a las células hijas, que se manifiesta por la reducción de control del crecimiento y la función celular, conduciendo a una serie de fenómenos adversos en el huésped, a través de un crecimiento masivo, invasión de tejidos vecinos y metástasis. La proliferación celular en los tumores malignos no es totalmente autónoma; además de la dependencia del cáncer respecto del huésped para su irrigación sanguínea, su crecimiento se afecta por las hormonas, los fármacos y los mecanismos inmunológicos del paciente. Los cánceres se dividen en dos grandes categorías de CARCINOMA y SARCOMA.

The definitions in 21 are more or less successful representations of the set of basic characteristics, parameters, and knowledge relations. The genus in both medical dictionaries is *malignant tumor / tumor maligno*. This type of entry logically includes more characteristics (composition, process, result, types) because the knowledge base of the receiver is greater.

For example, both the English and Spanish specialized definitions refer to the process of uncontrolled cellular growth, as well as the conceptual structure of types of cancer that includes *carcinoma* and *sarcoma*. These definitions also presuppose a knowledge of the distinction between malignant and benign tumor. Though the information in these entries is not very well organized, it indicates the following characteristics as major parameters of differentiation between benign and malignant tumors.

22

	Black's Medical Dictionary	DCTM
encapsulation	unrestrained by the capsule of the parent organ	
anaplasia	more 'primitive'	anormalidad, reducción de función celular
mitosis	faster proliferative rate	crecimiento masivo
invasive	distant spread	invasión de tejidos vecinos; dependencia respecto del huésped para su irrigación sanguínea; fenómenos adversos en el huésped
metastasis	secondary deposits of tumour known as 'metastases'	metástasis
growth (-control)	progressive growth, faster proliferative rate	la reducción de control del crecimiento, proliferación celular
differentiation	lesser degree of differentiation, disorganized alignment	anormalidad de las células

The difference between malignant and benign tumors can thus be represented in terms of binary distinctions.

23

	MALIGNANT TUMOR	BENIGN TUMOR
encapsulation	--	+
anaplasia	+	--
mitosis	+	--
invasive	+	--
metastasis	+	--
growth (-control)	+	--
differentiation	--	+

Curiously enough, the pragmatic information in *Black's Medical Dictionary* contradicts that in the *DRAE* because it underlines the fact that it is a mistake to think that cancer always ends in death. ("It is entirely wrong to see cancer as a single disease entity with a universally poor prognosis").
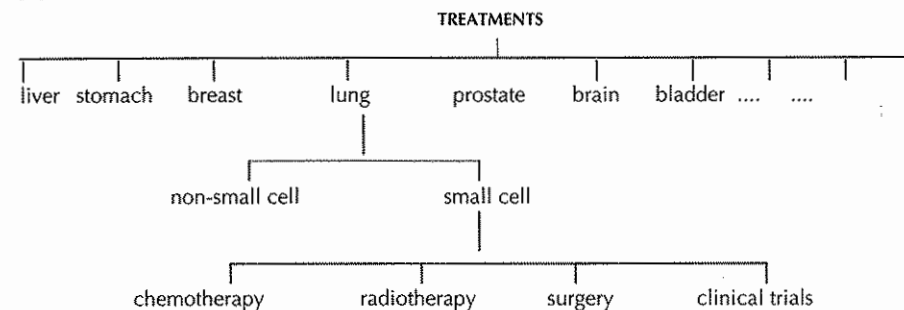
2.1.2   The term *in vivo*

Within the text, terminological contexts are important because in the same way that terms are members of concept systems implicit in the text, they also are also related to other units made explicit in the text:

24
Because of the frequent presence of occult metastatic DISEASE chemotherapy is the

cornerstone of TREATMENT for limited stage small cell lung cancer.

Regarding the relations of elements within the same sentence, *treatment* is the generic term for *chemotherapy*, which at the same time presupposes the implicit presence of treatments which are also possible choices.
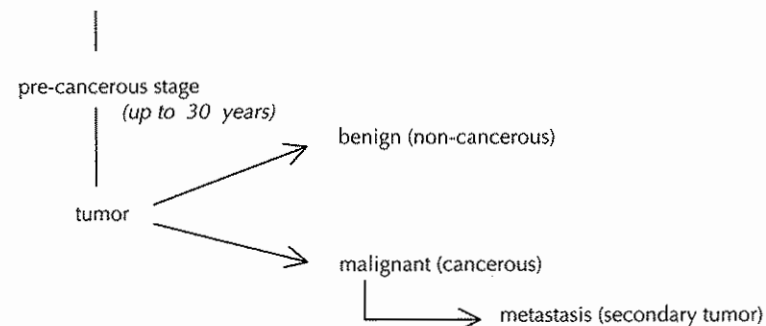
25

In the same way that *disease* is the generic term for small cell lung cancer, its specification *occult metastatic* implies another type of non-hierarchical conceptual relation, that of process and result.

26
Cancer as a process

Even in the structure of the text, systematic representations are important for the transmission of the message. Example 27 compares the sections in both texts regarding treatments (see appendix). In the text for patients (appendix 1A/2A), this section is clearly explicative. Its structure is in direct contrast to the corresponding section in the text for doctors (appendix 1B/2B).

27

Patients: treatment options	Doctors: treatment options
1 Treatments 1.1 chemotherapy 1.2 radiotherapy 1.3 surgery	1 Clinical trials 1.1 Evaluation areas 1.1.1 new drug regimens 1.1.2 variation of drug doses 1.1.3 chemotherapy combined with surgical resection of primary tumor / radiotherapy Results of recent research

Textual configuration also reflects communicative context. In the text for patients (1A/2A), there are four paragraphs. The first introduces the topics of the other sections of the text. First it starts with new information (ie the existence of treatments), which then becomes given information, or the topic, of the following paragraph where the focus is on the description of each treatment option.

Evidently the text for doctors (1B/2B) does not begin with the same type of presupposition because it would not be informative as doctors are already aware of the existence of these treatments. The new information, which constitutes the starting point of the message, is the existence of clinical texts that consist in the administration / use of experimental drugs, new doses of standard ones and/or combinations of drugs already in use, and finally, the combination of more than one treatment in order to improve the patient's possibility of survival. As a result, the text for doctors begins where the text for patients ends because in the text for patients, there is scarcely any mention of clinical tests, which are more advanced variations of the basic treatments described. In the same way, the configuration of the specialist text reflects the fact that there is no need to signal the change of topic so clearly.

In the translation, such cognitive structures of knowledge are important. A good translator is capable of going beyond syntactic structures, which are specific of each language, and of acquiring a multi-dimensional version of the text. This implies the capacity to process textual information from various perspectives due to the double role that the translator plays in the act of communication.

3   The medical event

The concept of *frame* is also fundamental in explaining the comprehension process. A frame is a complex data structure that represents a stereotyped situation. This type of representation facilitates the comprehension of many events in our life because we project frames onto situations we find ourselves in so that we can understand them better.

The concept of frame can also be applied to textual structure because the structure of a text is more rapidly recognized if a translator has in his mental closet a wide inventory of textual skeletons. These text frames can be of varying length, from a single definition to an entire scientific treatise. Obviously, in scientific, and especially medical, translation, there is more than one type of text, and the terminology and textual configuration vary accordingly. For example, medical translation covers a wide range of text types from articles for the general public to textbooks, instructions for the use of medicines, and specialized articles in medical and scientific journals. Logically, the translator should be familiar with these different text frames.

The subsections of the texts in CancerNet are configured in such a way as to best transmit the global message to their projected receivers:

28

PATIENTS	DOCTORS
1(pat) Description	1(doc) Prognosis
2(pat)	2(doc) Cellular classification
3(pat) Stage explanation	3(doc) Stage information
4(pat) Treatment option overview	4(doc) Treatment option overview
5(pat) Limited stage small cell lung cancer	5(doc) Limited stage small cell lung cancer
6(pat) Extensive stage small cell lung cancer	6(doc) Extensive stage small cell lung cancer
7(pat) Recurrent small cell lung cancer	7(doc) Recurrent small cell lung cancer

Both inventories of texts have similar superstructures, though with evident differences in sections 1, 2 and 3. In the text for patients, there is no section which corresponds to cellular classification. It is also significant that in section 1, the title has been changed to *description* instead of *prognosis,* given that the content of this section is too depressing to be included. In section 3, the knowledge of the receivers is taken into account, and *explanation* has been substituted for *information.* The basic differences between the two texts are due to the difference in the ideal reader. Although in both cases, the basic function is to inform (*explaining* signifies *informing,* but at a more elementary level), this function is always in consonance with two distinct communicative contexts.

The terms in each text provide the key for understanding its content and perspective. The codification of medical terminology activates various types of representational schemas, all of which can be derived from the description of the same micro-cosmos.

4 Conclusion

The comprehension process of the translator is an essential factor in translation. In specialized translation, this comprehension process necessarily implies a special type terminology management, which can be described as *ad hoc* as opposed to the systematic variety carried out by terminologists.

As mentioned throughout the article, knowledge is encoded in terminology, and the terms within a text are indicative of the specialized knowledge that the translator must acquire in order to understand the message being transmitted. Such knowledge acquisition is necessary in order for the translator to put him / herself at the same level as the receiver in the source language.

The knowledge encoded in terms is both actual (*in vivo*) and potential (*in vitro*). Both contexts must be understood for there to be an adequate comprehension of knowledge structures. In the understanding of potential meaning, the terminographic definition plays an important role. In both types of context, larger configurations must also be taken into account such as the speech act involved, cognitive frame and textual superstructure. Information concerning the text sender and potential receiver, as well as the organization of the contextual systems activated within the text is essential in the production of a target text that accurately encodes the content of the source text.

PAMELA FABER
University of Granada

APPENDIX 1: English source text

[1A] TREATMENT OPTION OVERVIEW [PATIENTS]	[1B] TREATMENT OPTION OVERVIEW [DOCTORS]
How small cell lung cancer is treated. There are treatments for all patients with small cell lung cancer. Three kinds of treatment are used: (i) surgery (taking out the cancer) (ii) radiation therapy (using high-dose x-rays or other high-energy rays to kill cancer cells) (iii) chemotherapy (using drugs to kill cancer cells).	In small cell lung cancer, the majority of patients die of their tumor despite state-of-the-art treatment. Most of the improvements in survival in small cell lung cancer are attributable to **clinical trials** which have attempted to improve upon the best available, accepted therapy. Patient entry into such studies is highly desirable.
Chemotherapy is the most common treatment for all stages of small cell lung cancer. Chemotherapy may be taken by pill, or it may be put into the body by a needle in the vein or muscle. Chemotherapy is called a systemic treatment because the drug enters the bloodstream, travels through the body, and can kill cancer cells outside the lungs, including cancer cells that have spread to the brain.	Areas of active **clinical evaluation** in small cell lung cancer include new drug regimens composed of standard and new agents, variation of drug doses in current regimens, and study of the possible benefits of adding **surgical resection** of the primary tumor or **radiotherapy** to the chest and other sites to combination **chemotherapy**. Controversy exists over the issue of whether increasing the dose rate of commonly used front-line regimens above levels that produce modest toxicity will produce improved survival. Retrospective studies are plagued by methodologic difficulties and show inconsistent results. [1] The issue is best settled by randomized trials. A prospective randomized study in extensive stage disease does not suggest any advantage to increasing the standard doses of etoposide plus cisplatin. [2] Even chemotherapy of the intensity used in autologous bone marrow transplant regimens has not clearly been shown to improve survival in patients with small cell lung cancer. [3,4]
Radiation therapy uses x-rays or other high-energy rays to kill cancer cells and shrink tumors. Radiation therapy for small cell lung cancer usually comes from a machine outside the body (external beam radiation therapy). It may be used to kill cancer cells in the lungs or in other parts of the body where the cancer has spread. Radiation therapy may also be used to prevent the cancer from growing in the brain. This is called prophylactic cranial irradiation (PCI). Because PCI may affect your brain functions, your doctor will help you decide whether to have this kind of radiation therapy. Radiation therapy can be used alone or in addition to surgery and/or chemotherapy.	
Surgery may be used if the cancer is found only in one lung and in nearby lymph nodes. Because this type of lung cancer is usually not found in only one lung, surgery alone is not often used. Occasionally, surgery may be used to help determine exactly which type of lung cancer you have. If you do have surgery, your doctor may take out the cancer in one of the following operations:	
Wedge resection removes only a small part of the lung. Lobectomy removes an entire section (lobe) of the lung. Pneumonectomy removes the entire lung. During surgery, your doctor will also take out lymph nodes to see if they contain cancer.	

APPENDIX 2: Spanish target text

[2A] ASPECTOS DE LAS OPCIONES DEL TRATAMIENTO [PACIENTES]	[2B] ASPECTOS DE LAS OPCIONES DE TRATAMIENTO [MÉDICOS]
Existen tratamientos para todos los pacientes con cáncer de pulmón de células pequeñas. Se emplean tres clases de tratamiento: (i) cirugía (extracción del cáncer) (ii) radioterapia (uso de rayos X de alta energía u otros rayos de alta energía para eliminar células cancerosas) (iii) quimioterapia (uso de medicamentos para eliminar las células cancerosas). **La quimioterapia** es el tratamiento más común para todas las etapas de cáncer de pulmón de células pequeñas. La quimioterapia puede tomarse en forma oral o puede administrarse en el cuerpo con un aguja en una vena o músculo. La quimioterapia se considera un tratamiento sistémico ya que el medicamento se introduce al torrente sanguíneo, viaja a través del cuerpo y puede eliminar las células cancerosas fuera de los pulmones, incluyendo las células cancerosas que se han diseminado en el cerebro. **La radioterapia** consiste en el uso de rayos X de alta energía u otros rayos de alta energía para eliminar células cancerosas y reducir tumores. La radioterapia para el cáncer de pulmón de células pequeñas por lo general proviene de una máquina fuera del cuerpo (radioterapia de haz externo). Puede emplearse para eliminar las células cancerosas en los pulmones o en otras partes del cuerpo donde el cáncer se haya diseminado. La radioterapia también se puede emplear para prevenir el crecimiento de cáncer en el cerebro. Este procedimiento se llama radioterapia craneal profiláctica (PCI). Debido a que la PCI puede afectar las funciones del cerebro, el médico le ayudará a decidir sobre esta clase de radioterapia. La radioterapia puede emplearse sola o con cirugía y/o quimioterapia. Puede emplearse **cirugía** si el cáncer se encuentra solamente en un pulmón y en los ganglios linfáticos cercanos. Debido a que este tipo de cáncer de pulmón generalmente no se encuentra en un pulmón solamente, la cirugía sola no se usa a menudo. Ocasionalmente, la cirugía puede usarse para ayudar a determinar exactamente el tipo de cáncer de pulmón. Si en definitiva el paciente se somete a una cirugía, el médico puede extraer el cáncer usando alguna de las siguientes operaciones: Resección por cuña en la que se extrae sólo una parte pequeña del pulmón. Lobectomía en la que se extrae una sección completa (lóbulo) del pulmón. Neumonectomía en la que se extrae todo el pulmón. Durante la cirugía, el médico también extraerá ganglios linfáticos para determinar la presencia de células cancerosas.	En cáncer de pulmón de células pequeñas, la mayoría de los pacientes muere de su tumor a pesar de recibir los tratamientos más adelantados. La mayoría de las mejoras en supervivencia en cáncer de pulmón de células pequeñas se atribuye a **las pruebas clínicas** que han intentado perfeccionar la mejor terapia disponible y aceptada. El ingreso de estos pacientes en dichos estudios es sumamente deseable. Las áreas de evaluación clínica activa en cáncer de pulmón de células pequeñas incluyen nuevos regímenes de fármacos compuestos de agentes estándar y nuevos, variación de las dosis de los fármacos en los regímenes actuales y el estudio de los posibles beneficios que se pueden lograr agregando a **quimioterapia** de combinación la **resección quirúrgica** del tumor primario o **radioterapia** al tórax y a otros sitios. Existe controversia en cuanto a si el aumentar las tasas de dosificación de los regímenes de vanguardia comúnmente usados arriba de los niveles que producen una modesta cantidad de toxicidad producirá una mejor supervivencia. Los estudios retrospectivos están llenos de dificultades metodológicas y muestran resultados inconsistentes. [1] Esta situación se establece mejor en pruebas clínicas aleatorias. Un estudio aleatorio prospectivo de la enfermedad en etapa extensa no sugiere ninguna ventaja en aumentar las dosis estándar de etopósido más cisplatino. [2] Ni se ha mostrado claramente que la quimioterapia con la intensidad empleada en regímenes de trasplante autólogo de médula ósea mejore la supervivencia en pacientes con cáncer de pulmón de células pequeñas. [3,4]

References

BEJOINT HENRI 1997 "Regards sur la définition en terminologie" 19/26 *Cahiers de Lexicologie* 70

BOWKER LYNNE 1997 "Multidimensional classification of concepts and terms" 133/146 in WRIGHT / BUDIN

DUBUC ROBERT / LAURISTON ANDY 1997 "Terms and contexts" 80/88 in WRIGHT / BUDIN

FABER PAMELA / RICARDO MAIRAL USÓN 1999 *Constructing a Lexicon of English Verbs* Mouton de Gruyter, Berlin

KAGEURA KYO 1997 "Multifaceted / Multidimensional concept systems" 119/132 in WRIGHT / BUDIN

MEYER INGRID / KAREN ECK / DOUGLAS SKUCE 1997 "Systematic concept analysis within a knowledge-based approach to terminology" 98/118 in WRIGHT / BUDIN

SAGER JUAN 1990 *A Practical Course in Terminology Processing* Benjamins, Amsterdam / Philadelphia

WRIGHT SUE ELLEN 1997 "Representation of concept systems" 89/97 in WRIGHT / BUDIN

WRIGHT SUE ELLEN / GERHARD BUDIN 1997 *Handbook of Terminology Management* Benjamins, Amsterdam / Philadelphia

WRIGHT SUE ELLEN / LELAND WRIGHT 1997 "Terminology management for technical translation" 147/159 in WRIGHT / BUDIN