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Revision and Self-Revision in Medical Translation

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Quaeris quemadmodum in secessu, quo iam diu frueris, putem te studere oportere.
Utile in primis, et multi praecipiunt,
vel ex Graeco in Latinum vel ex Latino vertere in Graecum.
Quo genere exercitationis proprietas splendorque verborum, copia figurarum,
vis explicandi, praeterea imitatione optimorum similia inveniendi facultas paratur;
simul quae legentem fefellissent, transferentem fugere non possunt.
Intelligentia ex hoc et iudicium adquiritur.
(Pliny the Younger to Fuscus, Epistulae VII, 9, 1-3)[1]

[1] You desire my sentiments concerning the method of study you should pursue, in that retirement which you have long enjoyed. It is a very advantageous practice (and what many recommend) to translate either from Greek into Latin, or from Latin into Greek. By this sort of exercise one acquires noble and proper expressions, variety of figures, and a forcible turn of exposition. Besides, to imitate the most approved authors, gives one aptitude to invent after their manner, and at the same time, things which you might have overlooked in reading cannot escape you in translating: and this method will open your understanding and improve your judgement. (Pliny the Younger *Letters*. With an English translation by William Melmoth, rev. by W.M.L. Hutchinson (1927) The Loeb Classical Library: London)

ABBREVIATIONS

This dissertation adopts the *In-text Citation Style*. As a consequence, both source and reference items are quoted in the main text and in the footnotes by author and page number only. A complete reference list will be found at the end of the dissertation. In addition, a series of acronyms are made use of in order to be more concise. Please found below a list in alphabetical order of such abbreviated forms:

CR Collective Revision
CT Collateral Term
DR Didactic Revision
FR Formative Revision
IR Inter-Revision
OED Oxford English Dictionary
PM Project Manager
PrR Pragmatic Revision
SL Source Language
SR Self-revision
sT Specific Term
ST Source Text
TCLP Mossop's principle for revision: Transfer, Content, Language and Presentation
TL Target Language
TQA Translation Quality Assessment
TSP Translation Service Provider
TT Target Text

1. Introduction

This Dissertation deals with revision and self-revision in medical translation. It aims to describe the process of revision and its main characteristics and investigates the language of medicine in depth. In practice, the Dissertation strives to associate, where possible, the theoretical information explained in the first part with the results to be obtained in the second hopefully bringing to light some valuable discoveries.

The first part is divided into two theoretical chapters. The first one describes the revision process in general, while the second presents all the peculiarities of medical writing and its translation. Revision is a means of achieving quality in translation: it is the activity that follows the transfer of a source text to be translated. Thus, it means reviewing the draft text a translator has produced. The general principle of revision and self-revision as well is very simple and clear: check what you have done to be sure it is good. A good translator should never call a translation finished without first checking it, as a cook would never serve a raw meal. Moreover, revision can be carried out by the translator him/herself (known as self-revision), or there may be a reviser checking someone else's translation. Revision and translation share a lot of characteristics: some facts that can be said about translation generally are naturally true for revision as it is its subordinate process. However, revision also has its own peculiarities. After all, this essential process of translation has not been greatly investigated, neither is that of reviser an established position in translation training. However, revision plays a fundamental role in the professional process of translation and knowing more about it can help increase the quality of translation. That is why this dissertation deals with the profession of reviser, the revision process, the reviser's role in a translation company, and the strategies and techniques of revision. As will be seen, this Dissertation is both product- and process-oriented as it investigates in depth both the procedure accompanying self-revision in medical translation and the actual result obtained, namely the Target Text. Process and product must be treated together because the quality of the process generally ensures the quality of the product. The second chapter of the theoretical part draws on the available literature and several studies concerning medical texts and medical translation, offering a deep description of the main features connected to this type of writing and its translation from English into Italian. First, it defines the main concepts related to LSP languages in general and then it goes deeper in the subject by directly focusing on medical writing and, in particular, by offering an insight in what the main characteristics belonging specifically to the medical language are and how these can be transposed into Italian.

The practical part, on the other hand, proposes an example of self-revision applied to medical

translation which I carried out. Bearing in mind how a medical text is structured both in English and Italian, this example attempts to show how self-revision should be conducted in a professional environment by making use of the right principles. More importantly, it tries to demonstrate how the quality of a translation is strictly related to its function, or *skopos*, and how important this concept is for any professional reviser who should never waste time and money making unnecessary changes.

2. Theory Part I: Revision

2.1 Upon the notion of revision

In this chapter, all the different uses of the term *revision* will be looked upon and the meaning of the various words related to the similar procedures for checking a text will be disambiguated. Hence, the concept of revision will be defined and all the different existing types of revision described. In short, the work of a reviser and the competence and skills required to become a professional will be considered in detail.

2.1.1 An ambiguous term

Terminology has a relevant role in science: using the right term in the right context is a general rule in scientific discourse and thus in *Translation Studies*[1]. In addition, the advent of new technologies has been largely affecting terminology in the scientific field; as a consequence, a significant part in any glossary on translation terminology has happened to be occupied by a whole series of neologisms, whose aim is that of designating new elements and phases within the translation process. Most of the times, however, the use of such new terms has led to confusion and ambiguity as these are often calqued from words which already exist with another, general meaning.

Even within the field of Translation Studies, terms like *revision* and *checking* are far from consistently used and there is a great number of different words denoting concepts more or less similar to these activities: verbs like *edit*, *copyedit, proofread, revise or rewrite* are being used in a variety of overlapping or contradictory ways; similarly, *proof-correction, checking, reviewing, rereading* – nouns related to the wind-up activities – are incongruously employed. Some experts use the terms rather intuitively, applying their own terminology, or considering some of them virtually synonymous[2], therefore, definitions often sound quite fuzzy. Although considering revision and

[1] Snell-Hornby (2006: 2-3) defines Translation Studies, also known as translatology or traductology, as "a culturally-oriented subject, [which] draws on a number of disciplines, including psychology, ethnology and philosophy, without being a subdivision of any of them. Similarly, it can and should utilize relevant concepts and methods developed from the study of language […] without automatically becoming a branch of linguistics or having to adopt linguistic methods and theoretical construct wholesale. Linguistics is concerned with the theory and description of language for its own sake, translation studies with the theory and description of recreating concrete texts, whether literary, specialized or general. What is therefore important for translation studies in the *usability* of the method, the *potential* within the concept, and this must be both broad enough to have general validity and flexible enough to be adapted to the individual – and often idiosyncratic – text".

[2] "The term 'revision', 'quality control', 'checking' and 're-reading' are virtually synonymous" (Mossop, 2001: 110); yet in the *Terminology note* he adds in that same page he claims that "some translation services distinguish revision or

quality control as the same thing, Mossop makes an ambiguous distinction as he considers revisers and quality controllers as two separate things, explaining that while "the [former] category consists entirely of qualified translators; the [latter] category is broader, including anyone who performs a checking and correcting function" (*ibid*). Trying to be over-specific, yet quite puzzling, he also adds that non-translators such as proof-readers are quality controllers but not revisers. Besides proof-reading, another practice which is often confused with revision is translation criticism, also known as evaluation. According to Paul Horguelin[3], these two distinct procedures are both intended to increase the quality of a text, yet the choice between the two depends on the status of the text itself: if the text is complete (and thus already revised) it can undergo translation criticism[4]; in fact, only if it is a draft a text can be revised or proofread.

The following definitions should provide clarification of the meaning of the most basic terms:

Editing "means finding problems in a text which is not a translation and then correcting or improving it, with particular attention to making the text suitable for its future readers and for the use to which they will put it." (Mossop 2001: 1) Editors work in an editorial office of a newspaper or a magazine or in a publishing house and do not concern themselves with translation.

"*Revising*, is an aspect of the profession of translator" (Mossop, 2001: 1); it "is that function of professional translators in which they identify features of the draft translation that falls short of what is acceptable and make appropriate corrections and improvements." (Mossop, 2001: 109) Revisers are qualified translators who work in a translation company or as freelancers, usually, they are translators as well.

Self-revision is the translator's own check of the draft translation (Mossop 2001: 116).

Proofreading means looking for and correcting mistakes (most often mistakes in spelling, grammar, text layout, etc.) in a text, be it a translation or not. "Proofreaders can be non-translators; [they] do only those forms of checking and correcting that don't involve comparing the translation to its source" (Mossop 2001: 109). In the context of this Thesis, proofreading will be considered a sub-process of revision of a translation.

Pre-editing (of the ST) / *Post-editing* (of the TT) means editing machine translation; it is applied in order to achieve higher speed in the translation process, however at the risk of lower quality. As a result, the translator has a mixed translation/revision job to perform (Mossop 2001: 115;

checking from quality control" (*ibid*) which is more business-oriented (as opposed to text-oriented) and applied to "less-than-full revision" (*ibid*).

[3] The author of the first manual entirely dedicated to revision; his book *Practique de la Révision* was published in 1978.

[4] That is, the systematic study, evaluation, and interpretation of different aspects of translated works. It is connected with any academic field closely related to literary criticism and translation theory.

Gouadec 2010: 26). “Machine translation output is often unrevisable” (Mossop 2001: 24)

Translation criticism consists in studying the metatexts that have been produced in a given receiving culture. Such analysis has the purpose of finding constants in the general translation behaviour, and, on the other hand, of finding regularities (constants, norms) that can contribute to configuring a culture-specific translation behaviour (Toury, 2012).

2.1.2 Revision

As far as the noun revision is concerned, the online OED counts two main meanings of the word:

revision, n.

I. The action of re-examining, and related senses.

+1.
a) The action or an act of looking over or surveying something again. *Obs.* (1595 -1891)

b) The action or an act of taking a retrospective survey; review, or a review. *Obs.* (1619 - 1840)

2.
a) The action or an act of revising something; critical or careful examination or perusal of a text, judgement, code, etc., with a view to making corrections, amendments, or improvements.
b) The result of this; a revised or amended version of a text.
c) A single amendment or correction to a piece of work.

3. E*duc.* The action or process of going over a subject or work already learnt or done with the aim of reinforcing it, typically in preparation for an examination; an instance of this.

4. *Surg.* Surgery performed to improve the outcome of previous surgical treatment; *esp.* the repair or replacement of an artificial joint; an instance of this.

II. The fact of seeing again.

5.The fact of seeing a person or thing again; an instance of this; a fresh or new vision of something.

Surprisingly enough, the OED does not register any specific meaning strictly related with Translation Studies; only definitions I.2.b) and c) consider the product of revision exclusively as a text, but no mention of translations is ever made. For the purpose of our research, the acceptations in the OED will be re-utilised to form a thorough definition of the word focusing on its usage in

Translation Studies.

Besides the obsolete meanings [I.+1.a),b)] and the specific meanings [I.3, 4 and II.5], the word revision can be understood, in its widest sense [I.2.a)], as checking a product of a drafting activity (most often a piece of writing, e.g. law) in order to make sure it constitutes an acceptable outcome, and possibly changing it. In a narrower sense and transposing definition I.2.b) within the field of translation studies, revising can be perceived as a process which includes finalising, checking, proofreading, and amending a Target Text in order to make it acceptable and of a required quality. In this light, sense I.2.c) can be understood as a restriction of the former meaning. Finally, in its most concrete sense, revision constitutes a particular stage in the wind-up process of translation during which a reviser reads the target text once again, compares the source text against the target text, looks for any possible inaccuracies, mistakes of transfer of meaning, grammatical and stylistic errors and much more. Furthermore, in the context of translation, revision can be viewed either as a tool of quality assurance, a component process in the production of a translation, or a specialist translation assignment to fulfil.

Due to the lack of a suitable definition provided by the OED, find below the two concepts the term 'revision' refers to in *Translation Terminology* (Delisle *et al.* 1999: 175):

> (1) A detailed comparative examination of the translated "text" with the respective "source text" in order to verify that the "sense" is the same in both texts and to improve the quality of the "target text";
> (2) a function usually assigned to an experienced "translator" for the purpose of ensuring that texts translated by others will measure up to the standards of professional translation. […] In American English, this stage of the translation document cycle is commonly referred to as *editing*, which is also closely related to *review*. This step may involve checking a text, followed by a revision or editing phase, where the text is actually corrected.

To sum up, it can be said that the main aim of quality control procedures is achieving and maintaining a certain level of quality of translated texts[5]. After all, if draft translations went straight to client and were published or used for the predetermined purpose without any final control at all, the standard of translations would be deep below the current one. As a general rule, every translator is (implicitly or explicitly) expected to check their translations but whereas sometimes self-revision is enough, some other time, there are two or three revisers checking the same translated document. Anyway, the need for revision is always relative and depends on the nature of the document to be translated – its features, intended purpose and prospective readers (Robinson 1997: 13). As for text types, the texts to be revised range from technical documents, novels or short stories, advertising texts, and many others.

[5] In his business-based perspective, Mossop states that revision, self-revision and proofreading are forms of *quality control* (Mossop 2001: 164) which may improve translated texts so that they give a good account of a translation company.

Generally speaking, the more important the translation, the more strict its quality control; on the opposite, texts of minor importance or, in Mossop's terminology, "ephemeral" (Mossop 2001: 100) require a different, lower degree of revision. Chakhachiro's and Mossop's opinions on the need for revising such texts are different:

> I believe, however, that Mossop makes general statements that fail to take into account the main purpose of most revisions, namely to assess the accuracy of a translation in terms of meaning and style and to make the emendations required. I disagree with Mossop, who states in his discussion of the revision of ephemeral texts that 'there is no point spending five minutes searching for the *mot juste* if the translation is going to be read quickly and tossed away' (Mossop, 2001: 100). 'Ephemeral translations' range from informational texts on medical, health, and legal issues to news articles, for all of which I hold that it is important to convey the source-language message with all its terminologies and nuances (Chakhachiro 2005: 236).

As for when revision should take place, although many debates have questioned the right time for quality control, it is generally agreed that the phase of quality control procedures (such as revision, self-revision and proofreading) is near the end of the translation process[6], thus offering an ultimate chance to improve the translation at hand.

Once the meaning of the term has been agreed, one should admit revision is not a fixed process and realise it is not always possible. Quality control procedures are, in fact, characterised by several variables – including accuracy, speed, heart-searching, etc. – and the performance of these tasks is affected by the skills and knowledge of the reviser as well as by different conditions, such as stress, general mental state, working preferences and so forth (Robinson, 1997: 34). The conditions in which revision may occur and the concrete tasks it may involve are divers,

> Revision often constitutes part of the process of the translation of publications for the market. As such, revision can range from (occasionally) reviewing of source texts to suit target-readers' culture to stylistic revision in the target language and presentation of the translation in a proofread and formatted lay-out (Chakhachiro 2005: 230).

Nevertheless, there may be cases when revision is not applicable to a translation. For Gouadec, too many corrections in a text may be confusing and chaotic, therefore, a text to be revised should be of revisable quality (Gouadec 2010: 78). If a translation is extremely poor, re-translating should replace revision in order not to waste precious time and money. In other cases, when the target text should be significantly adjusted to the target audience, transposing or adapting are more appropriate than revision. In Mossop's words: "just as editing is not rewriting, revising is not retranslating" (Mossop 2001: 24).

[6] *Cf* Ch. 2.3.1.1 Translation models.

2.1.3 Types of revision

Keeping in mind both the above-mentioned concept of revision and the classification made by Horguelin (1985[7]), a tentative typology of revision can be made on the basis of: the revised text itself, the function or aim of the revision at hand and the numbers of subjects involved in the revision process.

2.1.3.1 Classification based on the status of the text to be revised

Depending on how many texts are employed during the revision process (the TT alone, or the ST and the TT together), Horguelin (1985: 9) distinguishes between: a) *unilingual revision* which "consists in ensuring the informative and linguistic quality (content and form) of a text with the aim to achieve the objective of the communication (to inform, to encourage an action, to share an opinion)" (T. of the A.)[8]; and b) *comparative reading* which is the same as the previous one, with the addition of an important element: the Source Text. "It consists in verifying the equivalence of the Source Text in the Target Language in accordance with the criteria for a good translation. Bilingual revision is, therefore, comparative" (T. of the A.)[9].

Later on, many scholars approached and accepted these two definitions in their studies. On the subject, whereas Mossop believes that *comparative reading* involves checking the ST against the TT, revealing possible mistranslations, omissions or additions, and tend to have micro-level focus. (Mossop 2001: 152), Newmark states that *unilingual reading* entails reading the target text without looking at the original document (Newmark 1991: 105). This "independent" or "blind" reading, however, cannot be considered the same as proofreading, since there may still occur discrepancies which are beyond the scope of proofreader's competence. In conclusion, when Reiss (in House 2015: 65) writes that "in a context of translation quality assessment, revision is retrospective and concerned with the accuracy of the products in terms of meaning and style […] it uses principles of comparative analysis" as well as when House (in Chakhachiro 2005: 227), states that revision "is not aimed at studying differences between two languages, but rather focuses on equivalence or 'matches' and

[7]This is the second edition of the first volume entirely dedicated to revision which was written in French in 1978 by Horguelin (*cf* footnote n. 3) and re-edited in English in 1980 by Hosington and Horguelin and again in French in 1995 by Horguelin and Brunette.

[8] *"Consiste à assurer la qualitè informative et linguistique (contenu et form) d'un text en vue d'atteindrel'objectif de la communication: informer, inciter à agir, faire partager une opinion*" (Horguelin 1985: 9).

[9] "*Il s'agit de vèrifier l'equivalence en langue d'arrivèe selon le critères d'unne bonne traduction. La rèvision bilingue est donc comparative"* (Horguelin 1985: 9).

'mismatches' between the source and the target text", they are both clearly speaking about comparative reading.

2.1.3.2 Classification based on the function of the revision

As regards the function of the revision process, Chakhachiro (2005: 230) believes that "the aim of revision is to ensure that a translation is an accurate and acceptable rendition of a source text for the target readership", so it can be said that revision helps minimizing the risk of not fulfilling the translation's purpose (Pym 2005: 71). As can be seen, the principal function of revision is that of improving the quality of the TT by correcting and improving it before delivery to customers; nevertheless, other types of revision can be detected if we accept the existence of two complementary functions: the pragmatic and the formative one.

Horguelin (1985: 10) distinguishes between "*rèvision pragmatique"* and "*rèvision didactique*". According to him (*Ibid.*), Pragmatic Revision (PrR) consists in checking the translation adequacy with respect to a series of previously determined criteria. Brunette (2000b: 173) adds an element to the above-mentioned concept, defining it as a "careful comparison of the translated text with the original in order to improve the translation, without consultation or other contact with the translator". Didactic Revision (DR), in turn, is the same as PrR but with formative purposes. Again, Brunette develops Horguelin's definition by describing it as the

> Stage in the translation process in which the entire translated text and the original are carefully compared to ensure the translation complies with previously defined methodological, theoretical, linguistic, textual and contextual criteria. The changes made to the translation are intended to improve the target text and help translators hone their skills (Brunette 200: 173).

It is interesting to note that Hosington (Thaon) and Horguelin (1980) use the term Formative Revision (FR), instead of "rèvision didactique", in order to distinguish this kind of revision from that produced at an academic level – that they call Didactic and that Horguelin and Brunette (1995: 50,237) will refer to as "pèdagigique".

> Formative revision applies to revision carried out in a translation bureau or service, where the reviser's role is not only to correct and improve translations but to train the translator. Didactic revision takes place within the confines of the classroom and is the final step in the preparation of the student enrolled in a translation program (Hosington (Thaon) and Horguelin 1980: 2).

2.1.3.3 Classification based on the number of subjects involved

On the basis of how many revisers are involved in the process, scholars have detected different types of revisions, namely: self-revision (SR), inter-revision (IR), collective revision (CR), and "*relecture-expetise".*

Quoting Mossop, "self-revision – the translator's own check of the draft translation – is an essential part of translation production procedure, skipping it is simply unprofessional" (Mossop 2001: 91). Self-revision is generally considered a process inherent to every translation process; no professional translator submits his/her work unless they read it at least once from the very beginning till the end, "no scanning or spot-checking". (Mossop 2001: 135,167) Robinson calls this "checking" and presents it as an aspect of the so-called *translator's reliability* (Robinson 1997: 13). Self-revision has more constraints and limits than revising the work of other translators: since the whole process includes only one person, only the knowledge and the set of skills of that one person can be drawn on. It is therefore necessary to apply different strategies to change the perspective in order to make self-revision truly efficient (to be treated in chapter 2.3.2. Strategies and techniques for revision). In addition, when revising one's own translation, the *familiarity effect*[10]and *expectancy effect*[11] manifest themselves more than in revising somebody else's translation: these phenomena make it harder to detect mistakes and may generally hinder accuracy of self-revision. Unlike when revising a translation of somebody else, in self-revision one has the feeling of ownership of the target text, which may, on the one hand, obstruct objectivity and efficiency of revising, but, on the other hand, also provide stronger motivation.

The main difference between inter- and self-revision stems from the number of operators participating in the overall process; in fact, in the former case there are an author, a translator *and* a reviser (or more than one) plus, possibly, a proofreader. There arise a number of interpersonal relationships which may or may not complicate the situation. The reviser and the revisee are obviously two different persons and the power they have over the text at hand is inferred from the hierarchy existing between them. Whether a suggested change becomes an actual amendment depends on their position. The revisee may be the revisee's subordinate – a junior translator or a student; in such case, the changes will usually be accepted. The revisee may also be a fellow-colleague; in that situation a discussion about the changes suggested or made can take place (Mossop 2001: 175). It should also

[10]The familiarity effect – i.e., enhanced memory of the text to be scanned for errors (Pilotti *et al*) – is interconnected with several variables, such as speed, accuracy, or delay and depends on the *encoding operation* involved that can either be *surface encoding* (orthographic and lexical analysis) or *deep encoding* (syntactic and semantic analysis). Whereas surface encoding results in a moderate level of familiarity, deep encoding generates a high level of familiarity.

[11]The so-called expectancy effect occurs as a consequence of deep encoding and leads to a less thorough analysis of the text; it makes revision faster but definitely less accurate.

be noted, treating the status of the revisee, that even if s/he is an experienced translator and his or her work is usually very good, the reviser must always be attentive and critical and must not rely on the reputation of the revisee. Apart from that, when revising the work of others another crucial aspect comes into play since every translator-reviser has their own image of a good translation solution. Working as a reviser means being open to solutions of others and not imposing one's own ideas on someone whose work is acceptable and good. Mossop wisely advises that

> One thing you must do is recognise the validity of approaches to translation other than yours […] it's someone else's work, and you must respect their approach unless the […] term they have used could seriously mislead the reader about the intent of the source text (Mossop 2001: 165).

Moreover, it is advisable to distinguish necessary changes from simple suggestions (Mossop 2001: 175-176). In any case, all the changes a reviser makes in a TT must be objectively justifiable. Claiming that a wording simply does not feel right is not enough. Basing every correction on a reliable argument is essential in case the reviser needs to discuss the revised text with the translator, or the work provider (Mossop 2001: 176). Finally, when revising it is also worth realizing that the translator knows more about the text at hand then the reviser, the former one worked on it a lot, made research and, hopefully, checked his or her work. Therefore, one should think hard before changing anything in the translation, especially if it is a text from a field one is not expert on. Unwarranted or unneeded changes cost time and money and they can only create unpleasant interpersonal relationships.

IR can be further subdivided. A subcategory of IR is what Rochard calls "*relecture concordance*" (2003: 137) which consists in reading the TT aloud while a colleague checks its correspondence with the ST. This procedure is typically used by two translators who are both native speakers of the TL or who speak different languages, the SL and the TL respectively. Another subcategory is cross-reading in which two translators at the same hierarchical level read the full TT treating it as a ST (indeed making a unilingual reading) in order to verify the text quality and to detect possible mistakes. Instead, the revision is called collective (CR) when it is carried out by a group of people, often a multidisciplinary team consisting of terminology experts, specialists, customers or they representatives, translator or editor of the text, computer experts, etc. Finally, when there are divergences of opinions between an autonomous translator and the translator agency or between a translator and his or her customers an expert reviser is called to intervene in order to assess as well as certify the quality of the translations. Rochard names this final procedure "*relecture-expertise*" (2003: 135).

In order to get better acquainted with the work of a reviser, different aspects of this profession will be dealt with in the following paragraph.

2.1.4 Being a reviser

The work of the reviser is still not widely recognised; in fact, although requiring a great expertise and responsibility, revising is not a very prestigious occupation. The position of the reviser stands inconspicuously between that of the translator and that of the reader whose goal is to negotiate existing or potential problems in the TT so that all the parties involved are satisfied. Mossop defines revisers as "gatekeepers" or "language therapists" who amend texts in two ways: "they correct and they improve". According to him, revisers "*correct* the text so that it conforms to society linguistic and textual rules and achieves the publisher's goals" and "*improve* the text to ensure ease of mental processing and suitability of the text for its future readers"(Mossop 2001 17). In other words, the principal mission of a reviser is "going back over the text at least once for evaluation purposes, and making changes in the text to correct whatever problems were detected during the evaluation" (Roussey and Piolat 2008: 765; in House 2015: 233). In order to be able to do that, a reviser needs to possess certain qualification and skills (to be discussed in sub-paragraphs 2.1.4.1 and 2.1.4.2). Hansen terms *profile parameters* the ensemble of these qualities and skills and states that they cover "(a) the subjects' individual, cultural, and educational backgrounds, habits, life-stories, and self-evaluation, as well as (b) their experiences and working conditions as professionals" (Hansen 2010: 195) and that

> Every translator has his/her individual combination of abilities, skills, and knowledge, an *individual pattern*, and that this individual competence pattern can be recognised and identified in both (a) *his/her translation product* and (b) *his/her behaviour in the course of the translation process* (Hansen 2010: 190).

These statements are true for self-revision as well as for inter-revision; the only difference is that in inter-revision two (or more) individual patterns, and thus potentially different profile parameters, come into play; this can either enrich the process and product of translation or, in the event of contradictory parameters and patterns, even cause some troubles.

2.1.4.1 Qualification and status

In terms of qualification, a general question must be investigated: 'who actually is a reviser?' According to Chakhachiro, s/he "may be a professional translator, a bilingual person, or even a monolingual speaker, depending on social and financial means" (Chakhachiro 2005: 226). As they are not able to carry out comparative reading of the source and the target text, monolingual speakers in the position of revisers cannot obviously ensure the best outcome of their work. In turn, a bilingual reviser would certainly work better even though not everyone speaking two languages possesses the

required theoretical knowledge to be able to do the job properly. Since translation skills contribute greatly to successful revisions, the best option is to find a translator/reviser: “it is now often the case that employers are seeking out 'translator-editors' – people they can hire, whether as salaried employees or as contractors, to translate, revise, edit and possibly carry out other language-related tasks.” (Mossop 2001: 1)

As far as experience is concerned, it is as valuable as in translation itself and it only comes with time and hard-work. In this respect, Alves and Gonçalves (in House 1998: 199) distinguish between novice translators – narrow band – and experienced translators – wide band. The former group (more relevant to this dissertation) is, according to them, characterised by the “inability to deal with revision as an independent phase” and “erratic cognitive rhythms in this phase”. Differently from translators who usually were not trained for the job (Robinson 1997: 4), “revisers generally come from a linguistic rather than scientific background” (Mossop 2001: 133) and this come in useful since revision should not be left in hands of people without appropriate qualification (Chakhachiro 2005: 233). The work of less experienced translators is often checked by senior translators who have become revisers; such professionals are paid higher and revision thus becomes a pretty expensive article because, from the practical point of view, “every minute devoted to revising someone else's translation is a minute not devoted to preparing a new translation” (Mossop 2001: 140).

As regards the status of revisers, it may be the same as for translators: in-house employee, contractor or freelancer. For the latter group, self-discipline is a keyword: since they are not forced to check their work by any company procedure and their texts will not be further revised or proofread by no colleague, self-employed translators should devote a substantial amount of time and effort to self-revision. Likewise freelance translators, contractors “have to tender for […] contracts. In most cases, however, they will be contacted by translators or by work providers or, in a translation service or company, be chosen by the project manager” (Gouadec 2010: 61). In-house employee, instead, can rely on a different reputation since working in a translation company usually provides the assurance of quality control of the translation product. Yet, one should not rely on a colleague's correcting of the translation and always strive for the best s/he can do.

2.1.4.2 Competence and skills

Revising requires a great number of competence and skills: some are pertinent to the work of translators, others relative to general working skills.

Generally speaking, it is possible to say that a translator has to possess revision competence

and that a reviser should possess translation competence[12], where translation competence is understood as the ability to find a mistake, deal with it and sort it out[13]. Yet, recognising and resolving a mistake is not enough, the crucial ability in revision is to select the best option among the previously generated ones; in fact, problem solving through decision making is the essence of revision. Likewise translators, being a reviser requires an excellent knowledge of the TL and of the SL, as well as excellent reading and interpretative skills. First of all, a reviser should master the TL in terms of grammar, punctuation rules, vocabulary, and stylistics which means not only knowing how and with what tools the language works but also knowing in what reliable source one can find solutions when in doubt. This is also related to the fact that in translation companies revision reports explaining what was corrected and why are often required, thus a reviser must be able to explain clearly, and using the appropriate terminology, the linguistic reasons for the changes made, always remembering that – as already remarked – in revision there should occur no unjustifiable correction. Mastering the SL should also part of the domain of revisers who work with both, the source and the target text, as they need it to carry out a comparative analysis and to assess the texts equivalence. Moreover, excellent reading skills are definitely needed by revisers; this may seem as an obvious argument, but reading for comprehension – i.e. regular reading – is in its nature different from reading for revision and involves different skills: "when we read, we read for comprehension. Our eye movements are rapid, too rapid to see the details within words – failing to see some words at all" (West 1983: 287). As soon as we grasp the meaning for comprehension, our eyes move ahead. Significantly, "we see what we expect to see. The brain corrects for omissions and oversights" (West 1983: 286-87). "It is not surprising, then, that simple reading is not an effective proofreading strategy" (Madraso 1993: 40). Aside from reading skills, interpretive skills come in useful as text-interpreting is a part of revising and it helps recognizing a problem in the text. Finally, the importance of having good memory and mental flexibility should not be undervalued. On the subject, Dimitrova mentions this ability translators, and revisers even more, need to possess

> To evaluate short target language stretches[14] (words, collocations, phrases and clauses) with regard to target

[12] This is certainly true in self-revision when translator equals reviser.

[13] According to Hansen, "*translation competence* means, among others, that problems and errors during the reception and formulation phase are recognised by the translator and that he/she has problem solving and revision strategies available to solve the problems and improve the text." (Hansen 2010: 191). Furthermore, Pym adds that a good translator needs to have "The ability to generate a series of more than one viable term […] for a transferred text." (Mansell; in Pym 2010: 82).

[14] Also known as translation units, they are defined as "the portion of source text that a translator deals withcognitively as one chunk, during the formulation of a target-language version: typically, this is a clause, or perhaps a sentence" (Chesterman 2002: 3). These units, though, may not be identical with revision units which would be the portions of drafted TT dealt with by revisers. It is interesting to note that in his book Mossop suggests that treating too small revision units is not a very smart strategy as they may loose their connection to context (Mossop, 2001: 154-155); as a matter of facts, researchers have demonstrated that students, in contrast to experienced translators, tend to work with

> language correctness and stylistic and pragmatic appropriateness in relation to the translation purpose. This evaluation is a demanding part of the process, given the fact that these stretches of target language linguistic material are constantly compared to source language stretches in the process, requiring the translator to constantly switch between the two languages (Dimitrova 2005: 36).

Equally to any other employees, revisers are asked to keep up with new codifications and to educate themselves continuously. In particular, it is indispensable for revisers to be able to work with computers. In our modern times, many areas of translation are facing increasing demands to keep up with new software, therefore, revisers must stay proficient in computer skills (Asadi and Séguinot 2005: 535) and be able to do all sorts of operations, such as formatting in word processors, using different programs, checking electronic or online dictionaries and terminology banks, creating back up files, checking files for viruses, searching information on the web, etc. In addition to this, revisers need to have: a critical eye for detail, stamina, patience and ability to concentrate. They should know how to fight fatigue and stress, especially when deadlines are tight and they have to work quickly but still accurately. In any case, "revisers are expected to move through the text far more rapidly than the original translator" (Mossop 2001: 96) always keeping in mind that "enhanced speed means enhanced income" (Robinson 1997: 95). The other skills of a good reviser are: learning from one's mistakes – if these are revealed, since s/he may often be the last person working on a certain document; being able to plan one's work carefully, so that there is enough time for translation and self-revision (Madraso 1993: 39); and, having enough self-confidence in order for the reviser to be able to overrule translator's decision, even though "only experience can give the considerable self-confidence" (Mossop 2001: 9). This profession also requires a certain mental flexibility, so that the reviser respects the author's/translator's style of writing; and the ability to empathise with others in order to facilitate cooperation with translators, clients, other revisers, proof-readers etc.

2.1.4.3 Practical aspects

To begin with, it must be said that revisers "are human beings, with options, attitudes, beliefs, and feelings" (Robinson 1997: 31) and, likely any other profession, revising – as well as translating – has its down-to-earth and day-to-day aspects that can either be viewed as constraints or benefits. The most positive aspect of this job lies in the diversity of texts one is assigned. The intellectual enrichment that comes with every new task plays a fundamental role since stereotypical work usually does not bring inner satisfaction. Nevertheless, the work of a reviser also include tough and uninteresting tasks or tasks with tight deadlines yet, as a matter of facts, a good reviser is expected to handle all of them

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smaller units, i.e. usually at the word level. The size of the translation/revision unit depens on the capacity of working memory and ability to sequence or isolate words (*cf* familiarity effect in footnote 11).

equally well.

Time management is certainly one of the most critical aspects of revising[15], indeed Mossop declares that "a central issue for all translators, and in particular for revisers, is the trade-off between time and quality" (Mossop 2001: 113-114). Clients want the translation to be reliable, fast and cheap (Robinson 1997: 7), but these three attributes do not always go together and it is revisers' task to balance interests of all the parties, or rather operators, involved, namely: the author and/or the client, the translator, possibly the company, and, ultimately the prospective readers. Yet, these are not equally important. Whereas Newmark' says that "the translator's loyalty is neither to the writer nor to the reader but to the truth" (Newmark 1998:204), according to Mossop the priority factor should always be the TT reader:

> As for balance between source text author and reader/client, this is of course the central problem of translation (source versus target orientation) […]. Turning to revisers now, in this approach they do not act like a second translator. Instead, the reviser favours future readers of the text. The reviser tries to meet the needs of readers always, and the needs of others, if possible (Mossop 2001: 112-113).

As far as participation of more individuals is concerned, also Chakhachiro affirms that "the translative operation is a matter of transactions between parties that have an interest in these transactions taking place". Yet, he thinks that revisers should be independent of translators, clients, and agencies, since personal bias "can lead to inefficiency and bitter debates" (Chakhachiro 2005: 233).

2.1.4.3 Ethics of revising

Due to their undisputed similarity, the same ethical rules that apply to translators are applicable to revisers as well. The only difference is that the reviser has to consider the person of the translator[16] in addition to other potential operators involved.

One of the most important ethical rule is that revisers should only mark those mistakes that need marking: not only is it a wasteful exercise to correct appropriate and acceptable renderings of the original text, but "it is unethical to make unwarranted stylistic changes as well as to withhold justified changes in order to discredit or unduly credit the translator" (Chakhachiro 2005: 235). This must be stressed out because many studies demonstrate that from the psychological point of view revisers may tend to introduce changes only in order to show they do their job, as it could look like they did not revise a text in which no corrections were made. In addition, revisers should always

[15]Newmark says that "the last stage of translating, [...] takes up between a half and two thirds of total translating time, unless the SLT [source-language text] is exceptionally easy and dull" (Newmark 1991: 105).

[16] This is not the case with self-revision, where one only has moral commitments to oneself and the motivation to ethical behaviour is therefore self-generated.

avoid subjectivity. The only remedy to this is, according to Reiss and Chakhachiro, the necessity for revisers to base their corrections "on the linguistic, stylistic, and pragmatic characteristics of the languages involved" (Reiss in Chakhachiro 2005: 235) because, after all, "there is, for us no such thing as the definitive solution to a translation problem (by definition, translation problems allow for more than one solution)" (Pym 2005: 73). As a matter of facts, though, scholars agree[17] that rule number one remains that revisers should in no case distort the meaning of the text (Robinson, 1997: 30). Lastly, revisers must always admit his/her fault (when s/he realises it), or failure to resolve a problem (Mossop 2001: 160,177): every professional has to know their limits, be it temporal or intellectual limitations. It is not right to accept a job one cannot do well because s/he has not sufficient expertise, linguistic competence or time for it. Refusing such a task or facing the consequences (bad reaction from the side of customer, author, or translator, lack of free time) is what a reviser should do (Chakhachiro 2005: 237).

[17] For example, Mossop writes "[...] as a reviser you could not let pass a draft translation that reproduces inadvertent nonsense in the source text simply because the client has asked for a very close translation […] Some might argue that contradictory or otherwise bad writing should be reproduced in some cases in order to make clear to the reader the poor quality of the writing in the source text. But this is not a proper function of translation" (Mossop, 2001: 113).

2.2 **Quality in translation**

Quality in translation – that is, quality of both the process and the product – could look like a simple and clear concept, however achieving quality in translation is not something that can be taken for granted and stating what features an optimal translation should possess is not an uncomplicated matter. The main issue related to this is that subjectivity has always affected in too many ways the assessment of the quality of a translation (Horguelin, 1985; in Hurtado Albir 2001; in Magris, 2006: 183). According to House, "translation quality assessment presupposes a theory of translation" but, unluckily, different scholars have different views on translation[18]; thus, "different views lead to different types of translation quality, and different ways of assessing it" (House 1998: 197). However, Horton believes that most linguists agree on the general, basic criteria needed to evaluate the efficacy of a good translation:

> The *evaluation* of a translated *target text* seeks to measure the degree of *adequacy* of that text with regard to the semantic, syntactic and pragmatic *givens of the source text* on the one hand and to the *cultural frame and expressive possibilities of the target language* on the other, always with a view to the *function ascribed to the target text*. (Horton 1996: 41-42; in Magris 2006: 184)

2.2.1 Translation Quality Assessment (TQA)

Nowadays, the relevance of, and justification for, translation quality assessment (TQA) is stronger than ever: professional translators, their clients, translatological researchers and trainee translators all rely on TQA for different reasons. Yet whereas there is general agreement about the need for a translation to be "good," "satisfactory" or "acceptable," the definition of acceptability and of the means of determining it are matters of ongoing debate. In the professional world, national and international translation standards[19] have come to exist, but there are no generally accepted objective

[18] For example, Newmark believes that: "a good translation [is] (a) one that satisfies the customer […], (b) one that fits its purpose […], (c) typically, accurate – as long as the original is accurate – and elegant […] Note that (a) and (b), though they are important and unexceptionable, could apply to any product, and they ignore the original text, whilst (c) humdrum as it is, attempts to be specific to translation. As I see it, customer satisfaction is the proof of a translation's 'success', but it is not a measure of its quality. (Customers, like readers/receptors, can be idiots.)" (Newmark 1998:105) Apparently, Mossop agrees with Newmark when he states that accuracy is what makes a translation a perfect translation (Mossop 2001: 23).

[19] One of the relevant certificates is the ISO 9000 series (revised every five years) defining the set of qualities and characteristics a product, or service, requires in order to satisfy implicit and explicit needs. Obviously, this is also relative to all sorts of products (not only translations or revisions), therefore, it takes a rather general attitude and does not take into consideration many aspects that cannot be left out in such a specific sector as it is that concerning translation, in general, and revision, in particular. As far as translation in particular is concerned, the standard DIN 2345 (Magris 2006: 189) or the Italian norm UNI 10574 (*ibid*.) determine what rules should be followed in order to achieve accuracy in translation.

criteria for evaluating the quality of translations. In fact, Rega (1999: 115) affirms that "a certain degree of subjectivity can intervene in […] revision if we assume that writing is always individual". As we learn from House's words (see above), then, speaking about quality in translation means speaking about the ways to assess it, where assessing quality corresponds to evaluating the strengths and weaknesses of a translation as well as judging its acceptability and appropriateness.

2.2.2 Approaches to translation quality assessment

As we saw, there may be different approaches to translation quality assessment. According to House, approaches to translation quality assessment fall into three distinct categories – namely, "anecdotal and subjective approaches [...], response-oriented approaches, and text-based approaches" (House 1998: 197) – from the latter group she developed her functional-pragmatic model that, together with her successors' contributions, represents the most interesting study for our research as it is an experimental analysis with observable response. Nevertheless, as it will be later demonstrated, all of these approaches are, to some extent, ineffective as they fail to take into account many practical aspects and thus to determine a quantitative evaluation.

2.2.2.1 Subjective, response-oriented and text based approaches

To begin with, it can be said that this category is the least structured as it gleans directly from the traditional concepts of translation evaluation. Back in history, the only two text genres to be translated were literary and religious. Hence, the intrinsic dichotomy resulting from that was that translations could be of two types only: literal or free. Whereas literary translation may have enjoyed the pleasure to be either literal or free, religious could only be literal. Generally speaking, in the former case the quality of translations was defined on the basis of how good the TT sounded, in the latter depended on its closeness to the ST. This very subjective tendency was perpetuated by all sorts of experts throughout centuries and it can still be studied among those approaches which have been named as the "anecdotal" ones.

Many practising translators philosophers, philologists and writers have long been offering anecdotal or subjective treatises on translation quality that could be said to be based on these same two widely intuitive concepts, namely the "'faithfulness to the original', or 'the natural flow of the translated text'" (House 1998: 197), and thus on a vague, "atheoretical" (*ibid.*) procedure. Although in more recent years many linguists had been in search for more systematic methods, a generally

agreed theory never appeared. For example, the volume[20] dedicated to the proceedings of the Third Congress of translators[21] on "Quality in Translation" is full of divergent[22] and altogether questionable statements of what quality in translation is supposed to mean. One of the main fault of these approaches is, according to House, that "the quality of translation" is seen "as dependent on the translator and his/her personal knowledge, intuitions and artistic competence" (*ibid*). Following Stolze's teaching (Stolze 1992; in House 1998: 197), House also proposes a subcategory of this group which she names the "neo-hermeneutic" (*ibid*) approach. In this case, the various phases of the translation process are considered as "individual, creative acts" in which "the translator identifies him/herself fully with the text to be translated" (*ibid*). Once again, this approach does not establish a series of objective principles and so it must not be accepted as a general theory.

As far as response-oriented approaches are concerned, Nida and Taber (1974, 1978) refuse the acceptability of formal equivalence between ST and TT to assess the level of quality of a translation and introduce the concept of dynamic equivalence that is more communicatively oriented. According to them, the manner in which receptors of the TT respond to it must be equivalent to the ST receptors response. In order to do so, Nida postulated three criteria for an optimal translation:

1) General efficiency of the communicative process", by which he means "the maximal reception for the minimal effort of decoding;
2) comprehension of intent;
3) equivalence of response (Nida 1964: 182; in House 1977: 8), namely the "Dynamic Equivalence of a Translation (Nida 1964: 159).

Later on, these same three criteria were worded and ordered slightly differently by Nida and Taber:

1) The correctness with which the receptors understand the message of the original […],
2) the ease of comprehension,
3) the involvement a person experiences as the result of the adequacy of the form of the translation (Nida and Taber 1969: 173; in House 1977: 9).

Yet, according to House (1998: 197), "upon closer scrutiny, these criteria prove to be as vague and non-verifiable" as they cannot be used to form a very rigorous evaluating system. Even earlier, Carroll (1966) (in House 1998: 197) had suggested the use of broad criteria like 'intelligibility' and

[20] Ed. by E. Cary and R. W. Jumpelt, 1963.

[21] The Third Congress of translators was held at Bad Godesberg in 1959, year in which – according to Horguelin (Magris 2006: 183) – researchers started to approach the subject in a different, more systematic way.

[22] If "Savory (1963) attempts to link the quality of a translated text to the personalities of the translator, the author and the audience, […] Elsen (1963) maintains that a good translation is one which is not identified as a translation." In addition, Friedrich (1963) makes the commonplace statement that quality depends on "the translator's precise understanding of whatever it is that the original writer wants to convey" and Govaert (1971) stresses on the importance of the role of the translator. But, finally, Gold (1972) pronounces that "any attempt at deriving general principles for translation quality is futile" (House 1977: 6-7).

'informativeness' as general concepts for quality assessment, yet, even in this case, subjectivity still represents a huge weakness.

Finally, source text-based approaches are much more practical experiments that attempt to reach in a more empirical way such craved objectivity. In these studies, pairs of source and target texts are compared with a view to discovering syntactic, semantic and pragmatic regularities of transfer. Reiss (1971-1978; in House 1998: 197), for example, suggested that the most important invariant in translation is the text type to which the ST belongs thus she proposes three basic text types on the basis of Bülher's three language functions[23]: content-oriented, form-oriented and conative. Yet, much is left unexplained by Reiss and not even her system can be considered as generally acceptable. Years later, in their functional theory of translation, Reiss and Vermeer (1984; in House 1998: 198) agreed that is the ***skopos***, i.e. the purpose of a translation, which is all important. The authors distinguish between equivalence and adequacy:

> Equivalence refers to the relationship between an original and its translation, where both fulfil the same communicative fuction; adequacy is the relationship between source and translation where no functional match obtains and the '*skopos*' of the translation has been consistently attended to (Reiss and Vermeer; in House 1998: 197).

Besides all the details the two authors leave undiscovered, this theory stresses on the importance of the ST over that of the TT and thus it is unacceptable since a translation must be simultaneously bound to both the ST and the TT.

2.2.2.2 The functional-pragmatic model: Juliane House

Working with the language pair English-German, Juliane House (1977) proposes a model based on pragmatic theories of language use. This model provides for: 1) the analysis of the linguistic-situational particularities of source and target texts, 2) a comparison of the two and 3) the resultant assessment of their relative match.

The basic requirement for equivalence between ST and TT is, according to House, that the translation should have the same function as the original; in order to do so, even equivalent pragmatic means could be made use of. For House (1997: 42):

> A translation text should not only match its source text in function, but employ equivalent situational-

[23]These are: 1) the *Darstellungsfunktion (*representational or referential function) which serves to describe extralinguistic reality, 2) the *Ausdrucksfunktion* (emotive-expressive function) that is linked to the speaker/writer of the message and 3) the *Appellfunktion* (conative function) centred on the receiver of the message (Bülher, 1965: 28-33 in House 1977: 103).

> dimensional means to achieve that function, i.e., for a translation of optimal quality it is desirable to have match between source and translation text along these dimensions which are found - in the course of the analysis - to contribute in a particular way to each of the two functional components, ideational and interpersonal, of the text's function.

Initially, the operation of the model involves an analysis of the original text according to a set of situational dimensions[24], for which linguistic correlates are established. House's situational dimensions feature the following subcategories:

A) Dimensions of Language User:

1) GEOGRAPHICAL ORIGIN
2) SOCIAL CLASS
3) TIME

B) Dimensions of Language Use:

1) MEDIUM [SIMPLE/COMPLEX]
2) PARTICIPATION [SIMPLE/COMPLEX]
3) SOCIAL ROLE RELATIONSHIP
4) SOCIAL ATTITUDE
5) PROVINCE" (House 1977: 41).

Differently from the section dedicated to language user, section B is much more abstruse, therefore, it needs some extra explanations[25]. According to the distinctions suggested by Gregory (1967: 215), in the category of "complex medium" 'writing' can be subdivided as follows: 1) written to be spoken as if not written, 2) written to be spoken, 3) not necessarily written to be spoken (i.e., to be read as if heard). These distinctions between different combinations of spoken and written modes are important because, even if a text is meant to be spoken and is, in fact, at some stage spoken, there is still a difference between genuine spoken language (as in a conversation) and the above mentioned 'spoken' subcategories of the written mode. In determining features of the spoken mode in the various manifestations of a complex medium, House considers various phenomena, such as: "structural simplicity, incompleteness of sentences, specific manner of text constitution, particular theme–rheme sequencing, subjectivity (marked, for instance, through the use of modal particles and gambits) and high redundancy". Second, as far as "participation" is concerned, a text may be either a 'simple' monologue or dialogue, or a more 'complex' mixture involving various means of "indirect participation elicitation and indirect addressee involvement" that can manifest linguistically, for example, in "a characteristic use of pronouns, switches between declarative, imperative and

[24]The author eclectically adapted the Neo-Firthian model proposed by Crystal and Davy (1961; in House 1977: 39): A) Individuality, Dialect, Time; B) Discourse: (a) [simple/complex] *Medium* (speech, writing), (b) [simple/complex] *Participation* (monologue, dialogue); and C) Province, Status, Modality and Singularity. (Crystal and Davy 1969: 107) by collapsing the three sections A, B, and C into two sections: Dimensions of Language User and Dimensions of Language Use. .

[25] The following paragraph is strictly related to House's explanation of her model (House 2015: 28-30).

interrogative sentence patterns or the presence of contact parentheses, and exclamations". Third, in "social role relationship" House analyses the role relationship between addresser and addressees, which may be either "symmetrical (marked by the existence of solidarity or equality) or asymmetrical (marked by the presence of some kind of authority)"; account is further taken of the "relatively permanent position role (teacher, priest)" and "the more transient situational role (visitor in a prison, speaker at a given occasion)". Then, under the dimension of "social attitude" the author describes "the degree of social distance or proximity" resulting in "relative formality or informality". She considers five different styles or levels of formality[26]: "frozen, formal, consultative, casual and intimate". Finally, "province" refers not only to "the text producer's occupational and professional activity but also to the field or topic of the text in its widest sense of 'area of operation' of the language activity as well as details of the text production" that can be deduced from the text itself. As can be seen, by using such situational dimensions House is able to open up the ST; hence, a particular textual profile is obtained for the original text which will be later compared with that of the TT.

As just mentioned, the resulting textual profile of the ST characterises the original text function; therefore, the degree to which the profile and function of the TT match those of the original is the degree to which the translation is adequate in quality. House describes the method of operation of the model

> Outlining the method of analyzing and comparing texts by indicating how the various situational dimensions of the model are realized syntactically, lexically, and textually, drawing eclectically on a number of concepts deemed useful for the establishment of linguistic correlates to the situational dimensions (House 1997: 43).

And, she distinguishes three main textual aspects:

> 1) Theme dynamics (various patterns of semantic relationships by which 'themes' recur in texts), 2) clausal linkage (a system of basically logical relations between clauses and sentences in a text), 3) iconic linkage (two or more sentences cohere because they are isomorphic) (House 1997: 45).

In evaluating if the two texts match, House distinguishes between 'covertly erroneous' and 'overtly erroneous [translation] errors'[27]: whereas the former are "dimensional mismatches" which are "pragmatic errors that have to do with language users and language use", the latter are non-

[26]On the model of those suggested by Joos (1961).

[27]Nord and Pym establish a similar sub-division for translation errors. Nord (1991) distinguishes between 'pragmatic' and 'cultural' errors: the former directly affect the TT function since the translator does not properly apply the pragmatic instructions received in the translation brief; in turn, the latter indirectly affect the TT function as the translator fails to take in account all the norms and stylistic conventions of the target culture. Pym (1992: 285) speaks about 'binary' and 'non-binary' errors. Whereas 'binary errors' are those that can clearly be said to be either correct or incorrect, non-binary errors are those for which such clear distinction does not exist and thus need some sort of negotiation, i.e. comparison with another TT.

dimensional mismatches which are "mismatches in the denotative meanings of the original and translation elements and breaches of the target language system at various levels" (House 1998: 199). As seen for House, a fundamental concept that needs to be defined in order to assess translation quality is that regarding translation errors – a topic discussed by the many scholars (*cf* Ch. 2.3.3.2 Error types). A necessary distinction has to be made between translation errors (nonsense, misinterpretation, incorrect meaning, calque, false friend, anglicism, interference, loss, omission, under-translation, addition, over-translation, inappropriate paraphrase, transcoding word for word translation) and language errors (unintentional ambiguity, barbarisms – morphological errors –, inappropriate expression, inappropriate repetition, solecism – syntactic errors –, zeugma) which could be both caused by methodological errors (Delisle *et al.* 1999). In particular Gouadec defines a translation error as "*une rupture de congruence dans le passage d'un document premier (à traduire, existant, compris, analysè) à un document second (à venir) […] l'erreur est distorsion injustifiée d'un message et/ou des ses caractères*" (Gouadec, 1989: 38), thus as an error mainly concerning meaning transfer (*cf* Ch. 2.3.3.1 Revision Parameter).The final qualitative judgement of the translation consists of a listing of both types of errors and of a statement of the relative match of the two functional components. Consequently, empirical work with such a model has resulted in a distinction between two basic types of translation: overt translation and covert translation. An overt translation is one in which the addressees of the translation text are quite 'overtly' not directly addressed: an overt translation is not a 'second original'. In overt translation the original is tied in a specific manner to the source language community and its culture, and is often specifically directed at source culture addressees but at the same time points beyond the source language community because it is, independent of its source language origin, also of potential general human interest. Original texts which call for an overt translation have an established status in the source language community and potentially in other communities. I divided such texts into two groups: 1. overt historically linked source texts, i.e. those tied to a specific occasion in which a precisely specified source language audience is/was being addressed". (House 2015: 56). In turn, "a covert translation is a translation which enjoys the status of an original source text in the target culture. The translation is covert because it is not marked pragmatically as a translation text of a source text but may, conceivably, have been created in its own right. A covert translation is thus a translation whose source text is not specifically addressed to a particular source culture audience, i.e. it is not particularly tied to the source language and culture. A source text and its covert translation text are pragmatically of equal concern for source and target language addressees. Both are, as it were, equally directly addressed. A source text and its covert translation have equivalent purposes, they are based on contemporary, equivalent needs of a comparable audience in the source and target language communities. In the case of covert translation

texts, it is thus both possible and desirable to keep the function of the source text equivalent in the translation text" (House 2015: 54-55). The main difference between the two is that

> Functional equivalence is only possible in covert translation, which is more difficult than overt translation because differences in the cultural presuppositions of the source and target language communities may require the translator to apply a cultural filter[28] (House 1998: 199).

Nevertheless, the potential usefulness of quite a complex distinction between overt and covert translation becomes rather relative when House states that

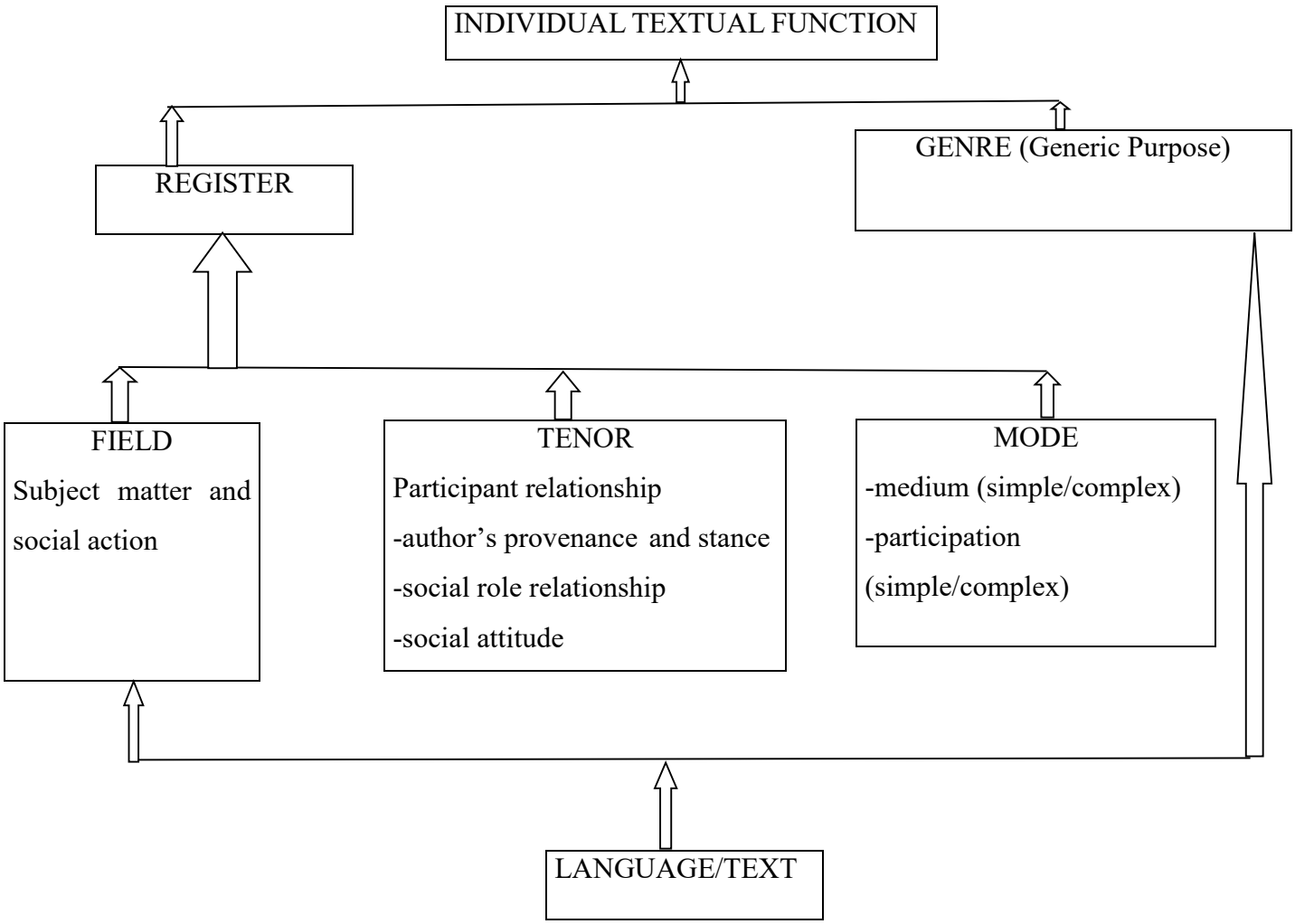
> A particular ST does not necessarily require once and for all either a covert or an overt translation, given the different, dynamic ways of viewing a text and different purposes for which a translation may, in the course of time, be required (House 1997: 77).

For more clarity, please find a summary of House's model (*Cf* House 1977: 203) in the scheme below:

<table>
<tr><td colspan="4">SOURCE TEXTS</td></tr>
<tr><td colspan="2">INTERPERSONAL FUNCTIONAL CAT.
Source-culture specific texts having independent status</td><td colspan="2">IDEATIONAL FUNCTIONAL CATEGORY
Texts which are not source-culture specific, and do not have independent status</td></tr>
<tr><td>Addressees are non-specific:
text is not linked to a specific historical occasion;
text is FICTIONAL</td><td>Addressees are specified:
text is linked to a specific historical occasion;
text is NON-FICTIONAL</td><td>Addressees are non-specific:
text is not linked to a specific historical occasion;
text is non-fictional, TECHNICAL</td><td>Addressees are specified;
text is linked to a specific historical occasion;
text is non-fictional, NON-TECHNICAL</td></tr>
<tr><td>Moral anecdote
Comedy dialogue</td><td>Religious sermon
Political speech</td><td>Scientific text
Commercial text</td><td>Journalistic article
Tourist information booklet</td></tr>
<tr><td colspan="2">OVERT TRANSLATION
(=second level function in translation)</td><td colspan="2">COVERT TRANSLATION
(=function intact in translation)</td></tr>
</table>

[28] Thanks to "a number of contrastive pragmatic analysis comparing the discourse of German and English native speakers […] in order to establish the presence or absence of pragmatic differences in the verbal behaviour of English and German speakers" (1997: 79-80) conducted by House in the 70s-80s, she gives example of applying a cultural filter. As a result of her research, House points out that "German subjects tended to interact in ways that were more direct, more explicit, more self-referenced and more content-oriented" (1997: 84) and presents the pattern of cross-cultural differences between German/English in her research along five dimensions: Directness/Indirectness, Orientation Towards self/Orientation towards Other, Orientation towards content/Orientation towards persons, Explicitness/Implicitness, Ad hoc Formulation/Use of Verbal Routine". Finally, she adds that "in terms of the two Hallidayan language functions, the ideational and the interpersonal, it is the ideational one, which seems to be given a different focus in German interactions – often at the expense of the interpersonal one" (1997: 85).

After having been criticised by many[29] for her research, House rethinks the categories for analysis and attempts to "clarify the relationship between textual function, linguistic characteristics and social use of a text by introducing the category genre" (1997: 105). Yet, also 'genre' is a rather fuzzy-edged category and consequently it turns out to be problematic to state that it is precisely 'genre' what is to be kept 'equivalent' in translation. In House's model, genre might serve as a category linking register (which realizes genre) and the individual textual function (which exemplifies genre). The resultant revised model consists then of four levels: "function of the individual text, genre, register and language/text" (House 1997: 107). The author exemplifies her notion of register analysis through the Hallidayan 'trinity' Field, Tenor, Mode (*ibid*) and proposes a "scheme for analysing and comparing original and translation texts" (House 1997: 108):



[29] In particular, she was criticised for: "the nature of the analytical categories and terminology used", the "lack of intersubjective verifiability of the analysis", the "limits of translatability" (House, 1997: 102-103) and by Reiss and Vermeer who had misunderstood her notion of an overt translation.

In rethinking the notion of 'Translation Evaluation' House states:

> The choice of an overt or covert translation depends not just on the translator himself, or on the text or the translator's personal interpretation of the text, but also, and to a considerable extent, on the reasons for the translation, on the implied readers, on publishing and marketing policies. In other words, in translation there are many factors that cannot be controlled by the translator and have to do with translation as a linguistic procedure or with the translator's linguacultural competence. Such factors are social factors, they concern human agents and socio-political or even ideological constraints that normally have greater power and influence than the translator. Still, a translation is also a linguistic-textual phenomenon and can be legitimately described, analysed and assessed as such (House 1997: 119).

House's statement seems to be closer to the response-oriented, functionalistic approaches she criticized than to the linguistically-oriented approach where she had initially located her proposal. As we can see, House's model – likewise many others – is extremely complex and, as a matter of facts, not fully effective; if from the one hand it attempts to reach the systematisation of useful criteria for TQA, from the other, it is not able to avoid subjectivity. Even House (Magris 2006: 185) underlines that the real problem of this method is that it is very hard to establish the extent to which such equivalence can be empirically verified; in fact, according to Magris (2006: 186), one of the major weaknesses of functionalist approaches is that they lack of unquestionable reference on which the final evaluation can be based.

To conclude, it must be said that although theoretically all of these systems can, to some extent, efficiently work for TQA, the increasing complexity, or rather impossibility, of putting such models into practice has determined their actual failure. As a matter of facts, many practical researchers have pointed out that, especially in professional contexts, such evaluating systems are impossible to be applied. In addition, they claim that models for TQA should include not only a qualitative but also quantitative evaluation[30] (Magris 2006: 187) since theorists have always neglected to include two fundamental practical elements in their models for determining TQA, such as: delivery timeliness and translation costs. According to Bonthrone (1998: 13; in Magris 2006: 187), clients as well as professional translators have, in fact, come to define quality in terms of handing in the right translation at the right moment, in the right place and at the right cost. Finally, as will be further developed in Chapter 2.3.3.1, it is important to consider that in now-a-days professional TQA systems great relevance/importance is given to technical aspects, like the lay-out, that, unfortunately, has still not been fully investigated at an academic level.

[30] In this view, House's position is emblematic as, after having explained her complex evaluation model, she recognises the possibility to confuse the linguistic analysis of a TT and a ST with a 'social' evaluation; in fact, in her opinion, a qualitative evaluation does not directly result in a quantitative one as, in the latter case, a series of 'social', rather than linguistic, factors come into play (Magris 2006: 187).

2.2.2.3 Recent approaches: quality assurance

As showed above, many approaches have been developed in search for an objectively valid method for assessing, and thus ensuring, quality in translation; yet, objectivity in TQA has never been fully achieved. More recent studies have investigated the topic in detail and translation has started to be seen as a process – of which revision is part – rather than as a product. As a consequence, a new series of phases related to the revision process were detected and, as a matter of facts, the correspondent neologisms soon appeared. In this sub-chapter, a new concept of quality in translation will be introduced and Brunette's and Mossop's definitions of 'quality assessment', 'quality control' and 'quality assurance' further examined.

The real change in modern times is represented by the state-of-the-art concept that, as Mossop says, "quality is always relative to needs", so "there is no such thing as absolute quality" (Mossop 2001: 23). Sometimes a rough translation serves its purpose better than an optimal translation (Kingscott 1996: 138; in Magris 2006: 188) so the standardisation of the process alone is not enough to ensure quality and one must be aware subjectivity is always part of the process. Above all, differently from previous theorists, modern translation experts have stopped to consider quality in terms of the translation product but rather started to speak about the translation process and to define each phase in detail because, according to them, establishing the correct rules for the overall process can only result in a good quality product.

In this modern perspective, revision can be seen as a process within the process, thus a series of different stages belonging to it can be studied. In her article "A Comparison of Translation Quality Assessment Practices" (2000), Brunette carries out a study on the possible ways to assess, and so achieve, quality in translation. In her study, making use of 'pragmatic texts'[31] only, she identifies five methods[32] for quality assessment: a) *didactic*, or formative, *revision*; b) *translation quality assessment* (TQA); c) *quality control*; d) *pragmatic revision* and, ultimately, e) what she calls *fresh look*, better known as quality assurance. In Brunette's view, each method examines a given translation from a different perspectives and has a specific purpose. First, didactic revision consists of a careful comparison between the ST and the TT that aims at improving the translator's skills. Second, TQA is seen as a means for management purposes and is performed over a portion of the TT; in this case, productivity and quality are measured according to a predefined checklist. Likewise, quality control is also related to management techniques which is achieved through a series of requirements, norms and criteria established in advance that ensure the compliance of the TT, i.e. translation as a product.

[31] "Pragmatic texts, or general texts, are any contemporary non-literary documents intended for readers who shares certain common interests but not necessarily specialized knowledge" (Brunette, 2000. 170).

[32] For better explanations of method a) and d) *cf* 2.1.3.2 Classification based on the function of the revision.

The fourth method is usually performed by an individual reviser who is not in contact with the translator and whose purpose is that of improving the final version. Last, 'fresh look' or quality assurance considers the translation as an independent text that has to conform to target readers' expectations.

To sum up, Mossop's words come in handy once again to better define TQA and clarify the distinction between quality assessment, quality control and quality assurance. The author believes that "quality control and quality assessment are contributions to quality assurance" but "whereas quality control (i.e. '*checking*' or '*revising*') is text-oriented, quality assessment is business-oriented". Mossop also explains that the two phases together represent "the full set of procedures" (thus applied before, during and after the translation production process) used "to ensure that quality objectives important to client are being met". Differently from quality control, though, TQA "is not part of the translation production process [thus it] may take place *after* delivery". For Mossop, TQA "consists in identifying (but not correcting) problems in one or more randomly selected passages of a text in order to determine the degree to which it meets professional standards of the translation organisation" (Mossop 2001: 117-118). As for who can carry out quality control, Mossop and Gouadec agree on the fact that it can be done by all members of the translating organisation; in particular, Gouadec thinks that "translators, revisers, work providers or other operators"(Gouadec 2010: 76) are equally able to take on this task.

In conclusion, it must be said that this modern concept of TQA has led to new practical ways to assess it. One is *customer satisfaction/claims,* which can be measured through the use of direct questionnaires or potential complaint forms. Though, even this method has limits: on many occasions, customers are not able to assess quality for a number of reasons (i.e. the customer does not know the SL or s/he only considers timeliness/price) – thus it would be unethical to base quality on such a parameter. Also, *quality metrics* are often used to assess quality: in this case, more or less serious errors are associated with pre-determined marks and the overall mark divided for the number of words of the ST. Yet, as different clients may want different types of translations, a threshold value cannot be set in advance. As a matter of facts, even these two more recent ways to assess quality in translation cannot be considered objective and their results must be treated as such.

2.3 Revision as a process

This chapters focuses on revision seen as a process involving metacognition because, likewise translators, professional revisers should be able to select the right strategies and parameters in order to recognise problems and, eventually, sort them out.

2.3.1 A metacognitive process within a metacognitive process

When considering the process of revision, the superordinate process of translation must be certainly taken into account. Hansen defines the translation process as

> Everything that happens from the moment the translator starts working on the source text until he finishes the target text. It is all encompassing, from every pencil movement and keystroke, to dictionary use, the use of the internet and the entire mental process that is involved in taking a decision, solving a problem, or making a correction (Hansen 2010: 190).

In this view, translation and revision are both multidimensional activities (Roussey and Piolat; in House 2015: 232) that involve cognitive as well as metacognitive tasks; in fact, according to Robinson, "translation [and revision as its part] is always intelligent behaviour – even when it seems least conscious or analytical" (Robinson 1997: 50). Such intelligent behaviour is of great help to overcome indecision when in search for solutions because, quoting Angelone, like reading or writing, translating and revising deal with "a very significant problem solving component concerned with mediation between languages" (Angelone 2010: 17). All in all, in order to be able to process and transfer the information, translators and revisers draw on their knowledge in the first place, employs metacognition, use different strategies and strive consciously to avoid any possible negative effects. Although the translation and revision process are quite similar to one another, some differences can still be analysed: translators have a much more creative job which primarily aims at information transfer, in contrast, a reviser's work is less original work and mainly deals with problem solving.

2.3.1.1 Translation models

Referring to translation as a superimposed concept of revision, the different stages of the translation process must be looked into in order to better understand how the revision process works. Although different Translation Studies scholars have not agreed on a unique translation model, all of them work with similar, most often three-phased and transfer-centred, systems. To begin with, let's have an

overview[33] of the different models used by the various scholars:

a) 1. Orientation, 2) Drafting, 3) Revision (Alves and Goncalves; in House 1998: 200);
b) 1. Pre-drafting phase, 2. Drafting phase, 3) Post-drafting phase (Mossop 2001: 167);
c) 1. Source language comprehension, 2. Source-target language transfer of meaning, 3. Target language text production (Angelone 2010: 17);
d) 1. Approach, 2. Process, 3) Revision (Newmark 1998: 117);
e) 1. Understanding language, cultures, genres, the source text, and the sender's intentions and individual style, as well as the receiver's presuppositions and need in the communication situation, 2. Making decisions and producing coherent, meaningful, stylistically appropriate and well-functioning text, 3. Revising and evaluating one's own and sometimes other's translation products (Hansen 2010:193).

As can be seen, these models (whether primarily meant as such, or just statements of how the translation process is developed) offer an insight into the position of revision within the translation system. In fact, although calling it in different ways, all the above mentioned authors consider revision as the last phase in translation. Nevertheless, there are also linguists[34] who consider revision as an implied sub-process of translation, thus they do not explicitly incorporate it within their schemes.

2.3.1.2 Revision: different phases for problem solving

From the above models, it is obvious that revision occupies the final stage in the translation process, as such it constitutes the last chance to improve the TT and to minimise the risk of any adverse effect. Likewise translation, also revision can be divided into stages all focusing on how to recognise problems and, eventually, provide with satisfactory solutions.

Hayes *et al.* propose a triadic model consisting of:

1. Critical reading,
2. Solution searching,
3. Text transforming (Hayes et al. 1987; in Roussey and Piolat 2008: 776; in House 2015: 233).

And Angelone, who does not explicitly deal with revision but rather with uncertainty in translation problem solving, indicates the following phases:

1. Problem recognition,
2. Solution proposal,
3. Solution evaluation (Angelone, 2010: 17).

[33] *Cf* Sunkovà, 2011.
[34] For example, Bush says that the translation process consists of: "analysing the original, transferring the concepts to the other culture, and restructuring them to fit the framework of another language" (Bush, 2005).

For both, phase number 1, 2 and 3 must be followed in chronological order because disrupting the sequence usually causes dysfunction in the process itself. The three stages are self-explanatory: in 'problem recognition', or 'critical reading', the reviser obviously identifies all the problematic elements in the translation and tries to locate where changes are, justifiably, going to be made; second, 'solution proposal', or 'searching', consists of "strategy planning and/or application, […] 'trying out' potential solutions for the encountered problems" (Angelone 2010: 20); ultimately, in 'text transforming' or 'solution evaluation' the reviser decides on an appropriate equivalent from a series of candidate translation variants retrieved during the solution proposal stage and then evaluates it. After the third phase, the reviser should reach the so-called *tipping point* and move forward to another revision case. Indeed, following this sequence in the right way should result in an optimal revision and, therefore, in a good translation. In particular, Hansen employs a specific expression to indicate a good translation – that is, the "felicitous translation process". Restricting his view to revision, it can be said that a felicitous revision process is one in which the reviser has

> Cognitive awareness and control over their actions, so that they realise if they have found an in-context and communication-situation appropriate formulation, i.e. a formulation that fits in relation to source text, theme, text type, and register, and in relation to the presuppositions, expectations, and need of the target text receiver(s) – and what is important – where [revisers] are attentive and also realise if they have not yet found an appropriate solution and they still will have to work on the task (Hansen 2010: 191).

Nevertheless, as previously showed, there are more tasks to be carried out for a good revision as, for example, identifying prospective readers and the use they will make of the translation, familiarising oneself with the translation brief[35], deciding on revision strategy, identifying a type of mistakes to focus on (Mossop 2001: 151) and, most importantly, always keeping consistency in mind.

Even though it has been said that, theoretically, the phases described should follow one another, in practice Angelone observed different tendencies of professional and novice translators that confirm what already said by Alves and Gonçalves: experienced translators spend more time on the first phase and tend to follow the three phases in successive order; conversely, translation students devote more time to the final phase and "jump around" the three phases. In this latter case

> Bundles are disrupted and left apparently incomplete, there is a jumping back and forth between problem sequences because solution evaluation was not successfully completed, and, most tellingly, problem recognition appears to be weak" (Angelone 2010: 33-34).

[35] Revisers must always base their choice on the brief from the client which is "a set of specifications, mainly concerning the users (*who* will be reading the translation) and the use (*why* they will be reading it)" (Mossp, 2001: 110). It may also include "preferred terminology, page layout, and other matters" (*ibid*). The parts of the brief can be obtained in three ways: they are explicit, the clients states them orally ir in writing when the request for translation is made); unstated but already known from previous similar job; or elicited by the translation service, which takes the initiative of inquiring about this or that aspect of the brief (Mossop, 2001: 110-111).

What is similar for both categories of revisers is the use of metacognition, Angelone confirms that professionals as well as students are able to face problem solving through their "metacognitive knowledge (awareness of what one does and does not know) and metacognitive regulation (exerting active control over planning and evaluation processes)" (Angelone 2010: 25). Yet, there is a "significant difference in how that activity occur as, for the non-professionals, it is more refracted and unpredictable" (Angelone 2010: 34). Besides metacognition, professionals should take advantage of choosing smart strategies and right parameters while revising.

2.3.2 Strategies for revision

As in any other job, in revision following certain strategies and techniques can be very helpful. Although there is no generally acknowledged sets of strategies (Mossop 2001: 167), find below a list[36] of the most interesting techniques compiled from different sources:

a. *Leaving the translation overnight or longer*[37] – allowing at least a part of a day between composition and revision. (Chesterman 2008: 69) This is generally the most common and very helpful technique which, however, requires good time-management.

b. *Changing the medium* – revising on paper instead of on screen, recording the translation on a Dictaphone and then listening to it, reading it aloud, or listening to the translation being read by somebody else (Chesterman 2008: 71-72).

c. *Starting reading at some point in the middle of the document* – new insight is provided by breaking up the logic of the text and its sequential argument (Chesterman 2008: 71-72). In this way the expectancy effect can be decreased. Reading backwards can generate the same beneficial outcome, nevertheless, seeing words and phrases out of the actual context – which happens in this case – may be risky.

d. *Letting somebody else read the translation* (or imagining to be someone else when self-revising it). Consulting another person reduces subjectivity but also the feeling of anxiety (Madraso 1993: 34).

e. *Changing mental state* – for example by changing a pen, a chair, a place one works in. It is mainly useful in self-revision when switching from the role of translator to the one of reviser.

f. *Duplicate the final reader's experience by starting with the unilingual reading*, reading from beginning to the end (Mossop 2001: 153) and trying to forget everything one knows about the target text.

g. *Using different modes of reading* – Newmark presents three modes of reading which can be employed during revision. It is namely "(1) reading aloud; (2) 'phonic' reading, where, as in thinking, the sounds of what is read remain in the mind, and (3) normal 'efficient' rapid reading, where the sense 'eliminates' the sound. Especially during reading aloud, reviser/proofreader can note the sections that give the reader difficulty […] often they signal problems with the text:

[36] *Cf* Sunkovà 2011: 41-42.

[37] Leaving a delay helps minimising the negative familiarity effect (*cf* footnote 11) which is reversed to beneficial after a certain portion of time. The ideal time break to be allowed between composing and revising a translation lies somewhere in the time span of forty minutes to two weeks (Sunkovà 2011: 37).

sentence-structure problems, spelling problems, mechanical problems", and occasionally content problems (Madraso 1993: 33). Reviser should be able to switch between them if needed (e.g. dealing with a very difficult passage or when treating direct speech in a text, revising a text which is to be read out loud). (Newmark 1998:1).

h. *Reading larger units of text during comparative reading*, as reading too small units may cause lack of context. (Mossop 2001: 154-155)

i. *Inserting short breaks from time to time* – hard intellectual work is tiring and usually does not generate quality results if done without some amount of rest.

j. *Thinking negatively* – Pym claims that some problems in translation (and thus revision) can be solved by inverting the positive mode of thinking. "This means trying to define not the ideal function of the translation, but the probable 'failure conditions', the ways in which the translation would obviously not do its job" (Pym 2005: 75)

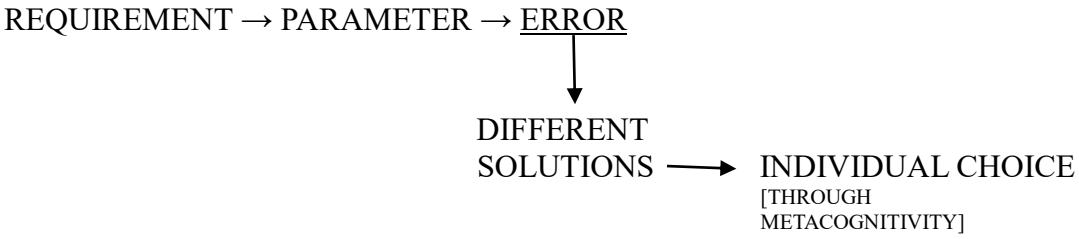
k. *Separating the checks* – in most cases there are more features to look for in a translated text (spelling, commas, numbers, accurate transfer, capitalizations, collocations, etc.) (Chesterman 2008: 71-72; Newmark 1998: 67,161). These checks can be carried out separately in order for the reviser to concentrate better on the particular error type.

As shown these are sorts of obvious advice given by scholars to help revisers in their job. As regards point k. in particular, however dull and time-consuming may be to proceed this way, separate scans at a macro- and micro-level can be very useful for determining different types of mistake. Better than separate checks, these are called revision parameters and the following chapter will be dedicated to the explanation of three different authors' individual taxonomies on such parameters.

2.3.3 How to check a text

In order to choose what features are going be analysed in a translated text, revisers must always keep in mind two things: the requirements imposed on a translation by the author of the ST and the prospective readers of the TT[38]. Once these two conditions have been determined, one is able to set the parameters to follow when revising in order to look for mistakes. So, requirements define the parameters on the basis of which the classification of mistakes is established.

[38] *Cf* footnote 40.



> E.g.: the translation should include the right terminology, thus the parameter is "correct terminology", and thus the mistake can potentially lie in incorrect usage of terms. It would be pointless to enumerate possible text requirements as they are numerous and change with individual revision tasks.

Obviously, not everyone agrees with such a scheme; for example, Hansen defines translation product parameters as the

> (a) Results of an evaluation of the final target text, which means primarily errors and good solutions; (b) categorizations of types of errors in the final product, and (c) the results of an evaluation of the subjects' revisions during the translation process (Hansen 2010: 195).

Differently from what has just been said in which requirements are stated prior to translation/revision, parameters are being observed during the act of translation/revision, and, ultimately, mistakes are (or are not) revealed; for her, parameters arise from evaluation or represent directly error types. For the purpose of this dissertation, the first scheme is of more use for the second, practical part of such Thesis.

2.3.3.1 Revision parameters

Given that Mossop's parameters, for their specificity and modernity, are those selected for the practical part of this dissertation, the following table should offer an insight into the chronological development of such criteria from three different perspectives. These different classifications provide more thorough and systematic theoretical approach to revision in general.

Horguelin and Hosington (1980)	Mossop (2001)[39]	Gouadec (2010)
I.ACCURACY – at a semantic level; II. CORRECT USAGE of the TL III. TRANSPARENCY – the TT must be idiomatic thus easily readable; IV. TONE – using the right register; V. AUDIENCE APPROPRIATENESS – the TT must be apt for the target culture.	A: I. MEANING TRANSFER a) Accuracy b) Completeness B: II. CONTENT a) Logic b) Facts III. LANGUAGE AND STYLE a) Smoothness b) Tailoring c) Sub-language d) Idiom e) Mechanics IV. PHYSICAL PRESENTATION a) Layout b) Typography c) Organization	I.MATERIAL QUALITY – completeness, compliance with specifications, layout; II.LANGUAGE (spelling, grammar, syntax, terminology, phraseology), style, register – correctness, homogeneity, compliance with applicable specifications; III.TECHNICAL-FACTUAL-SEMANTIC QUALITY CHECK – information, data, logical or other sequences – adequacy and compliance with applicable specifications; IV. TRANSFER – completeness, compliance with professional standards, specifications, readers' possible constraints. *This parameter does not have to be checked by the reviser if the translator has already checked it.

[39] For further explanation of Mossop's parameters *cf* Appendix A

From the three authors' point of view, by observing these criteria, a reviser is able to define potential error types in the TT. It is interesting to note that although Horguelin and Hosington as well as Mossop cite such parameters while discussing revision in particular, Gouadec's criteria are part of a more general discourse on "standard quality control". Due to that, a comparison between Horguelin and Hosington's and Mossop's individual taxonomies will be presented in the first place, and, secondly, Gouadec's scheme will be briefly discussed.

As evident, Horguelin and Hosington's model is an early version of Mossop's. In particular, the more recent model (2001) is way more specific as it contains Gouadec's parameters within wider groups. In both models the most important section is the first one which regards the semantic level; in fact "the first task of professional translators of non-literary texts is to guarantee that the translation means what the source means" (Mossop 2001: 126). This former section exemplifies from the very beginning how Mossop's wider scheme almost always include Horguelin and Hosington's criteria within it. So, Meaning Transfer is subdivided into Accuracy – corresponding with/to the more restricted denomination chosen by Horguelin and Hosington –, and Completeness. On the one hand, since accuracy has strictly to do with the message an accurate translation is not, by definition, a source-oriented or a close translation; an accurate translation is, in turn, one that conveys the same meaning as the TT. For Mossop, the most common kind of inaccuracies are mistranslations, either caused by incorrect understanding or syntactically ambiguous sentences. Yet, although these should be avoided, sometimes they could turn out to be useful – especially for political or ideological reasons[40] (Mossop 2001: 126-128). On the other hand, Completeness, which is not a synonym of explicitness, is governed by the NANS (No Additions, No Subtractions) principle that must be applied only to relevant meaning because small additions and subtractions are sometimes inevitable (Mossop, 2001: 128-129). As for the second parameter, it is quite different in the two schemes. Horguelin and Hosington encompass in Correct Usage the respect for the norms, the code and the register of the TL, including the avoidance of barbarisms and solecisms[41] as well as orthography or concordance errors. In contrast, Mossop's Content is more related to the text structure: the TT should be coherent and avoid nonsense, without containing "factual, logical or mathematical errors" (Mossop 2001: 132). Third, the pairs of authors believe Transparency must always be checked in terms of how good the

[40] For example, Mossop explains that although the 'Bibliothèque nationale du Quèbec' is sometimes calles the 'Bibliothèque nationale' it cannot be translated with the 'National Library' as it evokes the name of the National Library of Canada, based in Ottawa. Besides ambiguity, there is an ideological problem behind the choice to be made as the names reflect different understandings of the country: " the French reflects the belief in a Quebec nation which happens to be part of a federation called Canada; the English reflects the belief in a Canadian nation consisting of three territories and ten provinces, one of which is called Quebec" (Mossop 2001: 128). In this case, the translation 'Quebec provincial library' is a deliberate inaccuracy that one may have chosen to reflect the English-Canadian outlook, yet some might call it a minor form of censorship.

[41] *Cf* footnote 28

translator was at using the right idiomatic combinations in the TL. Once again, Mossop further develops this concept by including in his Language and Style parameter a series of sub-concepts which he considers necessary to achieve what his predecessors called Transparency, namely: smoothness, tailoring, sub-language, idiom and mechanics. First of all, a TT must be cohesive, indeed smoothness covers the area of style; second, the tailoring of a TT consists in making it suitable for its intended readers and for the use they will make of it by conforming the TT vocabulary, emotive tone and degree of formality/technicality to its readers' education level and knowledge of the subject matter. In comparison with Horguelin and Hosington's taxonomy, Mossop's Tailoring equals Audience Appropriateness. Third, Sub-language mainly includes the specific field of terminology; according to Mossop, one of the most effective way to find the right terminology and phraseology when dealing with technical texts is by consulting parallel texts on the same topic written by native speakers of the TL. Fourth, Mossop believes that Idiom is an important feature of the TT since "notoriously, translators – even good ones – are prone to producing, under the influence of the source text, unidiomatic combinations such as 'washed his teeth'" (Mossop 2001: 136), which is a perfectly grammatical yet unidiomatic[42] phrase. Lastly, Mechanics is a very specific aspect related to business companies in which a reviser's task is that of ensuring the TT respects the TL conventions specified for that particular job. It is interesting to underline that, in fourth position, Horguelin and Hosington make explicit a parameter Mossop leaves implicit – that is, Tone. For them, this is "the criterion by which the reviser will be able to judge the ability to keep the same level of diction as in the original (Hosington and Horguelin 1980: 24). Finally, one parameter that, for understandable reasons, is absent in Horguelin and Hosington is Physical Presentation, a criterion strictly related to the computerisation of the translation process for which the layout, typography and organisation must be consistent throughout the TT. To conclude, it must be remarked that Mossop's model is divided into two: one of the main difference between sections A) and B) in Mossop's scheme is that whereas Transfer parameters can only be checked in comparative reading, CLP parameters can be revised by means of unilingual reading.

As far as the most recent (2010) model is concerned, it can be said that this is a more modern and rearranged version of Mossop's parameters. Unlike Mossop for whom each section is subdivided in different criteria to be checked either individually or as a whole, in Gouadec's system each major group – material presentation, language, semantics and transfer – must respond to the same set of principles, in particular completeness and compliance with pre-set standards. Obviously, as it is the latest, it includes a part dedicated to the physical presentation of the TT, a more than ever important

[42] In English one would say 'cleaned' or 'brushed his teeth'.

parameter in now-a-days translations/revisions.

Once the parameters for revision have been set, a good reviser should also determine in advance the degree to which a TT is going to be revised. In professional work, time is a main issue thus full revision should be applied only to those "texts that merit it" (Mossop 2001:141); indeed, in case of ephemeral texts less-than-full revision may as well do. Let's now see what less-than-full revision actually means. As already said, parameters as well as their further subdivisions are not necessarily going to be checked as a whole and in order to determine what criteria is the best-suited one should consider a number of factors, such as: who will be reading the text and why; how, where and for how long the text will be read; in case of IR, the level of familiarity between reviser and translator's work; the conditions in which the translator worked, i.e. s/he was in a hurry; and the presence of more than one quality controller, e.g. two reviser or a reviser *and* a proof-reader. Depending on the whole of these factor, a reviser may decide what quality level s/he is aiming at. The level of overall quality can range from a bare minimum of merely "intelligible" to a maximum of "very well written"; passing through two intermediate levels of "fully accurate", from the semantic point of view, and "well written", thus accurate but also clear and quite well tailored and smoothed (Mossop 2001: 143-144). Whereas level "very well written" is hardly ever required, level "fully accurate" or even level "intelligible" are not infrequently accepted. Finally, when applying less-than-full revision, a reviser also has to decide if s/he is going to read the entire text or just parts of it and to want extent s/he is going to check the translation against the ST. According to Mossop, a reviser should employ full comparative reading only when checking for Accuracy and Completeness (Meaning Transfer), otherwise a unilingual reading would do unless there is a particularly questionable, i.e. illogical, passage that requires comparative checking. In contrast, "spot-check", "scan" and "glance" (Mossop 2001: 145) are ways of partial reading that can help revisers who work with ephemeral texts or who are just in a hurry.

2.3.3.2 Error types and consequent changes

As we saw, parameters are set in order to detect error types. One of the main feature of errors is that they are not distributed proportionally: their occurrence is rather uneven; therefore reviser must be ready to encounter five errors in one sentence or no error in five successive sentences. To begin with, this chapter should scrutinise the different nature of errors so that eventual changes and possible corrections can be made by the reviser to sort problems out.

Newmark states that "categorization of translation errors is firstly subject to one's personal theory of translation, and secondly to whether the errors occur in literary or non-literary texts"

(Newmark 1998:189). Disregarding the literariness of texts due to the focus of this Thesis, it is true that the categorizations can be, once again, subjective. In particular, when dealing with mistakes in translated texts, the particular language has to be considered. English is certainly prone to other kinds of mistakes than Italian. In the context of revision (or proofreading) spelling is mentioned very often, but it is mostly in connection to English. The Italian language is different as far as phonetics and orthography are concerned and spelling mistakes are not such a big issue. As seen, there are a lot of possible points of view on error types; the following paragraphs should give an overview of them.

Also, the treatment of errors is strictly subjective. Keeping in mind Delisle's subdivision between language and translation errors[43], Mossop states that "the errors which are peculiar to translational writing [are]: mistranslations, omissions, and the strange unidiomatic language interference (odd word combinations or sentence structures calqued from the source text)" (Mossop 2001: 21). In addition, apart from the different authors' exploitation of House's classification between "covertly erroneous" and "overtly erroneous errors"[44], one interesting thing to stress is that House's translation errors are further subdivided into:

> i. Not Translated;
> ii. Slight Change in Meaning;
> iii. Significant Change in Meaning;
> iv. Distortion of Meaning; and
> v. Breaches of the TL system (cases of ungrammaticality – clear breaches of the TL system; and cases of dubious acceptability - breaches of the norm of usage) (House 1977: 67).

Similarly, in his article "An Approach to Translation Quality Assessment" Geoffrey Kingscott makes a further classification of mistakes treating explicitly translation:

> a. Wrong Term,
> b. Syntactic Error,
> c. Omission,
> d. Word structure or agreement error,
> e. Misspelling,
> f. Punctuation Error,
> g. Miscellaneous Error (Kingscott; in Sunkovà 2001: 48).

As demonstrated, there are no two identical systems of error classification since it is usually accommodated to the particular text conditions. Nevertheless, the setting in advance of useful parameters help revisers determine error types and thus find a solution for such mistake resulting in an actual change in the translation.

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[43] *Cf* footnote 28.

[44] For more clarity, remember that covertly erroneous errors result from differences between the socio-cultural values and the two language systems, and overtly erroneous errors are mismatches (mistranslations, additions, and omissions) and faults of the target language.

Keeping in mind the above mentioned classifications of error types, it is easy to understand Dimitrova's classifications of the level on which a change occurs. Her study focuses on different types of changes, which are:

a. Syntactic,
b. morphological,
c. lexical,
d. content,
e. orthography and
f. other (Dimitrova 2005: 33)

In comparison, Fraigley and Witte based their revision changes classification on "whether new information is brought to the text or whether old information is removed in such a way that it cannot be recovered through drawing inferences", thus in terms of theme and rheme. They term such changes Text-Base Changes (that is, meaning changes) and divide them further according to the text level affected. The other category is called surface (or language) changes: it involves formal modifications which "do not bring new information to a text or remove old information" (Fraigley and Witte; in House 1997: 102).

REVISION CHANGES

Surface changes		Text base changes	
Formal changes	Meaning preserving changes	Microstructure changes	Macrostructure changes
Spelling, Tense, Number and Modality, Abbreviation, Punctuation, Format	Additions, Deletions, Substitutions, Permutations, Distributions, Consolidations	Additions, Deletions, Substitutions, Permutations, Distributions, Consolidations	Additions, Deletions, Substitutions, Permutations, Distributions, Consolidations

(Fraigley and Witte; in Sunkovà 2001: 73)

Apart from these individual classifications, it is important to note that not all changes made in terms of revision are corrections. Changes can be classified in different ways: in terms of their quality, with respect to the reviser's motivation or on the basis of the revision scope. As for the quality of change, it can be summarised as: improvements, unnecessary changes and deteriorations. Improvements consist in correcting a mistake; that is why in such case it is meaningful to identify the error type. Unnecessary changes, then, means making an amendment for which there is no sufficient reason: on

this occasion the translation is not altered as the revised text segment is of the same quality as it was before the change. Finally, deteriorations result in changes of the drafted text segment which represents a worse solution, therefore, revision turns out to be a wasteful exercise. Changes could also be classified with respect to the reviser's motivation, usually observed in experiments using talk-aloud protocols. In this context, the reason underlying a change can be: a) to achieve maximal faithfulness to the original (accurate meaning transfer, equivalent adjusting, stress, style); b) to make the target text conform with generally applied and officially established rules and principles (grammar, spelling, punctuation, idiomaticity); c) to ease reading and comprehension for the intended receivers (tailoring the language, smoothing, adjusting terminology). Lastly, revision changes may be assessed according to their scope, i.e. the size of a proportion of text which is affected (Mossop 2001: 152). The basic division is twofold: micro level changes, and macro level changes. If a mistake occurs at the micro level, it is, generally speaking, easier to spot as the mistake is part of a smaller text unit. Macro-level errors, in turn, may "involve issues of cohesion, coherence, genre conventions and so on." (Angelone 2010: 17-18).

As shown, changes do not necessarily imply corrections, but even when they do so there are certain regulations that should be followed. The following chapter is dedicated to Mossop's principles for correcting a translation.

2.3.3.3 Mossop's Principles for correcting

As a general rule, Mossop believes corrections must be always be kept to a minimum, yet there are cases in which they are necessary. His principles are divided into:

A) *Cases where one absolutely must make a change:*
"if you cannot understand the translation without consulting the source text" (Mossop 2001: 155), or "if you have to read a sentence twice to understand it correctly" (*ibid*).

B) *Minimize corrections*
Avoid perfectionism – since one could go on endlessly improving a text, there is no point in trying to make a target text literally perfect. Mossop considers perfection as a personal goal, instead, a business goal must be achieving acceptability (Mossop 2001: 156)
Don't retranslate – This is actually Mossop's first principle which should become a mantra among revisers, in his opinion revisers should only "work with the wording that is already there, [without] restart[ing] the drafting process by working from the source text and inventing a whole new translation of a sentence" (Mossop 2001: 156).
Beware of introducing errors (i.e. accuracy and completeness or language errors, deletion of too many or too few words while correcting) – it is important to observe all the elements participating in a change, so that they are all adjusted accordingly. When changing one mistake of a certain type, a mistake of another type can easily be introduced (Mossop 2001: 157).
Minimise correction of features you are not currently checking for – when performing separate checks, it is better to pay attention to the chosen feature and not to correct the other parameters, as errors can be missed or corrected inappropriately (Mossop 2001: 158).

Above all, Mossop believes that professional revisers should always admit that they failed to find a solution (Mossop 2001: 160) and in case no alternative is found just indicate the problem to the interested party.

3. Theory Part II: Medical texts and translation

This chapter deals with scientific writing and scientific translation as well. In particular, it investigates what the main features of medical texts are both in Italian and English and tries to give some advice for practical translation purposes.

3.1 Scientific and technical texts

3.1.1 Text types

Writing is done for different purposes and for different audiences; these various forms of writing are called text types. The many scholars have named such text types in a number of ways; Christopher Taylor (2009: 116-144), for example, considers a typology of six broad categories of texts:

1) Literary texts,
2) Technical texts,
3) Legal texts,
4) Commercial texts,
5) Journalistic texts, and
6) Advertising texts.

All these types share some common characteristics yet, for the purpose of this dissertation, only those concerning Technical texts are going to be further analysed in the following sub-chapters.

3.1.2 The Sci-Tech continuum

Although many textbooks conflate science and technology under the same text type category, putting them together is inappropriate. Nonetheless, as Sue Ellen Wright (2011: 243) stresses out, it is very difficult to draw boundaries between different concepts as the "Sci-Tech" domain actually represents a continuum[45] which, to some extent, could even lead to intertextuality "with legal-commercial or literary texts" (Wright 2011: 251).

Broadly speaking, the scientific method implies an empirical and often experimental approach to the observation of the natural world followed by the postulation of rules. Moreover,

> Science proper can be classified at a high abstract level into broad subject fields such as: mathematics,

[45] Find a table explaining the complexity of this continuum in Appendix B.

> astronomy, statistics, computer science, bioscience (zoology, botany, and medicine), chemistry, and earth sciences (geology and geography). (Wright 2011: 245)

In this view, medical texts, although important, occupy only one of the many sub-domains, each of which has "its own set of sub-topics and text classes distributed across the Sci-Tech spectrum" (Wright 2011: 243). The main distinguishing feature of each-subdomains is clearly related to the specific use of a Language for Specific Purposes (LSP), be it that of medicine, of physics or of computer science.

3.1.2.1 Language for Specific Purposes (LSP)

Cortelazzo defines LSP as

> Una varietà funzionale di una lingua naturale, dipendente da un settore di conoscenze o da una sfera di attività specialistici, utilizzata, nella sua interezza, da un gruppo di parlanti più ristretto della totalità dei parlanti la lingua di cui quella special è una varietà, per soddisfare i bisogni comunicativi (in primo luogo quelli referenziali) di quel settore specialistico; la lingua speciale è costituita a livello lessicale da una serie di corrispondenze aggiuntive rispetto a quelle generali e comuni della lingua e a quello morfosintattico da un insieme di selezioni, ricorrenti con regolarità, all'interno dell'inventario di forme disponibili nella lingua (Cortelazzo, 1994: 8)[46].

To begin with, the author speaks about two different dimensions that must be analysed when dealing with LSP, these are: the horizontal and the vertical one. From the horizontal perspective, different LSPs are subdivided in relation to their content, thus the language of economy can be opposed to that of medicine and, within the field of medicine itself, that of pathology is different from that of anatomy. On the other hand, the vertical dimension has to do with sociolinguistics, consequently it has been approached from the various authors in a number of ways. Cortelazzo (1994: 4), for example, believes that the vertical dimension is mainly connected to two social forms of language use, in particular one focusing on the needs of education and training and another with the aim of making researches available to the popular audience[47]. In contrast, Marella Magris (1992: 5) believes this dimension is related to the degree of precision of a language that, according to Hoffman (in Magris 1992: 5-7), can be calculated on the basis of four criteria further divided in five other levels:

1) Abstraction degree:

   A = maximum,

   B = very high,

[46] As Serianni (2005: 114) underlines this definition is suitable for "stronger" special languages as that of medicine, but could be problematic in the case of "weaker" special languages, such as that of football or politics.

[47] In Cortelazzo's words *insegnamento* and *divulgazione* (Cortelazzo 1994: 4).

C = high,

D = low,

E = very low;

2) External linguistic form:

A = elements and relations are conveyed through artificial symbols,

B = artificial symbols for elements and natural language for relations,

C = natural language with a high percentage of specific terminology and very rigid syntax;

D = natural language with a high percentage of specific terminology but with quite a free use of syntax;

E = natural language with some specific terms and with quite a free use of syntax.

3) Contexts in which such linguistic levels are used:

A = theoretical sciences,

B = experimental sciences,

C = applied sciences,

D = material production,

E = usage;

4) Participants:

A = scientist ←→ scientist,

B = scientist (technician) ←→ scientist (technician) ←→ helpers training in the scientific-technical field,

C = scientist ←→ Scientific Director of the material production,

D = Scientific Director of the material production ←→ specialist worker,

E = material production representative ←→ salesman ←→ end user.

These criteria are also applicable to medical text, even though criterion no. 4) should be slightly readapted in:

A = researcher ←→ researcher,

B = researcher ←→ specialist ←→ specialist,

C = specialist ←→ doctor ←→ doctor,

D = specialist/doctor ←→ pharmaceutical operator/healthcare professional,

E = specialist/doctor ←→ patient ←→ patient.

As it will be shown in the practical section of this dissertation, analysing this characteristics beforehand comes in handy to better understand the text and thus to use the right translation approach.

3.1.3 Medical writing usage register[48]

As Wright underlines, the term 'register' is polysemic as it can sometimes be "equated with the special language per se as 'an open-ended set of varieties (or styles) of language typical of occupational fields, such as […] medical language, technical language, etc.' (Trosborg 1997: 5)" (Wright, 2011: 246) or, more commonly, with "field of discourse" (Quirk, 1985 in Wright, 2011: 246) or level of formality: "very formal, formal, neutral, informal, very informal" (Wikipedia 'Register'; in Wright, 2011: 246). However, a more exhaustive definition is provided by the standard ISO 12620:1999 which defines

> The data category /register/ as a 'classification indicating the relative level of language individually assigned to a lexeme or term or to a text type', with the permissible values: *neutral*, *technical*, *in-house*, *bench-level*, *slang*, *vulgar*, sometimes expanded to include *formal*, *colloquial*, etc. (Wright 2011: 246).

The reason for which register is so important in medical writing is that "difference in usage register can trigger variations in terminology and style" (Wright 2011: 246). In fact, a given concept may be designated by a whole range of different terms reflecting different registers within the same special language depending on both situational factors and the projected target audience. As far as "situational diversities" (Sager and Nkwent-Azeh 1989: 19; in Wright 2011: 246) are concerned, these can be sub-categorised to meet end-user expectations depending on the roles of participant in a given speech act. These are:

- Peer-to-peer scientific communication (professional journals, books, scholarly papers, etc.);
- scientist to skilled practitioner (oral and written communications, frequently in instructive mode);
- skilled practitioner addressing technicians (e.g. engineers to specialized technical personnel; medical doctors to medical technicians);
- specialists to lay people (oral and written explanations, evaluations, sometimes in instructive or persuasive mode, e.g. medical brochures on how to lose weight);
- science writers addressing the educated, interested lay public (popular science articles, web pages with high level of information content);
- specialists addressing laity who have issues involving education, dialect, ethnicity, personal life experience (healthcare providers treating less educated, unsophistcated patients who may harbour suspicions about modern medical practice);
- laity and end users discussing Sci-Tech topics(medical issues, technological products, software, etc.) among themselves, possibly reflecting traditional prejudices. (Wright 2011: 246-247).

An interesting point about medical writing is that medical text readers have changed a lot, especially during the last century: nowadays medical writing can, in fact, be directed to professionals as well as the non-specialist, general public, as a consequence, clinical study protocols/reports or patient

[48] *Cf* 2.2.2.2 The functional-pragmatic model: Juliane House.

informed consent forms are part of medical writing in the same way as sales literature for newly launched drugs, medical journal articles or popular science magazines. In this light, it can be said that the audience does always affect the target term choice and so "tummy, stomach, gut, belly, and even few others might occur appropriately in different situational contexts" (Wright 2011: 247). Thus, the myth of mononymy and monosemy[49] professed by many is only an ideal correspondence that must be applied exclusively in "narrow contexts, such as standards and patents, for consistency within a given document, or when using rigidly defined controlled languages (Controlled English 2007, NAMAHN 2001)" (Wright 2011: 247).

3.1.3.1 Scientific text functions

Depending on the purpose and thus on the prospective readers of scientific texts, different text functions and text varieties[50] (genre) can also be detected. As regards text functions, rough consensus categories include:

- Informative: factual texts focused on content; dubbed 'referential' by Nord because they refer to real-world object;
- expressive: often literary texts, but also associated by Sager with evaluative texts, thus linking them to Sci-Tech;
- appellative, persuasive: including advertising, as well as directive, instructional texts;
- phatic: usually embedded fragmentary element that employ metacommunicative rapport between the author or voice of the text and the receiver. (Wright 2011: 248)

In the Sci-Tech continuum, and especially in medical writing, informative texts are definitely the predominant group, however, "some popular writers of scientific texts (e.g. Rachel Carson, Steven Pinker) interleave pure science with persuasive or even phatic elements" (Wright, 2011: 248).

[49] *Cf* the impossibility of synonymy within the field of special languages, at p. 51 of this dissertation. On this same subject, Newmark states that "the medical language register in European languages is a jungle of synonyms – different words being applied to the same condition, depending sometimes on whether the point of view is natomical, clinical or pathological, and sometimes on when and where the expression is used" (Newmark, 1979: 1405). Synonymy is clearly exemplified by Magris (1992: 61), who include in her work a list of the synonyms related to the term *myelofibrosis*:

> English > osteosclerotic anaemia, chronic non leukaemia myelosis, leucoerythroblastosis, leucoerythrobastic anaemia, myelonecrosis, megacaryocytic myelosis with osteosclerosis, myeloid metaplasia, non leukaemic myeloid splenomegaly, myeloid megacaryocytic hepatosplenomegaly, atypical myelosis, myelosclerosis, splenomegaly with sclerosis of the bone marrow.
> Italian > *anemia leucoeritroblastica tipo Vangham, anemia osteosclerotica, eritroblastosi cronica dell'adulto, malattia di Hueck-Assmann, metaplasia agnogenica mieloide, mielosclerosi, mielosi splenica aleucemica, osteomieloreticolosi, osteomielosclerosi, splenomegalia mieloide dell'adulto, splenomegalia mieloide megacariocitica.*

[50] *Cf* Appendix B

3.1.3.2 Text structures

Different registers, and thus different audiences, also determine different text structures. Nevertheless, the presence – at least at the macro-level – of pre-existing schemes makes the author's (the reader's and the translator's) work much easier. For example, all doctors are familiar with the typical structure of a medical trial papers:

> Title and author(s) – including their professional titles and the academic institution they belong to
> Brief abstract
> Introduction
> Objectives
> Materials and Methods
> Discussion and Results
> Conclusion (Magris 1992: 72 and Taylor 2009: 125)

Yet, such structure can vary greatly depending on the purpose of the text. In case of diagnostic reports, for example, such a scheme consists of two different parts: that related to the anamnesis (familiar anamnesis, physiologic personal anamnesis, pathologic personal anamnesis of the past and of the present) and that related to the objective analysis (divided into general and specific objective analysis, in which the latter is further divided into: inspection, palpation, percussion and auscultation). Another example of structural change is represented by drug leaflets, which are divided into: indications, contraindications, collateral effects, interactions with other drugs, posology, methods of use and properties (Magris 1992: 73).

3.1.4 Medical writing

Broadly speaking, medical writing deals with the creation of well-structured, standards-compliant documents that effectively and clearly describe research results, product use, and medical information of all sorts. As a consequence, concision, objectivity and neutrality are major key-words in such texts; the following sub-chapters will investigate how such characteristics are evident from the linguistic point of view.

3.1.4.1 The importance of lexis in LSP

Likewise many other scholars, Cortelazzo believes the striking role lexis covers in LSP is due to the special needs required by specialised languages. Even from the quantitative point of view, comparing the number of noun occurrences in texts written with or without LSP, it can easily be seen that the

former group has a much higher lexical frequency; thus, in LSPs lexis definitely occupies the most important level of the hierarchical structure. Such an importance is evident also from the ISO 1087-1: 2000 standard definition of a special language, that is:

> A language used in a subject field and characterized by the use of specific linguistic means of expression, [which] always include(s) subject-specific terminology and phraseology and also may cover stylistic or syntactic features. (Wright 2011: 245)

As clear, a special language requires a set of specific words identified as the 'terminology' of that language. The use of terms in LSP is much more complex than that of words in general language because the former group serves the purpose of representing a very specific concept. Intuitively, as Cortelazzo (1994: 8) states, there should only be a one-to-one relation between meaning and signifier of a certain term; yet, as it was earlier discussed, this is only an ideal correspondence. Something that makes the use of LSP lexis even more complex is that, although the vocabulary of special languages is documented in specialized lexicography and terminological dictionaries and supported today by electronic terminology-management systems, it is not limited to vocabulary: "special language terminology is embedded in general language, and linguistic communities have their own expectations regarding conventions and constraints associated with specific text varieties" (Wright 2011: 246).

The right term choice has a fundamental importance in scientific texts and, especially, in the medical field. Lexis in medicine is not just important but vital, making a mistake could even result in death. Luca Serianni believes that

> In nessun'altra scienza biologica le parole hanno avuto tanta importanza quanto nella medicina: un'importanza che può essere calcolata grossolanamente guardando alla mole dei lemmi medici ospitati in un vocabolario dell'uso, non solo italiano, e che è dovuta a varie ragioni. Prima di tutto alle caratteristiche intrinseche di una scienza sperimentale, soggetta a evolvere a un ritmo sempre più rapido dalla metà dell'Ottocento in avanti (Serianni 2005: 7).

As Serianni points out, medical terminology has deeply changed in the last couple of centuries as did the figure of the doctor itself: whereas an 18th c. doctor would have been able to easily read a text written in Latin – at the time, the international language of science –, a doctor today must have a good command of English – today the hegemonic language of science. Nevertheless, the most interesting change is due to the different types of readers modern medical texts may be directed to: as already discussed, medical writing is no more limited to doctors neither to educated laymen only, but also include the general public[51]. While texts dealing with general medicine tend to use familiar

[51] As in case of drug leaflets or healthcare programmes.

terminology, more specialised material contains terms that are often unfamiliar to medical specialists in other fields. For example,

> There are many paramedical areas such as quality control, hospital management and health policy which use an accessible language code, and publications for the general reader […] use relatively straightforward language. There are, however, impenetrable concentrations of technical detail such as abstracts for conference papers on highly specialised areas of medicine which test translation techniques to the limits (Taylor, 2009: 258).

This creates a dichotomy at the linguistic level in that a simplified language accessible to students or non-specialists in general is opposed to an over-specialised language that can result to be incomprehensible[52] even among doctors who do not work in that specific sector.

Another main characteristic of medical language is that, compared to that of other sciences, it is ever-expanding. As a demonstration of this, Serianni counts the medical terms appearing in the *Dizionario Italiano Sabatini-Coletti* and discovers it registers 5555 words (corresponding to 5.45% of the overall entries, quite a significant datum if the overall percentage of scientific terms belonging to all the other sciences together – namely physics, math, geometry, statistics, biology and chemistry – only reaches 5.82%). Serianni (2005: 116) explains such a supremacy at a quantitative level with three main reasons: the first one relates to the fact medical terminology often resorts to the use of Greek formations, in contrast to other sciences, such as physics, that make greater use of the general language, e.g. *lavoro* > 'work' or *forza* > 'force'; the second relies on the notion of individualism which has always been linked to the medical profession, hence each doctor yearns for immortality – something that can only be achieved through a permanent, linguistic sign[53]; lastly, the complexity of anatomy itself determines the final reason for such a significant number of terms belonging to the medical special language.

3.1.4.1.1 Term formation

Although Cortelazzo works with Italian, it can be said that his discoveries could be applied to English as well. In general, he believes that the term formation process is similar to that of word, therefore he identifies a number of ways in which a new term may first appear in a scientific context. Terms created

[52] Zannini *et al.* call such a complex language "*medicalese*" (Zannini *et al*., 1991: 128).

[53] For example, through eponyms or the creation of neologisms. As for the creation of neologism, in his book Serianni (118: 2005) makes a list of some of the doctors who coined a new word in the medical field; since no Italian doctor appears in such list, as a matter of fact this list confirms the very little influence Italy had throughout the last three centuries in the medical field.

afresh are quite rare, instead, loan or calqued terms from foreign or archaic languages are much more common. For the creation of technical terms – also known as technicisms – Cortelazzo identifies four main processes:

1) the semantic reassessment of an already existing word (as it was the case of 'revision' in Translation Studies);
   1a) the semantic reassessment of a term taken from a different LSP;
2) neo-formations through derivation or composition[54];
3) the derivation of eponym phrases, as in the case of calling a unit of measurement with the name of the person who invented it, like in 'newton' (Cortelazzo 1994:12-15); and
4) the use of acronyms, like 'LASER' that stands for 'Light Amplification by Stimulated Emission of Radiation' (it must be noted that, as Cortelazzo underlines, in Italian such term is perceived more as a loan word from English than as an acronym).

The same term formation processes are obviously applied to medical terms as well. In her work, Magris (1992: 35-43) gives good examples that help us explain more in depth how these processes actually work in medical terminology. To begin with, given that medical terms more often resort to archaic languages, the first process concerning the creation of terms taken from the general language is far more applicable to other sciences (e.g. the use in physics of terms like 'power' or 'force') rather than to medicine. As for the creation of terms borrowed from other LSPs, an example in medicine is the use of the term 'collapse' which was previously used in astrophysics with the meaning of 'rapid contraction of stars due to an increase of gravitational forces over pressure ones'. Second, medical terms are mainly formed through two sub-processes: derivation and composition. The former consists of creating a new term by using morphemes taken from the general language and/or affixes deriving from archaic languages[55] (interestingly, affixation is the most frequently used in medicine). In turn, the latter is the creation of terms or even compound terms on the basis of shared, archaic linguistic roots (e.g. *cardio-vascolare* or *laparo-toraco-frenotomia* (Serianni 2005: 206)). Third, the formation of eponyms is much more frequent in medicine than in other sciences. Eponyms can be created depending on the name of the person who invented a particular instrument (e.g. *bisturi di Blair-Brown*), who discovered an anatomical part (e.g. *corpuscoli di Golgi* > 'Golgi tendon organ'), or who first detected a particular desease (e.g. *morbo di Basedow-Graves* > 'Graves' disease). In addition, the creation of eponyms can have mythological (e.g. *tendine di Achille* > 'Achillis tendon' or *morfina* > 'morphine' from Morpheus) or literary (*Sifilide* > 'syphilis', from Fracastoro's epic poem *Syphilis*) references. In translation, eponyms represent a problem when there is no equivalent in the TL. For

[54] Please find in Appendix C a list of Italian and English equivalences of Greek and Latin medical affixes and roots.
[55] E.g. the Greek prefix haem- for 'blood' + the general language morpheme –ist to create the term 'haematologist'.

example Magris (1992: 54) explains how the German *Substanz von Landsteiner und Wiener* must necessarily be translated with '*sostanza di tipo D*'. Another problematic translation case can be studied when eponyms are turned into adjectives: if 'harvesian system' is kept in Italian '*sistema harvesiano*' as it is in English, 'Gaussian points' must, in turn, be translated with '*punti di Gauss*' (Magris, 1992: 54). Since there are no standard rules for the translation of adjectivised eponyms, when in doubt one should always consult the available literature or, at least, a specialist. Lastly, term formation through acronyms definitely is a much more recent phenomenon. On the subject, it should be said that whereas Italian often borrows acronyms directly from English (e.g the acronym HIV = 'Human Immunodeciency Virus' is commonly used in Italian), in some other cases it employs their Italian translation (e.g. the acronym TAC '*tomografia assiale computerizzata*' is used for TC scan). Interestingly, the use of Italian translations for acronyms that are usually borrowed from English (e.g. using *IAM* '*Inseminazione Artificiale con seme del marito*' – an acronym frequently used in the '50s – instead of AIH 'Artificial Insemination by Husband') may reflect a conservative and, to some extents, even reactionary attitude (Magris 1992: 55). In translation, the use of acronym may present a problem when scientists create their own acronyms – a very common practice in English texts – which have not yet been standardized. In such cases, the translator may decide to: 1) keep the English acronym after having made it explicit by including the translation into parentheses; 2) create a new Italian acronym on the basis of its Italian translation, or 3) repeat each time the translated acronym in full – not a very synthetic technique (Magris 1992: 56).

3.1.4.1.2 Specific (sT[56]) and Collateral Terms (CT)

As explicit from the discussion above, LSP makes great use of technicisms and so does the medical language. Serianni (2005: 121) goes deeper into this subject and, as regards medical terminology, distinguishes between "specific" and "collateral" terms (Serianni 2005: 121-158). From the synchronic point of view, specific terms (sT) can be studied making use of two different kinds of criteria: the semantic and the formal one. From the former one, technical words can be related to:

1) anatomy (*ulna* > 'ulna'),
2) physiology (*metabolismo* > 'metabolism'),
3) pathology (*glaucoma* > 'glaucoma'),
4) medical equipment (*radiologia* > 'radiology'), and
5) sciences related with medicine (psychology: *narcisismo* > 'narcisism').

[56] Not to be confused with ST (Source Text)

As for the latter, the classification of technical terms depends on their linguistic form, thus they can be subdivided in:

1) non-analysable mono-rheme technicisms, without checking their etymology before-hand these are quite difficult to understand one-word terms (*epilessia* > 'epylepsy') [57];

2) analysable, as they are made of well-known affixes, mono-rheme technicisms (*mastite* > 'mastitis')[58];

3) poly-rheme technicisms working as just one unit (*afta epizootica* > 'foot-/hoof-and-mouth disease').

Not only is terminology constituted by terms, but also by parts of speech (nouns, adjectives, verbs, etc.), and special combinations of these[59] that are used in order to employ an higher register opposed to that of general language: according to Serianni (2005: 127), these are called "collateral terms" (CT). Whereas sTs can be known also by the general public, CTs represent the very trademark of medical writing as exclusively those specialised in the sector are able to use them properly[60]. Although CTs can also affect the micro-syntax[61], the most important CTs are the lexical. In Italian, one example of lexical CT is represented by the verb *accusare*:

> *Accusare 'manifestare un sintomo, detto del paziente': "il paziente non accusa disturbi riferibili all'azione del virus"*(Serianni 2005: 141)

A concept that the laypublic could easily express with '*provare*'.

[57] From Greek *ἐεπιληψία*, "sono preso, sono colpito da qualcosa" (www.wikipedya.it).

[58] Please check Appendix B for more clarification on the meaning of the prefix *mast-* + the suffix *-ite* and their correspondent English translation.

[59] For instance, the use of adjectives of relation as in *fosse nasali* or in the structures: *evento* + adj (*eventi cardiovascolari acuti*), *in sede* + adj. (*il dolore insorge in sede retrosternale o epigastrica*), *su base* + adj. (*una diagnosi su base anamnestica*), *di tipo* + adj. (*una patologia di tipo degenerativo*), *rischio* + adj. (*fattori di rischio coronarico*); and that of prepositional clauses (e.g. the modal preposition *a*: *eventi clinici a carattere aterosclerotico*; the causal preposition *da*: *polmonite da streptococco*; *a carico di* followed by an anatomycal part *forme allergiche a carico dell'apparato respiratorio*, *a livello* followed by *di/del* + an anatomycal part *il ferro alimentare viene assorbito a livello del duodeno*; *in presenza di* meaning 'with' but emphasising a pathological interest *flussi mestruali abbondanti possono aversi in presenza di fibromi all'utero*; *in assenza di* meaning 'without' *gravi ostacolialle arterie coronarie in assenza di manifestazioni anginose o elettrocardiografiche*) (Serianni 2005: 131-138).

[60] Obviously, this implies that CTs can be substituted with other, more general words without affecting the meaning of the text.

[61] In Italian, an example is the omission of the article in front of: a) Latin names of bacteria and viruses (*Serratia marcescens è stata considerata l'agente causale di …*), b) registerd names of drugs (*Supradyn va assunto…*) (Serianni 2005: 133-134).

3.1.4.1.3 Etymology of sTs

In his article "A layman's view of medical translation", Peter Newmark says that:

> It is notorious […] that medical and pharmaceutical language is the most incorrect and redundant, as well as the oldest, of all the scientific languages. The words used are the deposit of man's knowledge and superstition throughout the age, with many hybrids built up opaquely from Greek (particularly pathology) and Latin (anatomy). (Newmark 1979: 1405).

Both in Italian and in English, Graecisms and Latinisms are the most common technical terms of the medical language; yet some terms deriving from Arabic can still be encountered.

Differently from CTs that are more recent formations, sTs are quite old. As a consequence, many sTs draw directly on Greek[62] (e.g. Gr. *phlebotomìa* > It. f*lebotomia* > En. 'phlebotomy') and Latin[63] (Lat. *angor* > It. *angina* > En. *angina*)[64]. In particular, estimates reveal that 75 % of English scientific terms derive from Greek or Latin; such percentage plummets to 50% in general language. Given that Italian directly derives from Latin, such prevalence is much more evident in English. One of the main difference between English and Italian in the use of Graecisms and Latinisms is that whereas in the former case such technical terms are often Italianised (with the exception of the *Nomina anatomica* and the names of parasites (Magris, 1992: 23-24)), English has adopted their original form[65]: keeping the Greek or Latin form in Italian would actually produce an archaic and not very acceptable style and a very high degree of formality. Another etymology of Italian as well as English medical terms is the Arabic one, yet those that still survive are very few (e.g. Ar. *safin* > It. *vena safena* > En. 'saphenous vein').

Leaving aside the past for the present, it must be said that the hegemonic role English has today in scientific writing is undiscussable, especially in Italy[66] where much of medical terminology has been literally imported from English.

3.1.5 English as the hegemonic language of science

It is widely acknowledged that English today is the predominant language for leading-edge science[67].

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[62] Nevertheless, the vast majority of Grecisms are modern formation established on the model of classic Greek derivations (Serianni 2005: 169).

[63] At this stage, it is interesting to note that whereas Greeks produced much of the well-known medical literature, Latins mainly translated the Greeks' works (Serianni 2005: 170).

[64] Given that these two classical languages are governed by very different accentuation rules, where in doubt Italian often prefers the Latin.

[65] An exception is represented by the En. 'in place' which is rendered with the It. *in situ*.

[66] Cf. 3.1.3 English as the hegemonic language of science

[67] According to Magris (1992: 57), 37% of medical texts are written in English. In addition, an UNESCO estimate has

Not only are articles originally published in English, but a relative low percentage of these articles is translated into other languages because worldwide, scientists have adopted English as their working language, both in written and spoken form.

The hegemonic role of English affects different languages in a number of ways:

> In some smaller languages (Dutch, Scandinavian languages, etc.), English is increasingly the language of university science instruction or even at advanced secondary levels, both in order to prepare students for English-speaking professional environments but also because it is often uneconomical to publish state-of-the-art textbooks for a relatively limited readership. Languages that do not offer a full spectrum of text varieties may lack of the highest scientific register of technical terminology (Wright 2011: 257).

This means that new knowledge in these languages first becomes available at the level of popular science both in spoken and written discourse. Yet, it must be reminded that popular-science writers working in languages other than English act as translators of a sort, in that they base their work on English text but write in TL.

> Thus knowledge transfer from pure to popular science involves hetero-functional translation to a lower level of special-language communication (from the expert to the educated lay level). [As a consequence,] English borrowings and loan translations in many cases supplant many native forms[68], and synonymy and unmotivated terms may proliferate (Wright 2011:257).

The following sub-chapter will further analyse how such English borrowings and loan translations actually work in Italian.

3.1.5.1 English influences on Italian

From the lexical point of view, Serianni (2005: 186-188) singles out five different types of lexical Anglicisms present in Italian, these are:

1. generic or occasional Anglicisms – they can be easily substituted with Italian terms, such as 'screening' > *indagine, esame*; 'borderline' > *ai limiti della norma*; 'patch' > *innesto*; 'turnover' > *ricambio*;
2. Anglicisms connected to pathology – e.g. 'shock' *emorragico*, 'stress' *fisici patologici*;
3. Anglicisms linked to surgery – e.g. 'stent' *coronarico*, 'bypass' *aortocoronarico*, 'shunt' *protosistemici*;
4. Anglicisms associated to diagnosis – e.g. 'wash-out' *dell'azoto*, 'breath test', 'follow-

determined that 2.650.000 scientists actually read in English.

[68] This is why at p.124 of his book Serianni indicates that *cefalea a grappolo*, *polvere di casa* or *il morbo della mucca pazza* are commonly called in Italian 'cluster headache', 'home dust' or 'mad cow desease'.

up', 'clearance';

5. Anglicisms related to biology – e.g. *recettore* 'scavenger', *teoria dell'*'underfilling/overfilling'.

Using a different nomenclature, besides the presence of integral Anglicisms (e.g. 'pacemaker', 'timing'), Magris (1992: 57) signals also that of calques (e.g. 'after-load' = *postcarico*) and hybrids (*colorazione post embedding*, *cross-reagire*).

As many would say, such a preponderant English 'contribution' may affect in various ways the actual purity, and to some extent, even the clarity of Italian; yet, this is a process which has hit our language from many perspectives, not only in the medical field. As regards the medical sector, though, such an influence can be studied not only at the lexical level but also at the morpho-syntactic one.

From the morpho-syntactic point of view, English has come to influence even the Italian word order, thus Serianni presents some cases in which the rheme-theme sequence happens to be adapted from English. As a rule, Italian requires the inversion of the rhematic subject with the predicate (that is why the answer to the question "*Chi vuol venire?*" must be *"Vengo io"* and not "**Io vengo*"), yet Serianni offers three examples in which the right sequence is not respected:

> "*Necrosi settale e infiltrazioni emorragiche di scarsa entità sono usualmente presenti*",
> "*I seguenti effetti indesiderati sono stati descritti durante l'uso di PRADIF*",
> "*Eritama e moderata secchezza e desquamazione della pelle sono stati osservati in una piccola percentuale di casi*" (Serianni 2005: 185).

As clear, medical Italian language is modelled upon English both at the lexical and morpho-syntactic level; nevertheless, in medical texts Italian and English grammar alike are governed by more general rules which are going to be discovered in the following sub-chapters.

3.1.6 Grammar in medical writing

Even though

> The grammar of technical writing does not differ very sharply from that of other kinds of writing [as] they all share the common grammar of the language, […] there are some striking peculiarities and tendencies in the morphology and syntax of technical prose (Pinchuck 1977: 19).

Likewise English LSP texts, also Italian ones are characterised by an impersonal, quite concise tone (Cortelazzo 1994: 17-18) – two qualities that are obviously reflected also from the grammatical point of view. The strengthening of nouns and the weakening of verbs are the two major features related to LSP grammar identified by Cortelazzo. According to him, these correlated processes can be studied

in:

a) The reduction of verb tenses, forms and persons to the third person of the present indicative[69] (even in passive[70] or impersonal forms);
b) the prevalence of nominal forms of verbs;
c) the high frequency of nominalisation; and
d) the use of quite a limited set of generic, polyvalent verbs.

Since science should maintain an objectivity that "precludes the giving of opinions in the first person or overt demonstrations of emotion" (Taylor 2009: 121), all these grammatical choices are made in scientific writing to increase the level of formality, neutrality and impersonality within a text. As far as verbs are concerned, Sager *et al*. (1980: 206; in Magris 1992: 69) relates the choice of using the present tense to the fact it serves the purpose of describing:

-A general truth,
-repeated actions,
-definitions,
-descriptions,
-observations,
-material and substance properties.

Moreover, the choice of employing the indicative mode is due to the fact scientific writing deals with affirmations on real facts (Magris 1992: 69). As for passives, these are verbal forms commonly used in pure science writing to report reproducible results. Although Pinchuck states that "the great frequency in the use of passive in technical English comes readily to mind" (Pinchuck 1977: 19), Wright (2011: 246) highlights that, likewise in Italian, such forms are giving way also in English to a prescriptive demand for active voice in popular science and technical writing. Above all, though, nominalisation has become the very distinguishing feature of such special language and the following sub-.chapter will explain how this process, often accompanied by the use of copular verbs, works in medical writing.

[69] Please note that in drug leaflets, also the imperative mode is commonly used (Magris 1992: 69).

[70] As far as English is concerned, an interesting difference between British and American English is that "where British English favours passive voice and nominalised verbs (Sager et al. 1980, Ahmad and Rogers 2001), American English, particularly in technical writing, prefers semantically expressive verbs (e.g. manipulate, fabricate) as opposed to sequestring verbal action in nominalisìzed forms (manipulation, fabrication) (Byrne 2006, Delisle *et al*. 1999)" (Wright 2011: 246)

3.1.6.1 Nominalisation in scientific writing

The grammar of scientific language may intuitively be considered complex by the layman, yet the language of "everyday communication and non-technical texts is often more grammatically intricate" (Taylor 2009: 121). In fact, the obscure, specialised and, more importantly, unfamiliar vocabulary is what that makes medical texts look so complex, In Taylor's words:

> The nominalised nature of the [medical] discourse creates its specificity and its relative impenetrability. As is pointed out in Quirk et al. (1985: 1351), technical language has a higher proportion of complex noun phrases, a lower proportion of names and pronouns and fewer simple noun phrases as clauses subject. (Taylor 2008: 123)

Broadly speaking,

> The mechanism by which English creates its own particular form of noun-only strings to form extended nominal groups provides scientific language with compact, meaning-dense nominalizations that form the stepping stones of scientific discourse. (Taylor 2009: 124)

In other words, nominalisation particularly distinguishes technical grammar (and written language as a whole) from the grammar of the spoken language, often on the basis of what Halliday (1994: 353; in Taylor 2009: 123) calls "grammatical metaphor".

> This starts from the premise that the verb system provides the lexis to describe processes, action or states:
> The most common cause of engine trouble is contaminants in the system.
> Technical texts, however, often nominalise processes and actions, so that the above example might be expressed as:
> System contamination-based engine trouble is … (Taylor 2009: 123)

Consequently, it must be said that the greater nominal content of technical writing inevitably means that the lexical density of such texts is higher than in the more prevalently verbal non-technical texts. Statistics demonstrate that, in medical texts, nouns represent 44%[71] of grammatical forms; contrastingly, in general language such a percentage plummets to 28% (Magris 1992: 67). Such a prevalence of nouns[72] obviously responds to the need for absolute precision required by medicine: contrary to verbs, nouns can be qualified through measurement and exact values. Although nominalisation is much more evident in English (Magris 1992: 68), it is present also in Italian, however, the two languages use different structures to express it. In Italian, the most frequent noun

[71] Counting nouns and adjectives together such a percentage gets even to 60% (Magris 1992: 67)
[72] It should be underlined that 72.9% of nouns appear in their singular form, while only 27.1% of them are in plural (Hoffman 1985: 112; in Magris 1992: 67).

phrase string is represented by 'noun + adjective' or 'noun + preposition + noun'; in turn, the most frequent English structure is 'adjective + noun' or 'noun + noun', in which the first noun works as an adjectival (e.g. 'liver desease' = *affezione epatica*) (Magris 1992: 53). Such a difference does not cause necessarily translation difficulties as similar processes exist in both English and Italian, except the so typical noun string of technical English have to be unravelled in Italian in a different way.

Obviously, concision is what determines the choice for nominalisation which, in fact, has been accompanied, throughout the centuries, by an increase in the use of copular verbs to connect ever more elaborate nominal groups like in the case of:

> NG (=noun group) *is* NG
> NG *is correlated/contrasted/mixed/with* NG
> NG *is caused/complemented/restricted by* NG
> NG *is composed/consists of* NG
> NG *is due to* NG, etc. (Taylor 2009: 123).

The presence of copular, thus semantically neutral, verbs better exemplifies that typical process in medical discourse previously called as the weakening of the verb. As a demonstration, it should be said that in scientific writing, the position of the verb occupies only the fourth place[73], after nouns, adjectives and prepositions.

3.1.6.2 De-personalisation of medical texts

As evident from the discussion above, the most important feature of scientific writing is its concise, precise and objective nature. If the development of nominal phrases, in which much of the meaning is contained in very long noun strings, and the drastically reduced presence of verb phrases are all means to achieve concision and precision; objectivity, and thus the de-personalisation of these texts (Serianni 2005: 255), is something that can definitely be obtained at the linguistic level through the use of passives[74].

As clear, a frequent characteristic of tech texts is the use of the passive which guarantees the deletion of the agent, thus making the empirical research more neutral, impersonal and objective. In this context, the actual subject is not the person (or group of people) who formulated the hypothesis, but the hypothesis itself (Magris 1992: 70); in fact, the use of passives emphasises the research results rather than the physical subjects who conducted the research itself. In this light, doctors and scientists

[73] In literary texts, verbs occupy the second position (Magris 1992: 68).
[74] Statistically speaking, whereas in scientific writing the percentage of passives encountered is 26-32.6%, in literary prose it is only 2.2-3% (Sager *et al.* 1980: 209; in Magris 1992: 70).

are of second importance so that in some medical articles "*parece que los autores quedan relegados a un mero papel de comparsas, de firmante de un artìculo que se ha escrito èl solo*" (Gutièrrez Rodilla; in Serianni, 2005: 257). Given that the use of passives is much more frequent in English than in Italian (Magris 1992: 71), the latter language makes also use of the impersonal form through the *si* particle both in the indicative (*si è riscontrato*, *si è osservato*, *si ritiene*) and in the exhortative subjunctive modes (*si consideri*, *si noti*, *si prenda un flacone e lo si riempia*…) (Magris 1992: 71).

Furthermore, as Serianni (2005: 258-259) highlights, such de-personalisation can be achieved throughout the text thanks to other means, such as:

- the deletion of the too personal pronoun 'I', either referred to doctors or patients – in contrast, the organ itself or the pathology detected are directly addressed;
- the linguistic absence of the doctor but not that of the patient: patients are indeed treated as broad, typical entities;
- the explicit reference to all the actors involved in the communication.

Lastly, doctors must always be neutral and avoid, especially in desperate cases, emotionality. According to Serianni (2005: 263), from the linguistic perspective such neutrality can be reflected in the doctors' choice of adopting euphemisms; hence, the use of words like LAL for '*Leucemia Acuta Linfoide*' serves the purpose of softly presenting an unpleasant reality to patients without though hiding it.

3.1.7 Coherence and cohesion in medical texts

As any other text type, medical texts must be cohesive and coherent. In particular, in medical writing cognitive processes must follow a logical progression. Given that the pieces of information contained in medical texts are very complex, writing a logical and coherent text becomes very important for the actual comprehension of it. In brief, the very ways to achieve textual coherence in medical discourse include: the following of the right theme/rheme sequence and the overt manifestation of all the connections within the text by making use of different strategies like reference (pro-forms), substitution, ellipsis (omission), conjunction (additive/adversative/causal/temporal conjunctives) and lexical cohesion (reiteration through repetition, (near) synonym, antonym or hyponym/hypernym and collocation/co-occurrence). Very interestingly, as regards the differences between English and Italian, Magris (1992: 74) underlines that whereas repetition is much more frequent in English, Italian prefers anaphoric and cataphoric reference.

3.2 Scientific Translation

Scientific writing (and its translation) is as old, historically, as literary writing and thus has a long and extensive tradition. Generally speaking, it can be said that technical and scientific texts are more straightforward than other texts "from the pragmatic-cultural point of view as science and technology transcend cultural mores and represent a universal point of reference for mankind" (Taylor 2009: 226). For this reason, translation difficulties lie more at the level of lexicogrammar and style yet, although the language is usually considered to be more formal than in standard discourse, this is an oversimplification.

As already seen, texts dealing with academically scientific material tend to use a more formal register based on varying levels of subject-specific graeco-latin terminology, which helps to distinguish this register from the standard. However, this tendency can vary greatly, ranging from the language of school text books to that of articles in highly specialised journals and the learned works of established experts in the field. More strictly 'technical' texts, such as manuals and specialist magazines aimed at a wider public, are often much less formal and display user-friendly features more akin to standard language. In this context,

> Pinchuk (1977: 167) makes the distinction between 'scientific language' and 'work-shop language', stating that: "the scientific language draws on a humanistic education, while workshop terms are non-literary, practical, colloquial and sometimes humorous (Taylor 2009: 226).

3.2.1 Medical translation

The importance of scientific and technical translation stands on the fact it is part of the process of disseminating information on an international scale, which is indispensable for the functioning of our modern society. Since "a technological civilization like ours is dependent for its survival on an interchange of knowledge on many levels in many forms" (Wright 2011: 260), scientific translation in general and medical translation in particular become essential tools for our progress.

Medical texts figure among the most frequently translated (and mistranslated) text types. Demand for medical translation stems largely from the needs of doctors to publish material in English language journals of varying degrees of prestige and deliver talks in English at international conferences. However, it is still uncommon to find specialist translators even in the fields as potentially rewarding as medicine, and this accounts for the often sub-standard nature of the work undertaken. While it is not so rare to find doctors with a good command of the English language, they rarely have any training in translation, and thus the uneasy symbiosis of doctor and non-specialist

translator continues. The latter, however, can benefit from experience and a few relevant notions passed down from those who have already broken the ground. Many considerations relating to technical-scientific translation in general are pertinent to medicine, but the genre also has its own specificity. In particular, in medical translation the translator's object is to elicit equivalent effect – that is, "to attempt to produce the same cognitive and to a lesser extent emotive impression on his reader as, to the best of his belief and imagination, the writer of the original produced on his own (average) reader" (Newmark 1979: 1405). Usually, the first aim of the translator is factual textual accuracy, while the second a natural, sympathetic way of writing that will interest his/her reader. As a consequence, the tasks of a translator include:

> [To] assess his/her reader (articles for laymen and for specialists have different styles), […] to translate effectively, removing barbarisms (unless the writer is well-known and his way of expressing himself important), clarifying and pruning where necessary, checking on any possible mistakes and misprints, and reducing longwinded jargon. (Newmark 1979: 1405)

At last, it is important to say that when translating science, the translator employs paraphrase instead of adaptation (both problematic suggestions for the modern translator); but be as it may, the implication is that such translation involves moving the text in the direction of the reader to create a fluent TT. "In Houses's terms (1977/1981), this creates a 'covert translation' in keeping with the contention that pragmatic texts, if 'well translated […] will not be recognised as translations' (Neubert and Shreve 1992: 125)" (Wright 2011: 254).

3.2.1.1 Medical translation: myth-busters

As seen, it is widely accepted that medical writing is primarily for doctors, but it could also, but not only, be directed to "intelligent laymen" (Newmark 1979: 1405). In any case, the content of medical reports and articles will usually not be specific to the source language culture, provided both it and the target language culture are set in developed countries[75]. Hence, some of the translator's problems – how to translate a word for a feature that does not exist in his own country, or the expression of the first writer's feelings, or a sound effect – do not usually arise in medical translation. For all that and, even more, for what is going to be described below, medical translation could not be regarded as complex, challenging and difficult as any other kind of translation yet, as Newmark says, it actually "may be no less difficult and challenging than that of poetry" (Newmark 1979: 1407).

[75] Tropical medicine translation presents few additional problems because researchers from developed countries have created the terminology and adopted the local terms.

It is thought by many that technical translation in general, and medical translation through inclusion, is relatively problem-free, in that the only difficulty posed is at a lexical level. This theory assumes that technical texts consist of "simple, unadorned syntax, peppered with technical terms which merely require the consultation of a good technical dictionary" (Taylor 2009: 258). The translator soon learns, however, that this is a gross oversimplification. As already explained, the complexity of translating such type of texts lies on a number of different reasons, ranging from the fact new terms are being coined daily to keep pace with scientific achievement to the need of following the appropriate house-style when translating from a particular medical journal; though, a translator should always bear in mind medical texts do vary greatly in complexity, depending on the level of specificity.

Another-widely believed myth is that doctors can understand even badly translated texts simply by "piecing together the terminology" (Taylor 2009: 258), yet this is not always true. This notion is, for example, constantly refuted by journal referees who send back papers because of lack of clarity due to poor language use. A cause for sober reflection here is that many of these rejected translations are the work of mother-tongue, non-expert translators.

Finally comparing Italian with English, it is also a commonplace, based on truth – though –, that Italian technical and scientific language is a bit more formal than English. Translators, however, should always remember this is partly due to the fact that "ordinary Italian is by its very nature more Latinate and elaborate of expression" (Taylor 2009: 226).

3.2.2 Criteria for Sci-Tech translation

Above all, the translation process is "informed by the tensions that exist between SL and TL conventions, and by recasting strategies adopted to satisfy end-user expectations" (Wright 2011: 244). For this reason, Wright recommends to evaluate a text for translation on the basis of:

- the language of the source text (SL of the ST)
- the potential language(s) of the target text(s) (TL of the TT);
- the subject field(s) of the ST, which is/are embodied in:
    - special language terminology;
    - SL constraints and conventions anticipated by the TL audience for the subject field;
- the ST register and the appropriate TT register (not necessarily identical);
- the SL text class factors (type and variety) and desired TT class factors (not necessarily identical);
- presentation issues (layout, medium, etc.);
- the specification of translation job parameters. (Wright 2011: 244)

As already discussed, register plays a fundamental role in the scheme above. Yet, once translators have determined such criteria there are a couple of principles they should bear in mind to help them

face the translation process.

3.2.3 General principles for medical translation

According to Newmark, the general principle which applies to medical translation is that the frequency of any feature of the source language text – a word, compound, syntactic structure, word order, technical term – must be matched by equal frequency of the corresponding feature in the TL text. At this stage, the translator should also determine the degree of formality (use of passives or first person plural or both) and technicality of the text, bearing in mind that English medical style is "sober, conservative, moderate, with emphasis on verbal nouns rather than active verbs, and on multiple noun-compounds ('consultant unit confinement', 'mitogen-triggered lymphocyte DNA synthesis')" (Newmark 1979: 1406).

Taking advantage of his experience working as a translator from German and French, in his article Newmark also provides a series of hints on medical translation procedure. His first rule is never to accept a bilingual or monolingual dictionary as an authority but, instead, to consult the available literature on the subject matter treated or, when possible, to ask a specialist. As for the translation procedure in general, he first recommends to translate both the title and the abstract, if present, at the end. Second, the author believes translators must focus their attention on misleading cognate words and collocation, like in the case of malignant – and not malign – tumour. According to him, in fact, lexis determines bigger translation problems; in particular, he thinks that translators have the responsibility of never inventing words, especially in the case of drugs' names. But, above all, he reckons the most difficult problem for the translator who is neither medical nor paramedical him/herself is that of usage. For instance,

> What would doctors actually call a *insuffisance cardiaque à majoration droite*? […] It might be safely described as "increased right-sided cardiac nsufficiency", but this would not be usage […]. A more technical description would be "right-sided heart failure with venous and hepatic hypertrophy" (Newmark 1979: 1407).

In contrast, one thing that makes medical translation slightly easier is that scientific texts often include symbols, graphs and pictures exemplifying the data discussed thus helping the translator better understand the ST.

To conclude, Newmark emphasises the fact medical translation has now become a commercial activity, therefore the following sub-chapter tries to explain what that actually means.

3.2.4 Translation: a commercial activity

Nowadays, translation – and in particular Sci-Tech translation[76] – cannot still be perceived only as an intellectual activity, but as a commercial as well. In this light, commercial translation is not just the act of a single individual – the translator –, but of a team of actors (or 'stakeholders') all having defined roles, these include:

- (Author/originator): not cited; frequently uninvolved;
- Requester: commissioner of the translation; individual or entity requesting the translation;
- Project manager (PM): individual or possibly group of individuals responsible for coordinating the translation project; PMs are usually members of a TSP team, but savvy requesters sometimes perform the PM function themselves;
- Translation service provider (TSP): entity or individual (e.g. translation company or individual translator) supplying the translation;
- Editor ('reviser' in EN-15038), proof reader, and (third-party) reviewer: roles responsible for checking the translation for linguistic accuracy and TL adequacy;
- End user: consumer, the target audience for the translation. (Wright 2011: 253)

Although these roles are spelled out individually, the service functions can be conflated in a single individual. Let's now see how these stakeholders interact in order to make the translation process possible.

In brief, when initiating a Sci-Tech translation, some one or more of these stakeholders classifies the text according to the criteria discussed above and specifies technical issues such as format and tool use. In the best scenario, "authors internationalise the ST for translation (stripping out problematic culture- and language-specific elements) and coordinate with the TSP via the PM" (Wright 2011: 253). Authors are, however, seldom aware their texts will be translated, and even if they know, they are ignorant of translation issues. At this stage, assuming that the requester knows the target audience, s/he might state the relevant specifications in a work order (the translation 'brief'), which may be a simple purchase order or a formal contract. Alas, requesters are sometimes clueless about the SL or text variety, and are even more likely to be unfamiliar with TL requirements. As a consequence, PMs and TSPs usually determine requirement criteria in consultation with the requester and set down specifications for TT quality assessment[77]; eventually, the translator can begin to work on the actual translation. Yet, the author of this thesis cannot avoid to stress out that, even in commercial contexts, all of these

[76] "Byrne attributes 90 per cent of all translation to Sci-Tech, a rough but credible guess, […] (Byrne 2006: 2)" (Wright 2011: 252).

[77] The primary purpose of the ASTM Guide is to outline procedures for this process, although it often takes place in a fairly informal way.

different stages are not always respected (and sometimes are even skipped as a whole), therefore, translators happen to work without knowing what the requirements for that particular job really are.

4. Practice, self-revision of medical translation: an example

4.1Text and translation

4.1.1 Text presentation

As explained in the previous chapters[78], a textual profile of the ST is needed in order to characterise the original text function – or *skopos* – and, therefore, the degree to which the profile and function of the TT match those of the original. As already discussed in the theoretical part of this dissertation, this comparison determines the actual adequacy of the TT. In this view, House's scheme (1977: 41) comes in handy to analyse a to be translated text. Please find below the scheme completed with all the relevant pieces of information related with the chosen text.

A) Dimension of language user:
   1. Geographical Origin: London, Oxford, Edinburgh (UK)
   2. Social class: very high, educated class – *Scientific Impact Paper* no.46 issued by the *Royal College of Obstetricians and Gynaecologists*
   3. Time: January, 2015

B) Dimensions of language use:
   1. Medium: written to be read
   2. Participation: Simple (no indirect addressee involvement)
   3. Social role relationship: Symmetrical (peer-to-peer scientific communication)
   4. Social attitude: formal
   5. Province: Medical text on gynaecological issues

In addition, the scores associated to Hoffman's model (Magris 1992: 5-7) are:

1. Abstraction degree: D (low)
2. External linguistic form: D (natural language with a high percentage of specific terminology but with quite a free use of syntax)
3. Context: C (applied science)
4. Participants: B (researcher → specialist → specialist)

As already explained, analysing these parameters beforehand can turn out to be very useful to better understand the ST and thus to choose the best translation approach.

[78] *Cf* 2.2 Quality in translation.

4.1.2 Translation brief

More importantly, the translation brief is needed to make sure all requirements are met and to assess the actual quality of both the draft translation and the TT. In the example given, the translation was commissioned to me by a very close relative, a specialist in anaesthesiology, who needed it to write part of her PhD dissertation based on pain management. The requester's first interest was that of getting acquainted with all the different methods employed to cure pelvic pain and, more specifically, with all the results related to the various trials conducted by scientists. As a consequence, meaning transfer, rather than language or style, had to be looked upon more in detail[79]. In addition, it must be specified that due to the close relation standing between translator and commissioner when in doubt some parts of the draft were left in English (highlighted in bold) and symbols, like [???], were added when meaning was not completely clear. As revision is concerned, due to the fact that both translation and revision were conducted by the same person, this can be regarded as an example of self-revision. Given that the familiarity effect affects self-revision in various ways[80], this assignment actually proves the opposite; indeed, the reviser felt quite free to correct the draft since she had no to objectively justify her changes to the translator (who was actually the same person). In addition, the example at hand can definitely be classified as a pragmatic revision since the revisers aim is just that of correcting and improving the translation rather than that of training the translator.

Please find below the draft version of the TT followed by the TT itself, the actual revised document containing the comments referring to each change[81] made and, ultimately, a more discursive part presenting statistics together with some examples of the errors encountered.

[79] Please remember that, differently from Transfer, only CLP parameters can be checked without reading the ST.
[80] *Cf* 2.1.3.3 Classification based on the number of subjects involved.
[81] Based on Mossop's principles for revision (Mossop 2001: 155).

4.2 Draft[82]

Terapie mirate al sistema nervoso per lenire il dolore pelvico cronico

1. Background

Il dolore pelvico cronico (CPP) è stato definito dal Royal College degli ostetrici e ginecologi come "un dolore intermittente o costante al basso addome o alla pelvi di una donna che duri almeno 6 mesi e che non si avverta solo durane il ciclo mestruale o durante la gravidanza". Le donne affette da CPP possono provare un dolore ciclico o costante senza cause apparenti o a causa di attività specifiche come urinare (dysuria), defecare [aperture dell'intestino] (dyschezia) o nei rapporti sessuali (dyspareunia). Il CPP è associato ad un significativo abbassamento della qualità della vita e studiato in donne affette di frequente da stress psicologico. In Gran Bretagna, più di un milione di donne sono affette da CPP, tuttavia tale patologia è sempre più difficile da curare dato che alle pazienti non viene somministrata una terapia analgesica adeguata anche dopo molti anni. Anche se è noto che il CPP si manifesta insieme a varie patologie ginecologiche, come, ad esempio, l'endometriosi, l'adenomiosi, l'infiammazione cronica della pelvi e il prolasso dell'organo pelvico, in molti casi non è stata individuata una patologia a cui si possa associare tale dolore (sindrome del dolore cronico della pelvi [CPPS]). Inoltre, anche quando vi è una causa evidente, tipo l'endometriosi, i sintomi di dolore provato sono sproporzionati rispetto al grado di malattia identificato o persistono anche dopo la cura ottimale di tale malattia.

Per provare dolore c'è bisogno del sistema nervoso centrale (CNS) e un sempre maggior numero di esperimenti dimostra che il dolore, al di là di quale sia il punto specifico da cui si diffonde, può essere sia generato che perpetuato dallo stesso CNS. Inoltre, il dolore cronico viene associato a cambiamenti a lunga termine sia della struttura che del funzionamento del CNS che sono abbastanza simili al di là della patologia che causa il dolore. Oggi esistono solide prove a favore del fatto che tali alterazioni del CNS dipendano da una vasta gamma di patologie ginecologiche associate al CPP, come l'endometriosi, la vulvodinia, la cistite interstiziale/sindrome del dolore alla vescica (IC/BPS) e la dismenorrea. Per di più, la disfunzione del CNS può anche essere responsabile di molti sintomi associati al CPP, come un'alterazione del funzionamento degli organi che può portare ad urinare di frequente/ritenzione e diarrea/costipazione, e a

[82] Please find the ST in Appendix D.

disfunzioni endocrine, in particolare alle alterazioni dell'attività dell'asse ipotalamo-**puititary-adrenal**, che potenzialmente possono causare un incremento di infezioni e patologie autoimmuni.

Le donne con CPP di solito vanno dai ginecologi che, per la maggior parte, si focalizzano sulla conformazione e sul successivo trattamento della pelvi. Questa ricerca prende in esame i trattamenti disponibili per il CPP che si concentrano sul sistema nervoso piuttosto che sulla pelvi. Sebbene molti di questi trattamenti siano già, o stiano diventando, comuni negli ambulatori di terapia del dolore cronico, ancora non vengono usati da molti ginecologi. Tale studio non prende in considerazione il trattamento del CPP associato al cancro o della dismenorrea o della dispareunia isolate dato che non rientrano nella definizione RCOG del CPP. Tuttavia, buona parte della discussione sarà comunque rilevante per queste patologie visto che altre organizzazioni, come l'International Association for the Study of Pain IASP e la European Association of Urology EAU, includono le ultime due all'interno delle loro definizioni, ed in particolare la dismenorrea è stata associata ad alcuni cambiamenti centrali [= del sistema nervoso centrale] di particolare importanza.

Sebbene sarebbe più appropriato che alcune opzioni terapeutiche descritte in questo studio provenissero da un ginecologo, è opportuno ricordare che una volta che il dolore diventa cronico è probabile che dipenda da più fattori. In tutti i pazienti, a parte in quelli che rispondono meglio alla terapia, il risultato è probabile che sia migliore se la gestione della terapia è nelle mani di un team multidisciplinare che potenzialmente includa medici specializzati in terapie ormonali, mediche, invasive/chirurgiche e psicologiche. Anche se le terapie più invasive dovrebbero essere riservate ai pazienti refrattari alle cure standard di qualsiasi patologia identificata o dove una patologia non può essere identificata, altre opzioni (ad es. antidepressivi, anticonvulsionanti, stimolazione locale (stimolazione elettrica transcutanea del nervo [TENS]) possono essere iniziate nel caso un paziente presenti CPP e continuate mentre vengono svolte analisi più approfondite e/o altre cure. Tale strategia, oltre ad avere successo almeno nella diminuzione parziale del dolore, si presume possa migliorare la qualità della vita ed aiutare a prevenire lo sviluppo dei cambiamenti centrali a lungo termine.

2. Cure Mediche

2.1 Cure con antidepressivi ed anti-convulsionanti

I medicinali antidepressivi ed anti-convulsionanti sono da molti anni un supporto per la gestione del dolore cronico, in particolare nel dolore neuropatico, anche se il loro

funzionamento non è stato ancora completamente capito. Pare che gli antidepressivi agiscano alterando l'attività all'interno dei sistemi inibitori del dolore per mezzo della modulazione della seratonina, noradrenalina, dopamina e acetilcolina e potenzialmente grazie agli effetti antagonisti dell'anti-infiammazione diretta, **opiodergic** o N-methil-d-aspartate **[???]**. Ciò che si sa è che la loro attività analgesica è indipendente dalla loro attività antidepressiva e spesso si verifica a dosaggi più bassi rispetto a quelli necessari per produrre un effetto antidepressivo. Pare che anche i medicinali anticonvulsionanti agiscano grazie alla combinazione di più meccanismi, inclusa l'inibizione dei canali voltage-gated di sodio e calcio e le interazioni con il sistema acido y-aminobutirico (GABA). Dato che le donne con CPP di solito dichiarano di aver sospettato che il loro medico pensasse che il dolore fosse psicologico, questi fattori possono tornare utili quando si danno loro dei consigli medici prima di cominciare una cura con antidepressivi o anticonvulsionanti.

In generale, entrambe le classi di farmaci sono ben tollerate con effetti avversi relativamente minori (stanchezza e nausea più comunemente), anche se gli effetti avversi specifici variano tra i due farmaci. L'ampia varietà di medicinali disponibile si riflette sul fatto che spesso un confronto stretto tra efficacia e possibilità di effetto avverso non è stato fatto e perciò è difficile consigliare un farmaco rispetto ad un altro. I differenti meccanismi di azione fanno sì che se un farmaco non funziona un altro potrebbe funzionare, come potrebbe la combinazione di più terapie nel caso venga riscontrata un'efficacia solo parziale. Allo stesso modo, se l'effetto avverso di un farmaco specifico non è accettabile, probabilmente esiste un'alternativa che si adatta meglio al paziente. Vale la pena ricordare che una curva dose-risposta esiste per entrambe le classi di farmaci e pertanto le dosi dovrebbero venire aumentate gradualmente nel caso non venisse rilevata alcuna risposta iniziale. Tuttavia, se non vi è una risposta adeguata alle dosi somministrate o se gli effetti avversi non sono tollerati allora il farmaco deve essere diminuito e sospeso.

Anche se svariati studi esplorano l'uso di questi farmaci nel CPP, sono pochi gli esperimenti validi effettuati su questi farmaci per questa indicazione.

2.1.1 Prove sull'uso di antidepressivi in CPP

Una revisione sistematica delle prove disponibili sull'uso di antidepressivi nel dolore urologico cronico fu fatta nel 2009. Anche se si concentrava sulle condizioni relative al dolore urologico sia in pazienti uomini che donne (cistite interstiziale, prostatite cronica), questa revisione include anche degli studi in cui ai pazienti veniva diagnosticato solo il

CPP. La sindrome da dolore alla vulva, però, non era compresa. Vennero identificati dieci studi che rispettavano i criteri degli autori, valutando l'efficacia dell'amitriptyline, sertraline, nortriptyline, duloxetine e citalopram. Anche se la conclusione generale era che "l'uso di antidepressivi nella gestione del dolore cronico alla pelvi non è supportato da un adeguato numero di esperimenti a controllo random ben strutturati ", si deve riconoscere che almeno per l'amitriptyline e la sertraline, ci sono delle prove sul loro effetto benifico. Inoltre, i farmaci studiati erano ben tollerati e in generale sicuri, compreso l'uso a lungo termine dell'amitriptilyne.

2.1.2 Prove sull'uso degli anticolvulsionanti in CPP

Ancora meno prove sono disponibili sull'uso di farmaci anticonvulsionanti in CPP. Sator-katz e i suoi colleghi hanno comparato l'efficacia e la tollerabilità di amitriptyline con gabapentin e dei due farmaci insieme. Questo studio non dispone di un gruppo placebo ed era relativamente piccolo (n=20 per ogni farmaco da solo e n=16 per la combinazione dei due farmaci); tuttavia, le conclusioni mostrano che i farmaci erano entrambi ben tollerati e che gabapentin da solo o in combinazione è più efficace di amitriptyline da solo, soprattutto per un sollievo dal dolore a lungo termine. Siamo a conoscenza che un progetto pilota a controllo random di gabapentin versus placebo è ancora in corso. Un secondo studio esamina il ruolo del lamotrigine in CPP. L'interpretazione dei risultati di questo studio è difficile a causa del numero relativamente ristretto di pazienti trovati per le tre sottocategorie di CPP: addominale diffuso? (n=7), neuropatico (n=7) e vulvodinia (n=17). Anche se in tutti e tre i gruppi di donne si è riscontata un'efficacia parziale, solo coloro affette da vulvodinia hanno segnalato una riduzione significativa nella compilazione degli indici di dolore dopo 8 settimane di terapia (tuttavia, anche il gruppo con la neuropatia raggiungeva valori signicativi per quanto fosse un gruppo particolarmente piccolo). Un altro studio esamina gabapentin nel trattamento della vulvodinia. In questo studio delle 17 pazienti con vulvodinia a cui viene somministrato gabapentin, 14 (82%) dichiarono sollievo parziale o totale dal dolore. Anche se questo studio non è ben controllato, include donne per cui il trattamento con altri farmaci, come l'amitriptyline, non aveva funzionato.

2.2 La tossina Botulinica

L'uso di iniezioni della tossina botulinica (onabotulinumtoxin A o Botox, Allergan, Marlow, Bucks, GB) per alleviare il CPP sta aumentando sebbene gli studi che ne presentino l'effetto benefico siano ancora molto scarsi. Oltre ad agire direttamente sui

muscoli, si crede che la tossina botulinica abbia effetti anche sul sistema centrale nervoso, dato importante anche se non totalmente compreso. Due piccoli studi di osservazione appartenenti di una revisione[?] indicano alcuni benefici delle iniezioni della tossina botulinica nelle strutture del pavimento della pelvi senza che si riscontrino significativi effetti avversi per quando riguarda la vulvodinia, ma questi gruppi non erano controllati e potrebbero indurre ad errore[???]. La stessa situazione si presenta per l'uso intravescicale delle punture della tossina botulinica per IC/BPS, eccetto per il fatto che colpisca le funzioni del detrusore e quindi molti pazienti di questi piccole ricerche hanno avuto bisogno di auto-cateterizzazioni intermittenti.

Esiste un unico centro di esperimenti a controllo random sull'uso della tossina botulinica nelle donne che abbiano avuto più di 2 anni di dolore pelvico e "evidenti segni di mialgia del pavimento pelvico", come dimostrato dalla presenza di muscoli pelvici contratti alla palpazione e da un'elevata pressione vaginale rilevata col manometro. Al gruppo in terapia (n=30) è stato iniettato del botulino nei muscoli puborettali e pubococcigei mentre al gruppo di controllo (n=30) è stata iniettata nei muscoli soluzione salina. I valori riferiti al dolore provato sono diminuiti in entrambi i gruppi ma sono significativi dal punto di vista delle statistiche. Messe a confronto con gli standard, le donne nel gruppo a cui è stato somministrato il botulino hanno riscontrato una'importante riduzione della dispareunia e di dolore pelvico non mestruale, inoltre la pressione del pavimento pelvico era diminuita. Due pazienti a cui era stato somministrato il botulino nei muscoli sopracitati hanno riscontrato incontinenza da stress urinario[?], una delle quali è stata affetta da incontinenza delle feci ad intermittenza per 4 mesi. Gli esperimenti sul botulino in donne con una vescica iperattiva suggeriscono che questa sia una terapia ben tollerata col potenziale di apportare un significativo miglioramento alla qualità della vita di queste donne, delle ricerche più approfondite sull'uso del botulino nella vulvodinia e nella CPP sono così giustificate. Per di più, anche la tecnica del **dry needling** (tanto l'uso dell'agopuntura come quello degli aghi ipodermici per arrestare[?] il punto di innesco[?]/stimolare i muscoli senza iniezioni di fluidi sia attivi che placebo [inattivi]) merita ricerche più approfondite visti i buoni risultati, del tutto inaspettati, registrati anche nel gruppo di controllo a seguito della somministrazione di soluzione salina descritta sopra.

2.3 Altro

Altre tre terapie farmacologiche che si concentrano sul sistema nervoso sono state studiate per lenire il CPP.

Di particolare importanza, è stato riscontrato che la melatonina riduce notevolmente il dolore giornaliero, il dolore mestruale, la dischezia e la disuria in un gruppo di 40 donne con CPP ed endometriosi confermata da laparoscopia. Tuttavia, questi dati non possono essere applicati a donne con CPP a cui non sia stata diagnosticata l'endometriosi.

L'idrocloride lofexdine, un agonista dell'a2-adrenoceptor che agisce sia attraverso l'azione diretta di un antinocicettivo sia per prevenire vasospasmi nel letto utero-ovarico, è stato studiato in un gruppo di donne con CPP senza evidenti patologie in laparoscopia. Anche se questa ricerca non ha riscontrato una differenza significativa rispetto al placebo, i numeri presi in esame erano relativamente piccoli (19 lofexidine: 20 placebo) ed è stata messa in atto solo per determinare un effetto sostanziale.

Anche il solfato di dexamfetamine, un'amina simpaticomimetica, è stato indicato come un trattamento efficace contro il CPP, ma solo in associazione con un'edema ortostatica, idiopatica coesistente che è estremamente rara. Per tanto, altri esperimenti a controllo random sono necessari prima che questo trattamento possa essere raccomandato per il CPP generico.

3. Trattamenti non invasivi e non farmacologici

L'applicazione esterna di stimolazioni sia elettriche che magnetiche può essere usata per alterare la neurofisiologia localmente (all'altezza del dolore) o centralmente (cervello o midollo spinale), che potenzialmente producono l'analgesia. In più, la stimolazione elettrica può essere effettuata direttamente sui nervi periferici, sul midollo spinale o sul cervello; tali metodi saranno discussi nella sessione 4.

3.1 Stimolazione locale

3.1.1 Elettrica

La stimolazione elettrica, transcutanea dei nervi (TENS) è una forma conosciuta di analgesia usata durante le doglie. L'esatto meccanismo per il quale eserciti un effetto analgesico non è noto. Per molto tempo si è creduto che funzionasse per mezzo della teoria 'gate-control' per cui l'attività di fibre AB di largo diametro inibiscono l'attività delle

fibre più piccole (Ad e C: quelle che trasmettono il dolore) dagli stessi segmenti. Tuttavia, la stimolazione elettrica delle piccole fibre da sole può anche produrre un'inibizione segmentale ed extra-segmentale che porta all'analgesia. Inoltre, l'uso della stimolazione elettrica a bassa frequenza aumenta il rilascio di oppioidi endogeni, e quindi una maggiore riduzione del dolore sia in situazioni acute che croniche. E' stata dimostrata l'efficacia nella riduzione del dolore negli uomini con CPPS/prostatite ma non è stata studiata nelle donne con CPP nello specifico. In vista della localizzazione del dolore nelle donne con CPP, la stimolazione intravaginale elettrica (IVES) è stata proposta come strategia alternativa. I dati preliminari suggeriscono che IES è associata ad una significativa riduzione del dolore e dispareunia, con la riduzione del dolore mantenuta per i 7 mesi di follow-up[?]. Di recente, IVES per CPP è stata valutata in esperimenti placebo (stimolazione finta) a controllo random. Ciò conferma che la stimolazione attiva è superiore a quella finta, con una significativa riduzione dell'intensità del dolore alla fine delle 5 settimane di trattamento. Tuttavia, non esiste un follow-up a lungo termine di questo studio.

3.1.2 Magnetica

Molti sono i meccanismi proposti attraverso i quali il magnetismo può influenzare il dolore, come ad esempio: i) l'attenuazione selettiva della depolarizzazione neuronale che altera il potenziale di rilassamento[?] della membrana; ii) l'aumento del flusso sanguigno (che potenzialmente accelera la guarigione del tessuto e rimuove i mediatori nocivi); iii) l'alterazione dei legami cinetici a ioni[???] e quindi il rilascio regolare della citocinesi e degli altri mediatori infiammatori[?]. Nonostante esistano alcune prove sui benefici nei pazienti con osteoartrite (anche se potenzialmente in relazione con una guarigione accelerata del tessuto piuttosto che un effetto analgesico diretto), solo tre piccole ricerche sono condotte su donne con CPP. Nel primo studio si sono usati campi elettromagnetici a pulsione nella zona in cui si situa il dolore in 20 donne con dolore pelvico acuto o cronico. Tutte e nove le donne con CPP mostravano un buon miglioramento per quel che riguarda l'intensità del dolore dopo il trattamento, anche se è opportuno specificare che quattro di queste venivano curate per una sindrome acuta che stava alla base della CPP (rottura di una cisti ovarica o infezione del tratto urinario). La seconda ricerca mirava ad usare magneti placebo in uno studio randomizzato in doppio-cieco di una terapia a campo magnetico statico; tuttavia, alla fine dello studio tutti coloro che indossavano magneti attivi erano a conoscenza del gruppo di trattamento in cui si trovavano. Al termine del

periodo di trattamento di 4 settimane, anche se i valori associati al dolore non erano diminuiti in maniera significativa, queste donne dichiaravano di provare molto meno dolore rispetto a quelle del gruppo placebo (misurato con l'indice di disabilità relativa al dolore, un metodo di auto-valutazione che determina la disabilità relativa al dolore in sette domini come casa, lavoro, attività sociali e sessuali). L'ultimo studio stimolava sia il punto da cui si diffonde il dolore sia il midollo spinale sacrale con stimolazioni magnetiche a ripetizione (rMS) in 48 pazienti con CPPS. Una remissione al dolore è stata registrata nel 67% dei pazienti ed un esperimento controllato verso placebo è ancora in corso.

3.2 Stimolazione transcraniale

I metodi non invasivi di stimolazione cerebrale possono essere elettrici (la stimolazione transcraniale diretta a corrente [tDCS] e la stimolazione craniale con elettroterapia [CES]) o magnetici (la stimolazione transcraniale magnetica ripetitiva [rTMS]). Queste mirano a modulare il dolore con un effetto diretto sull'attività cerebrale. Ci sono buoni risulati di esperimenti che suggeriscono che queste tecniche possono sia produrre un'immediata alterazione nella concentrazione dei neurotrasmettitori - principali neurotrasmettitori di inibizione GABA compresi - sia indurre dei cambiamenti sinaptici a lungo termine. Nel caso di dolore cronico, si crede che l'analgesia si produca a seguito di una riduzione nell'attività delle reti cerebrali implicate nell'elaborazione[?] del dolore e di un'agevolazione dei meccanismi inibitori dell'abbassamento del dolore. Sebbene gli studi clinici intrapresi sulle condizioni del dolore cronico supportino in generale un effetto analgesico di rTMS e tDCS, il sollievo dal dolore ottenuto non è sufficiente per essere considerato significativo dal punto di vista clinico. Solo uno studio ha interessato nello specifico l'efficacia di tali tecniche nella CPP. Fenton e i suoi colleghi hanno confrontato tDCS con tDCS finta in sette donne con CPP refrattarie al trattamento. Gli studiosi hanno individuato una modesta riduzione del dolore dopo il trattamento attivo, ma il campione era troppo esiguo per trarre delle conclusioni d'interesse senza che vengano fatte delle ricerche più approfondite.

4. Trattamenti chirurgici/invasivi

4.1 Blocchi ai nervi[?]

Solo due piccoli studi si sono interessati ai benefici dei blocchi ipogastrici riscontrando benefici solo parziali. Altre ricerche prendono in esame le tecniche di iniezione e la

gestione pratica senza prove[???] o descrivono trattamenti multimodali in un centro che includa vari blocchi di nervi.

4.2 Neuroctomia/ablazione dei nervi

L'interruzione del sensore Lee-Frank del plesso nervoso[?] attraverso l'ablazione in laparoscopia del nervo uterosacrale (LUNA) è stato ampiamente praticato per alleviare il dolore pelvico fino alla pubblicazione di un più grande esperimento di LUNA ed una meta-analisi di tutti gli esperimenti LUNA avvenuta rispettivamente nel 2009 e 2010. La meta-analisi ha rinforzato le conclusioni tratte dagli esperimenti che dimostrano che la procedura LUNA non funziona per alleviare il dolore. Per tanto, ci sono alcune prove che le donne sottoposte alla procedura LUNA soffrano di più a breve termine rispetto a quelle che non si sottopongono a tale procedura.

La neuroctomia presacrale (PNS) comporta la transezione totale dei nervi presacrali che si trovano entro i confini del triangolo interiliaco[?] (una procedura che può essere fatta per via laparoscopica). I dati sull'efficacia delle procedure nel lenire il dolore pelvico sono limitati e in conflitto tra loro. Tuttavia, il più grande e recente esperimento a controllo random suggerisce che PSN possa essere efficace per il trattamento di una dismenorrea severa causata da endometriosi. La PSN laparoscopica richiede delle competenze chirurgiche e di specializzazione molto alte ed è aperta a complicazioni vascolari e linfatiche a causa della vicinanza dei grandi vasi sanguigni ai canali linfatici. Un'alternativa è la neurolisi presacrale laparoscopica che prevede l'iniezione di una soluzione neurolitica (ad es. phenol) per distruggere chimicamente l'architettura neurale microscopica dei nervi presacrali. Esiste uno studio che porta delle prove sulla possibilità di considerare questa tecnica un trattamento per il dolore pelvico, sia come trattamento singolo che in combinazione con altri. Però, senza altri dati che supportino un equilibrio favorevole tra efficacia e sicurezza, è impossibile poter raccomandare tanto la neurectomia presacrale quanto la neurolisi.

4.3 Neuromodulazione

Il ruolo della neuromodulazione nella gestione delle sindromi da dolore pelvico cronico non è ancor stato indagato a pieno, mentre quello nella gestione della vescica iperattiva o dell'incontinenza fecale è stato maggiormente compreso. Anche se ci sono sempre più prove di studi pilota o piccole ricerche di serie di casi a favore dell'efficacia nel dolore

pelvico, sono ancora necessarie ricerche più approfondite e controllate a dovere. Oggi, gli specialisti considerano la neuromodulazione uno strumento da usare per il dolore pelvico solo contestualizzandolo in un progetto più ampio di gestione del dolore. Le tecniche disponibili includono la stimolazione periferica dei nervi (ad es. la stimolazione del nervo tibiale posteriore, stimolazione della radice/nervo sacrale e la stimolazione del nervo pudendo) e la stimolazione del midollo spinale.

La stimolazione percutanea ad intermittenza del nervo tibiale (PTNS) è un'opzione di trattamento molto poco invasiva che è stato dimostrato sia in grado di diminuire significativamente le lamentele[?] che accompagnano il dolore nei pazienti con una disfunzione al tratto urinario più basso, come urgenza e incontinenza, urgenza [da sola] e/o frequenza. Uno studio di van Balken ed altri ha valutato 33 pazienti con CPP dopo la terapia PTNS. Il punteggio nella scala visuale analogica (VAS) è aumentato in maniera soggettiva nel 42% dei pazienti, con 7 pazienti (21%) che hanno votato un punteggio addirittura minore di 3 nella scala di valori VAS dopo 12 settimane di trattamento. In tutti i pazienti, sia il punteggio sulla qualità della vita sia quello relativo all'intensità di dolore provato erano migliorati significativamente. Questi risultati si riflettono nello studio condotto da Kim, Aggamy, Goky ed altri. Di conseguenza, la PTNS deve essere usata nel trattamento dei pazienti con CPP che hanno già tentato altre terapie e a cui non rimane nessun'altra opzione. Tutti gli autori, però, concordano sul fatto che studi più approfonditi debbano necessariamente essere condotti in futuro.

La neuromodulazione sacrale (SNM) o la neurostimolazione sacrale (SNS) sono state introdotte per la prima volta nel 1999 come terapie contro la CPPS da Feler e colleghi, anche se la letteratura che rimane è piuttosto scarsa. La differenza fra i due termini si basa sul fatto che la SNS si concentra sulla stimolazione del nervo che rappresenta il principale vettore[?]motore di una risposta positiva, mentre diversi autori credono che la neurostimolazione sia il punto da cui scaturisce la risposta ma che il mantenimento a lungo termine dipenda dall'impatto della modulazione sul sistema neurale. Essenzialmente, sia il nervo sacrale sia la radice sacrale vengono inizialmente stimolate per poi essere modulate in un secondo momento, dal momento che il posizionamento del filo[?] dell'elettrodo ricopre entrambe le parti. In conclusione, per lo scopo di questa ricerca, la neuromodulzione sacrale viene considerata un'entità[?]opzione terapeutica, dando per vero che entrambi i componenti del sistema neurale sacrale vengano modulati.

I casi di studio, come dicono Lavano e suoi colleghi negli studi del 2006, hanno dimostrato che in cinque pazienti su sette l'SNM ha ridotto drasticamente i punteggi relativi al dolore. In letteratura si trovano ricerche simili ma gli insiemi di dati rimangono piuttosto esigui. Uno dei gruppi più ampi ha studiato 78 pazienti in terapia dal 1994 al 2008. Un'SNM permanente è stata impiantata in pazienti che hanno mostrato almeno un 50% di miglioramento dei loro sintomi con un test di valutazione temporanea sui nervi periferici. Il follow-up mediano era di 61.5 (SD +-27.7) mesi e un esito positivo a lungo termine è stato riscontrato nel 72% dei pazienti. Si è dovuto rimuovere l'impianto nel 28% dei casi per lo più a causa dell'esito insoddisfacente (54% dei pazienti con risultati negativi). Il tasso di revisione[?] di questo studio è del 50% che è molto più alto di quello riscontrato nella letteratura generale sull'SNM che tratta le disfunzioni alla vescica e all'intestino. In altre ricerche caso-controllo fondate sull'osservazione retrospettiva, a 34 pazienti donna è stato impiantato un dispositivo permanente. I punteggi VAS medi relativi al dolore pre- e post-operatorio erano 6.5 +- 2.9 / 2.4 +- 1.1 ($P<0.01$). Questi risultati positivi si sono mantenuti dopo un periodo di follow-up medio di 86 +- 9.8 mesi. Il tasso di ri-operazione era 25%. Per tanto, l'SNM può essere usata ma senza sottovalutare la possibilità che ci siano delle complicanze.

Si pensa che la neurostimolazione del pudendo (PNS) nella CPPS refrattaria abbia un risultato migliore nei pazienti per cui le altre opzioni terapeutiche non abbiano funzionato. In un eventuale[?] studio in singolo-cieco cross-over sulla PNS e la SNM in pazienti con BPS (n=22), la PNS ha dato un risultato finale del 59% di miglioramento dei sintomi, mentre per la SNM si ha un 44% di miglioramento ($P=0.05$). Molti pazienti che hanno provato sia l'elettrodo sacrale sia quello del pudendo hanno scelto PNS quale il miglior sito[?]posto per ottenere sollievo dal dolore. Sembra che le opzioni di neuromodulazione siano ben tollerate e che più del 99% dei pazienti sottoposti a neuromodulazione abbiano dichiarato che si sottoporrebbero all'intervento una seconda volta. La PNS può funzionare nella neuralgia del pudendo che in realtà è una lesione del nervo periferico ed in quanto tale dovrebbe rispondere alla neuromodulazione con impianti di generatori [equivalenti/modulari] di impulso. Tuttavia, è importante che la stimolazione sia realizzata nello stesso punto in cui si sente il dolore.

La stimolazione del midollo spinale (SCS) è considerata un'importante opzione di trattamento per certe forme di dolore neuropatico cronico che altrimenti resisterebbero al trattamento. Il funzionamento nel CPPS è ancora incerto. L'SCS può essere efficace per

gli afferenti toraco-lombari. Tuttavia, è difficile ottenere una stimolazione appropriata usando l'SCS per quanto riguarda i nervi sacrali - pudendo compreso - e ciò ne limita l'uso nella gestione del dolore pelvico cronico. Ciò nonostante, nel caso in cui venga individuata una causa viscerale specifica, come succede per l'endometriosi, c'è una possibilità che abbia un impatto positivo. In un piccolo (n=6) studio di Kapural ed altri, l'SCS è stata usata per curare il dolore pelvico viscerale dopo un periodo di test positivi con blocchi ipogastrici e blocchi ipogastrici neurolitici. In un periodo di follow-up medio di 30.6 mesi, il punteggio VAS sul dolore medio è diminuito da 8 a 3, con una riduzione concomitante nell'uso di oppiacei da 22.5 mg a 6.6 mg di morfina solfata. Anche l'indice di disabilità del dolore è migliorato per tanto l'SCS può essere usata nella gestione del dolore viscerale che, però, necessita ancora di altri approfondimenti.

E'abbastanza chiaro che le terapie neuromodulari sono complesse e la selezione dei pazienti è di fondamentale importanza per far sì che funzionino. Questi pazienti sono vulnerabili, spesso hanno risposto negativamente alle altre modalità di trattamento e sono psicologicamente fragili. Di fatto, l'opzione della neuromodulazione può essere presa in considerazione solo in centri specializzati e in quei centri che possano offrire delle attenzioni[?]cure multidisciplinari.

4.4 Stimolazione profonda del cervello

Per il dolore cronico refrattario a tutte le altre forme di trattamento, la stimolazione profonda del cervello (DBS) deve essere condotta da un neurochirurgo. Come per i metodi non invasivi di stimolazione al cervello,lo scopo è quello di migliorare l'attività dei sistemi inibitori del dolore e di solito la stimolazione viene effettuata nell'aria talamica [letteralmente, su uno o su più talami,?], sulla materia grigia periventricolare e su quella periacquedottale. Più in superficie, anche la corteccia motoria può essere stimolata (MCS). Le meta-analisi (anche se principalmente di casi in serie) dimostrano che la DBS ha un tasso di successo a lungo termine del 46%, mentre quello della MCS può variare, a dipesa delle indicazioni, dal 40% al 75%. Sorprendentemente, entrambe le procedure hanno una probabilità di complicazione relativamente bassa in cui le infezioni rappresentano il rischio più alto. La DBS è associata al rischio di emorragia intracranica (fino al 4%), una complicazione che, tuttavia, non si presenta nella MCS. Non esistono studi che accertino l'efficacia della MCS o della DBS nelle donne con CPP.

5. Considerazioni conclusive

Quando vengono valutati e pianificati i trattamenti per le donne con CPP, è importante considerare l'importanza che ha il CNS nella percezione di dolore. I trattamenti che interessano il CNS possono essere intrapresi isolatamente mentre il pazienti è ancora sotto indagine o prescritti da soli o in combinazione con terapie ormonali e/o chirurgiche se vi è il sospetto, o l'individuazione, di una patologia pelvica.

Anche se esistono delle statistiche a supporto dell'efficacia di questi trattamenti per il CPP in particolare, prove solide dimostrano che vi è una somiglianza tra i meccanismi che stanno alla base del dolore e i cambiamenti centrali associati al dolore cronico, senza contare il punto specifico da cui parte la sensazione di dolore. Pertanto è ragionevole pensare di poter usare questi trattamenti in tutte le donne con CPP.

Le opzioni che prevedono l'uso di farmaci antidepressivi ed anticonvulsionanti sono ben tollerate per cui possono essere prescritte da un ginecologo o da un medico del pronto[?] soccorso. Le altre opzioni terapeutiche più nuove o invasive richiedono l'intervento di un team specializzato nella gestione del dolore. Tuttavia, è importanti che i ginecologi siano a conoscenza di tali opzioni così che i pazienti refrattari ai trattamenti standard possano essere studiati da un team specializzato prima di eseguire un intervento chirurgico radicale o che ne comprometta la fertilità [???].

Anche se ancora non si sa fino a che punto i cambiamenti centrali possano essere invertiti[?]ribaltati, il trattamento immediato dei sintomi di dolore può prevenire o, quanto meno, minimizzare lo sviluppo di cambiamenti a lungo termine associati al dolore cronico.

4.3 TT

Il ruolo del sistema nervoso centrale nel trattamento del dolore pelvico cronico

1.*Background*

Il dolore pelvico cronico (CPP – *Chronic Pelvic Pain*) è definito dal *Royal College of Ostetricians and Gynecologists* (RCOG) come "un dolore intermittente o costante al basso addome o alla pelvi di una donna della durata di almeno 6 mesi che non si avverta solo durante il ciclo mestruale o in gravidanza". Le donne affette da CPP manifestano un dolore ciclico o costante senza cause apparenti o a causa di attività specifiche come urinare (disuria), defecare (dischezia) o nei rapporti sessuali (dispareunia). CPP è associato ad un significativo abbassamento della qualità della vita e riscontrato in donne affette da frequente stress psicologico. In Gran Bretagna, più di un milione di donne è affetto da CPP; tuttavia, tale patologia è sempre più difficile da curare dato che, anche dopo molti anni dall'esordio della sintomatologia algica, alle pazienti non viene somministrata una terapia analgesica adeguata. Anche se è noto che CPP si manifesta insieme a varie patologie ginecologiche (come endometriosi, adenomiosi, infiammazione pelvica cronica e prolasso di organi pelvici), in molti casi non è stata ancora individuata una specifica eziopatogenesi a cui si possa associare tale sindrome – detta sindrome del dolore pelvico cronico (CPPS – *Chronic Pelvic Pain Syndrome*). Tuttavia, anche quando vi è una causa apparente (come l'endometriosi), i sintomi di dolore percepito non sono proporzionali al grado di malattia identificato o persistono anche dopo la cura ottimale di tale patologia.

La percezione del dolore avviene a livello del sistema nervoso centrale (CNS – *Central Nervous System*) e un sempre maggior numero di ricerche dimostra che il dolore, indipendentemente dall'organo d'origine, insorge e si perpetua nello stesso CNS. Il dolore cronico, inoltre, viene associato ad alterazioni permanenti sia della struttura che della funzione del sistema nervoso centrale che, a prescindere dalla patologia dalla quale origina la sintomatologia algica, sono abbastanza simili. Recenti ricerche dimostrano che tali alterazioni di CNS si manifestano in un'ampia varietà di patologie ginecologiche associate a CPP, come: endometriosi, vulvodinia, cistite interstiziale /sindrome del dolore vescicale (IC – *Interstitial Cystitis*/BPS – *Bladder Pain Syndrome*) e dismenorrea. La disfunzione di CNS può anche essere responsabile di molti sintomi associati a CPP: ne

sono esempio l'alterazione del funzionamento degli organi pelvici che può portare ad aumento di frequenza minzionale, ritenzione urinaria, diarrea/costipazione e a disfunzioni endocrine, ed, in particolare, l'alterazione dell'attività dell'asse ipotalamo-ipofisi-surrene che è potenzialmente causa di infezioni e patologie autoimmuni.

Di solito, le donne affette da CPP vanno da ginecologi che, per lo più, si limitano ad indagare e curare gli organi pelvici di loro competenza; al contrario, quest'articolo prende in esame i trattamenti disponibili per CPP che mirano al sistema nervoso centrale piuttosto che alla pelvi. Sebbene molti di questi trattamenti siano già, o stiano diventando, in uso presso gli ambulatori di terapia del dolore cronico, non sono ancora stati adottati da molti ginecologi. Quest'articolo, inoltre, non prende in considerazione il trattamento di CPP associato a cancro o a dismenorrea e dispareunia isolate dato che queste non rientrano nella definizione RCOG di CPP, tuttavia, buona parte della discussione sarà comunque rilevante per queste patologie poiché incluse nelle definizioni di altre organizzazioni, come l'*International Association for the Study of Pain* (IASP) e la *European Association of Urology* (EAU), secondo cui la dismenorrea è associata ad importanti alterazioni del sistema nervoso centrale.

Sebbene sarebbe più appropriato che alcuni trattamenti terapeutici descritti in quest'articolo fossero prescritte da un ginecologo, è opportuno ricordare che il dolore cronico ha origine multi-fattoriale; di conseguenza, in tutti i pazienti, esclusi coloro con risposta adeguata alla terapia, il risultato potrebbe essere migliore se la gestione del trattamento venisse affidata ad un *team* multidisciplinare che potenzialmente includa medici specialisti in endocrinologia, chirurgia (ginecologia, urologia) e psicologia. Inoltre, anche se le terapie più invasive dovrebbero essere riservate a pazienti refrattari alle cure standard o dove non si riesca ad identificare una patologia d'organo, terapie alternative (ad esempio, con antidepressivi e/o anticonvulsivanti e la stimolazione elettrica transcutanea del nervo [TENS – *Transcutaneous Electrical Nerve Stimulation*]) possono essere applicate in pazienti affetti da CPP mentre vengono effettuate indagini diagnostiche più approfondite e/o altre cure. Tali strategie, oltre a diminuire almeno parzialmente il dolore, si presume migliorino la qualità della vita e riducano la progressione delle alterazione del sistema nervoso centrale affinché non diventino irreversibili.

2.Cure mediche

2.1 Cure con antidepressivi ed anticonvulsivanti

Nonostante i farmaci antidepressivi ed anticonvulsivanti siano da molti anni un supporto per la gestione del dolore cronico ed, in particolare, per quello neuropatico, il loro funzionamento non è stato ancora completamente chiarito. Risulta che gli antidepressivi agiscano potenziando l'attività dei sistemi inibitori del dolore per mezzo dell'inibizione del *re-uptake* di serotonina, noradrenalina, dopamina e acetilcolina, dell'effetto anti-infiammatoria diretto, del potenziamento dell'attività degli oppioidi endogeni (endorfine) e dell'inibizione dell'attività dell'acido N-metil-D-aspartico (NMDA). Ciò che si sa è che la loro attività analgesica è indipendente da quella antidepressiva e spesso si verifica a dosaggi minori rispetto a quelli necessari per produrre un effetto antidepressivo. Pare, inoltre, che i farmaci anticonvulsivanti agiscano grazie all'interazione di più meccanismi inclusa l'inibizione dei canali voltaggio dipendenti di sodio e calcio e delle interazioni col sistema acido γ-aminobutirrico (GABA). Dato che le donne affette da CPP dichiarano di aver capito che il loro medico avesse ricondotto il dolore a fattori psicologici, quanto detto può tornare utile per spiegare loro che i farmaci antidepressivi ed anticonvulsivanti ai dosaggi prescitti hanno effetto sul dolore cronico e non sullo stato psicologico.
In generale, entrambe le classi di farmaci sono ben tollerate e con effetti collaterali minori (più comunemente stanchezza e nausea), tuttavia, gli effetti collaterali specifici variano tra le due. L'ampia varietà di farmaci disponibili spesso si riflette nella mancanza di un confronto approfondito tra efficacia e possibilità di effetto indesiderato; di conseguenza, è difficile consigliare un medicinale rispetto ad un altro. I differenti meccanismi di azione, inoltre, fanno sì che se un farmaco non è efficace potrebbe esserlo un altro, come potrebbe la combinazione di più terapie in caso di efficacia solo parziale; allo stesso modo, se l'effetto indesiderato di un farmaco non è tollerato, probabilmente esiste un'alternativa che si adatti meglio al paziente. Vale la pena ricordare che una curva dose-risposta esiste per entrambe le classi di farmaci pertanto, in caso di assenza di risposta iniziale, le dosi dovranno venire aumentate gradualmente; invece, in assenza di risposta adeguata alle dosi somministrate o in caso gli effetti indesiderati non siano tollerati il farmaco dovrà essere progressivamente diminuito e sospeso.
Anche se molte ricerche esplorano l'uso di questi farmaci in CPP, sono pochi gli studi effettuati validi per questa indicazione.

2.1.1 Prove sull'uso di antidepressivi in CPP

Una *review* sistematica degli studi disponibili sull'uso di antidepressivi nel dolore urologico cronico risale al 2009. Pur concentrandosi sulle condizioni relative al dolore urologico sia in uomini che donne (prostatite cronica, cistite interstiziale), questa *review* include anche studi in cui ai pazienti viene diagnosticato CPP da solo (vulvodinia esclusa). Dieci ricerche, che rispettano i criteri di inclusione degli autori, valutano l'efficacia di amitriptilina, sertralina, nortriptilina, duloxitina e citalopram; anche se la conclusione generale è che "l'uso di antidepressivi nella gestione del dolore pelvico cronico non è supportato da un adeguato numero di *trial* randomizzati controllati ben strutturati", si deve riconoscere che almeno per amitriptilina e sertralina, esistono prove a favore del loro effetto benefico. Di fatto, i farmaci studiati vengono ben tollerati e sono in genere sicuri anche per assunzioni a lungo termine.

2.1.2 Prove sull'uso degli anticonvulsivanti in CPP

Ancora meno prove sono disponibili sull'uso di farmaci anticonvulsivanti nel trattamento del dolore pelvico cronico. Sator-Katzenschlager e colleghi hanno comparato l'efficacia e la tollerabilità di amitriptilina con gabapentin e dei due farmaci insieme. Detto che questo studio non dispone di un gruppo placebo ed è relativamente limitato (20 pazienti per ogni farmaco da solo e 16 per la combinazione dei due farmaci), le conclusioni dimostrano che i farmaci sono entrambi ben tollerati e che gabapentin da solo o in combinazione è più efficace di amitriptilina da solo, soprattutto per un sollievo dal dolore a lungo termine. Tuttavia, un progetto pilota randomizzato controllato di gabapentin *versus* placebo è ancora in corso. Un secondo studio esamina il ruolo di lamotrigina in CPP; l'interpretazione dei risultati è piuttosto difficile a causa del numero relativamente ristretto di pazienti arruolati per le tre sottocategorie di CPP: addominale diffuso (7 pazienti), neuropatico (7 pazienti) e vulvodinia (17 pazienti). Anche se in tutti e tre i gruppi di donne si è riscontrata un'efficacia parziale, solo coloro che sono affette da vulvodinia hanno segnalato, nei questionari relativi alla percezione del dolore, una riduzione significativa a termine delle 8 settimane di terapia (per quanto fosse un gruppo relativamente ristretto, va specificato che anche in quello con la neuropatia si sono raggiunti valori significativi). Una terza ricerca esamina gabapentin nel trattamento della

vulvoldinia. In questo studio delle 17 pazienti con vulvodinia a cui viene somministrato gabapentin, 14 (82%) hanno dichiarato sollievo parziale o totale dal dolore. Sebbene questo studio non sia ben controllato, include donne per cui il trattamento con altri farmaci, come amitriptilina, non aveva avuto un effetto soddisfacente.

2.2 La tossina botulinica

Sebbene gli studi che ne presentano l'effetto benefico siano ancora molto scarsi, l'uso di iniezione della tossina botulinica, *onabotulinumtoxin A* o Botox® (Allergan, Marlow, Bucks – UK), è in aumento per il trattamento di CPP. Oltre ad agire direttamente sui muscoli, si crede che la tossina botulinica abbia effetti sul sistema nervoso centrale – dato importante anche se non totalmente chiarito. Due studi osservazionali su piccola scala indicano come le pazienti con vulvodinia a cui viene iniettata la tossina botulinica nelle strutture del pavimento pelvico rispondano positivamente alla terapia senza manifestare significativi effetti indesiderati; questi gruppi, tuttavia, non sono stati né controllati né adeguatamente selezionati. La stessa situazione si verifica per le infiltrazioni intravescicali della tossina botulinica nel trattamento di IC/BPS, eccetto per il fatto che in questo caso si colpiscono le funzioni del muscolo detrusore e quindi molti pazienti hanno avuto bisogno di auto-cateterizzazioni intermittenti.

Esiste un unico studio randomizzato controllato sull'uso della tossina botulinica in donne con dolore pelvico della durata di più di due anni ed "evidenti segni di mialgia del pavimento pelvico" come dimostrano la contrazione dei muscoli pelvici (rilevata alla palpazione) e l'elevata pressione vaginale (rilevata col manometro). Al gruppo di terapia (composto da 30 pazienti) è stata iniettata la tossina nei muscoli puborettali e pubococcigei mentre al gruppo di controllo (30 pazienti) è stata iniettata negli stessi muscoli della soluzione fisiologica. I valori riferiti al dolore percepito sono diminuiti in entrambi i gruppi ma non sono significativi dal punto di vista statistico. Messe a confronto con gli standard, le donne nel gruppo a cui è stato somministrato il botulino hanno riscontrato un'importante riduzione di dispareunia e di dolore pelvico non mestruale, inoltre la tensione del pavimento pelvico è diminuita. In due pazienti a cui è stata iniettata la tossina botulinica nei muscoli sopracitati si è riscontrata incontinenza urinaria ed in una delle due anche 4 mesi di incontinenza intermittente delle feci. Gli esperimenti sulla tossina in donne con vescica iperattiva suggeriscono che questa sia una terapia ben tollerata col potenziale di apportare un significativo miglioramento alla qualità della vita,

motivo per il quale si continuano a condurre ricerche più approfondite sull'uso della tossina botulinica nel trattamento di vulvodinia e CPP. Anche la tecnica del *dry needling* (tanto l'agopuntura come gli aghi ipodermici utili per detendere i punti *trigger*/stimolare i muscoli senza iniezioni di farmaci anestetici locali o placebo) merita ricerche più approfondite visti i buoni risultati, del tutto inaspettati, registrati anche nel gruppo di controllo a seguito della somministrazione di soluzione fisiologica descritta sopra.

2.3 Altro

Altre tre terapie farmacologiche che si concentrano sul sistema nervoso centrale sono state studiate nel trattamento di CPP.

Di particolare importanza, la melatonina ha ridotto notevolmente il dolore giornaliero, quello mestruale, dischezia e disuria in un gruppo di 40 donne affette da CPP ed endometriosi confermata in laparoscopia; questi dati, tuttavia, non possono essere applicati a donne con CPP a cui non sia stata diagnosticata l'endometriosi.

Lofexidina cloridrato, un agonista dell'α-2 adrenorecettore che agisce sia attraverso un'azione diretta antinocicettiva sia prevenendo il vasospasmo nel letto utero-ovarico, è stato studiato in un gruppo di donne con CPP senza evidenti patologie in laparoscopia. Questa ricerca non ha riscontrato una differenza significativa rispetto al placebo e, anche se il numero di pazienti prese in esame è relativamente limitato (19 pazienti nel gruppo trattato con lofexidina e 20 in quello placebo), è stata messa in atto solo per verificarne un eventuale effetto.

Anche il solfato di dexamfetamina, un'amina simpaticomimetica, è stato indicato come farmaco efficace nel trattamento del dolore pelvico cronico ma solo in associazione con un edema ortostatico idiopatico coesistente – patologia estremamente rara. Per tanto, ulteriori studi randomizzati controllati sono necessari prima che questo trattamento possa essere consigliato per CPP.

3. Trattamenti non invasivi e non farmacologici

L'applicazione esterna di stimolazioni sia elettriche che magnetiche può essere usata per alterare la neurofisiologia localmente (a livello della percezione del dolore) o centralmente (a livello di midollo spinale ed encefalo) e potenzialmente per produrre l'analgesia. La stimolazione elettrica può essere effettuata direttamente sui nervi

periferici, sul midollo spinale o sull'encefalo; tali metodi saranno discussi al punto 4 di quest'articolo.

3.1 Stimolazione locale

3.1.1 Stimolazione elettrica

La stimolazione elettrica transcutanea dei nervi (TENS) è una forma conosciuta di analgesia usata durante il parto, ma l'esatto meccanismo per il quale questa eserciti un effetto analgesico non è del tutto chiaro. Per molto tempo si è creduto che funzionasse per mezzo della teoria *gate control* secondo cui l'attività delle fibre Aβ di largo diametro inibisce l'attività di quelle di diametro inferiore dello stesso segmento (Aδ e C, che trasmettono il dolore). Tuttavia, anche la stimolazione delle piccole fibre può produrre l'inibizione segmentale ed extra-segmentale che determina l'effetto analgesico. Mentre una riduzione del dolore è stata dimostrata negli uomini affetti da CPP/prostatite cronica, ciò non è avvenuto per le donne con CPP. In vista della localizzazione del dolore in pazienti donna affette da CPP, la stimolazione intravaginale elettrica (IVES – *Intravaginal Electrical Stimulation*) è stata proposta come strategia alternativa. I dati preliminari suggeriscono che IVES è associata ad una significativa riduzione del dolore e di dispareunia, con un sollievo dal dolore mantenuto per i 7 mesi di *follow-up*. Di recente, IVES per CPP è stata valutata in studi placebo (stimolazione *sham*) randomizzati controllati. Ciò conferma che la stimolazione attiva è superiore a quella placebo con una significativa riduzione dell'intensità del dolore segnalata a termine delle 5 settimane di trattamento, ciononostante, non esiste un *follow-up* a lungo termine di questo studio.

3.1.2 Stimolazione magnetica

Molti sono i meccanismi proposti attraverso i quali il magnetismo può influenzare il dolore, come, ad esempio: i) l'attenuazione selettiva della depolarizzazione neuronale alterando il potenziale di riposo della membrana, ii) l'aumento di flusso sanguigno (che potenzialmente accelera la rimozione dei mediatori chimici dell'infiammazione), e iii) l'alterazione dei legami cinetici dei canali ionici e quindi il regolare rilascio delle citochine e degli altri mediatori infiammatori. Nonostante esistano alcune prove sui benefici in pazienti con osteoartrite (anche se probabilmente in relazione con una

guarigione accelerata del tessuto piuttosto che un effetto analgesico diretto), solo tre ricerche su piccola scala sono state condotte su donne affette da CPP. Nel primo studio, in 20 donne con dolore pelvico acuto o cronico si sono applicati campi elettromagnetici a pulsione nella zona in cui insorgeva il dolore. Tutte e nove le donne con CPP hanno mostrato un adeguato miglioramento per quel che riguarda l'intensità del dolore percepito a seguito del trattamento, tuttavia, è opportuno specificare che quattro di queste venivano già trattate per una sindrome acuta alla base di CPP (rottura di cisti ovarica o infezione del tratto urinario). La seconda ricerca, invece, prevedeva l'uso di magneti placebo in uno studio randomizzato in doppio-cieco di una terapia a campo magnetico statico; alla fine dello studio, però, tutti coloro che indossavano magneti attivi erano a conoscenza del gruppo in cui si trovavano. Al termine del periodo di trattamento di 4 settimane, anche se i valori associati alla sofferenza non erano diminuiti in maniera significativa, queste donne dichiaravano di percepire molto meno dolore rispetto a quelle del gruppo placebo (misurato rispetto all'indice di disabilità relativa al dolore, un metodo di auto-valutazione basato su sette diversi domini, come: casa, lavoro, attività sociali e sessuali). Infine, nell'ultimo studio condotto su 48 pazienti con CPPS si sono effettuate stimolazioni magnetiche a ripetizione (rMS – *Repetitive Magnetic Stimulation*) sia sul punto da cui si diffondeva il dolore sia sul midollo spinale sacrale: una remissione del dolore è stata registrata nel 67% delle pazienti ed un esperimento controllato *versus* placebo è ancora in corso.

3.2 Stimolazione transcraniale

I metodi non invasivi di stimolazione cerebrale possono essere elettrici (stimolazione transcraniale a corrente diretta [tDCS – *Transcranial Direct Current Stimulation*] e stimolazione craniale con elettroterapia [CES – *Cranial Electrotherapy Stimulation*]) o magnetici (stimolazione transcraniale magnetica ripetitiva [rTMS – *Repetitive Transcranial Magnetic Stimulation*]). Queste tecniche mirano a modulare il dolore con un effetto diretto sull'attività cerebrale e risultati attendibili suggeriscono che sono in grado sia di produrre un'immediata modificazione della concentrazione dei neurotrasmettitori, GABA incluso, sia di indurre dei cambiamenti sinaptici a lungo termine. In particolare, nel trattamento di CPP si crede che l'analgesia si produca a seguito di una riduzione nell'attività delle reti cerebrali implicate nell'elaborazione del dolore e di una facilitazione dei meccanismi inibitori discendenti. Sebbene gli studi clinici intrapresi

sulle condizioni del dolore cronico supportino in generale un effetto analgesico di rTMS e tDCS, il sollievo dal dolore ottenuto non è sufficiente per essere considerato significativo dal punto di vista clinico. Solo uno studio si è interessato dell'efficacia di tali tecniche in CPP: Fenton e colleghi hanno confrontato tDCS con tDCS placebo in sette donne con CPP refrattarie al trattamento ed hanno individuato una modesta riduzione del dolore a seguito del trattamento attivo, tuttavia, il campione era troppo esiguo per trarre delle conclusioni d'interesse senza che vengano fatte delle ricerche più approfondite.

4.Interventi di chirurgia invasiva

4.1 Blocchi dei nervi

Solo due ricerche su piccola scala si sono interessate all'esecuzione dei blocchi dei nervi ipogastrici, riscontrando benefici solo parziali. Altre ricerche, pur non essendo supportate da evidenze scientifiche, prendono in esame le tecniche di visualizzazione delle strutture e di esecuzione pratica del blocco o descrivono trattamenti multimodali in un centro predisposto all'esecuzione di diversi tipi di blocchi dei nervi.

4.2 Neurectomia/ablazione dei nervi

Il blocco del ganglio paracervicale di Lee-Frankenhauser, che si effettua attraverso l'ablazione in laparoscopia del nervo uterosacrale (LUNA – *Laparoscopic Uterosacral Nerve Ablation*), è stato ampiamente praticato come trattamento del dolore pelvico fino alle pubblicazioni di un più vasto studio e di una successiva meta-analisi di tutti gli studi LUNA, avvenute rispettivamente nel 2009 e 2010. La meta-analisi ha rinforzato le conclusioni tratte dalle pubblicazioni che dimostrano che tale procedura non ha effetti benefici sul dolore; in particolare, nelle pazienti donne sottoposte a LUNA la percezione del dolore nel breve periodo è aumentata rispetto a quella percepita da coloro che non vi si sono sottoposte.

Un'altra tecnica utilizzata è la neurectomia presacrale (PNS – *Presacral Neurectomy*) che comporta la transezione totale dei nervi presacrali che si trovano entro i confini del triangolo interiliaco (procedura che può essere eseguita per via laparoscopica). Nonostante i dati sull'efficacia di tale procedura nel trattamento del dolore pelvico siano limitati e in conflitto tra loro, il più grande e recente *trial* randomizzato controllato

suggerisce che PSN può essere efficace per il trattamento di grave dismenorrea causata da endometriosi. La neuroctomia presacrale laparoscopica, però, richiede delle competenze chirurgiche e di specializzazione molto elevate poiché gravata da complicanze vascolari e linfatiche a causa della vicinanza dei grossi vasi sanguigni e dei dotti linfatici. Un'alternativa a questa tecnica è la neurolisi presacrale laparoscopica che prevede l'iniezione di una soluzione neurolitica (ad esempio, fenolo) al fine di distruggere chimicamente la struttura neurale microscopica dei nervi presacrali. Sebbene esista uno studio che fornisce dati a favore di questa tecnica come trattamento per il dolore pelvico, sia come terapia singola che in combinazione con altre, senza ulteriori dati a favore dell'efficacia e sicurezza di tali tecniche è impossibile consigliare tanto la neurectomia presacrale quanto la neurolisi.

4.3 Neuromodulazione

Il ruolo della neuromodulazione nella gestione delle sindromi da dolore pelvico cronico non è ancora stato indagato a pieno, al contrario, quello nella gestione della vescica iperattiva o dell'incontinenza fecale è stato maggiormente chiarito. Sebbene vengano pubblicati sempre più studi pilota e serie di *case report* su piccola scala a favore dell'efficacia di tale tecnica nel trattamento del dolore pelvico, sono necessarie ulteriori ricerche controllate. Oggigiorno, gli specialisti considerano la neuromodulazione uno strumento da usare nel trattamento del dolore pelvico solo contestualizzandolo in un progetto più ampio di gestione del dolore; le tecniche disponibili includono: la stimolazione periferica dei nervi (ad esempio quelle del nervo tibiale posteriore, della radice o nervo sacrale e del nervo pudendo) e la stimolazione del midollo spinale.
La stimolazione percutanea ad intermittenza del nervo tibiale (PTNS – *Intermittent Percutaneous Tibial Nerve Stimulation*) è un'opzione di trattamento molto poco invasiva in grado di diminuire significativamente la sofferenza che accompagna il dolore nei pazienti con una disfunzione del tratto urinario più basso, come urgenza e incontinenza associata o meno a frequenza. In uno studio di Van Balken *et al*. condotto su 33 pazienti con CPP in seguito alla terapia con PTNS, si segnala che il punteggio nella scala visuale analogica (VAS – *Visual Analogue Scale*) è migliorato in maniera soggettiva nel 42% dei pazienti, con 7 pazienti (21%) che hanno espresso un punteggio VAS addirittura minore di 3 a termine delle 12 settimane di trattamento. Inoltre, sia il punteggio sulla qualità della vita sia quello relativo all'intensità di dolore percepito sono migliorati significativamente

in tutti i pazienti. Dato che questi risultati sono accertati dagli studi condotti da Kim *et al*., Aggamy *et al*., e Gokyildiz *et al*., PTNS può essere considerata nel trattamento di pazienti con CPP che abbiano già provato altre terapie e a cui non rimanga nessun'altra opzione. In ogni caso, tutti gli autori concordano che studi più approfonditi debbano necessariamente essere condotti in futuro.

Nonostante la neuromodulazione sacrale (SNM – *Sacral Neuromodulation*) e la neurostimolazione sacrale (SNS – *Sacral Neurostimulation*) siano state introdotte come terapie per CPPS per la prima volta nel 1999 da Feler e colleghi, la letteratura che rimane è piuttosto scarsa. Mentre SNS si concentra sulla stimolazione del nervo che rappresenta il principale *driver* di risposta positiva, diversi autori concordano che la neurostimolazione corrisponda al punto da cui inizia la risposta ma che il mantenimento a lungo termine dipenda dall'impatto della modulazione sul sistema neurale. In breve, sia il nervo che la radice sacrale vengono inizialmente stimolati per poi essere modulati in un secondo momento visto che il posizionamento dell'elettrodo coinvolge entrambe le strutture. Per lo scopo di questa ricerca, la neuromodulzione sacrale viene sì considerata un'opzione terapeutica, dando però per vero che entrambi i componenti del sistema neurale sacrale vengano modulati.

I casi studiati, come riportano Lavano e colleghi nel 2006, hanno dimostrato che in cinque pazienti su sette SNM ha ridotto drasticamente i punteggi relativi al dolore; anche se in letteratura si trovano ricerche simili, l'insieme dei dati rimane piuttosto esiguo. Uno dei gruppi di studio più ampi era formato da 78 pazienti in terapia dal 1994 al 2008 e, a coloro che mostravano almeno un 50% di miglioramento dei sintomi (rilevato da un test di valutazione temporanea sui nervi periferici), è stato impiantato SNM permanente. Il *follow-up* medio è di 61,5 (SD ± 27,7) mesi e un esito positivo a lungo termine è stato riscontrato nel 72% dei pazienti; l'impianto si è dovuto rimuovere nel 28% dei casi per lo più a causa di esito insoddisfacente (54% dei pazienti con risultati negativi). Il tasso di revisione di questo studio è del 50% che è molto maggiore rispetto a quello riscontrato in letteratura su SNM relativa a disfunzioni vescicali e intestinali. In altre ricerche caso-controllo fondate sull'osservazione retrospettiva un dispositivo permanente è stato impiantato in 34 pazienti donne. I punteggi VAS medi relativi al dolore pre- e post-operatorio sono 6,5 ± 2,9 / 2,4 ± 1,1 (P<0,01); questi risultati positivi si sono mantenuti dopo un periodo di *follow-up* medio di 86 ± 9,8 mesi e il tasso di re-intervento è del 25%, per tanto SNM può essere utilizzata senza però sottovalutare la possibilità che ci siano delle complicanze.

La neurostimolazione del pudendo (PNS – *Pudendal Neurostinulation*) per CPPS refrattaria è considerata un'opzione terapeutica in quei pazienti per cui le altre opzioni non siano state efficaci. In uno studio prospettico, incrociato in singolo-cieco su 22 pazienti con BPS sottoposti a PNS e SNM, la neurostimolazione del pudendo ha dato il 59% di miglioramento dei sintomi, rispetto al 44% di quella sacrale (*P*=0,05). Inoltre, molti pazienti che hanno provato sia l'elettrodo sacrale sia quello del pudendo hanno scelto PNS quale miglior sito per ottenere sollievo dal dolore. Di fatto, sembra che le opzioni di neuromodulazione siano ben tollerate e che più del 90% dei pazienti sottoposti a neuromodulazione abbia dichiarato che si sottoporrebbe all'intervento una seconda volta. In particolare, PNS può essere efficace nella neuralgia del pudendo che è una lesione del nervo periferico, ed, in quanto tale, dovrebbe rispondere alla neuromodulazione con impianti di generatori di impulso; infine, è importante ricordare che la stimolazione deve essere realizzata nel punto stesso in cui si avverte il dolore.

La stimolazione del midollo spinale (SCS – *Spinal Cord Stimulation*) è considerata un'importante opzione di trattamento per certe forme di dolore neuropatico cronico che altrimenti resisterebbero al trattamento. Sebbene il funzionamento in CPPS sia ancora incerto, SCS può essere efficace per le afferenti toraco-lombari, tuttavia, è piuttosto difficile ottenere una stimolazione appropriata sui nervi sacrali, pudendo compreso, e ciò ne limita l'uso nella gestione del dolore pelvico cronico. Nel caso in cui venga individuata una causa viscerale specifica, come succede per l'endometriosi, c'è, però, una possibilità che questa abbia un impatto positivo. Infatti, in uno studio su piccola scala (effettuato su 6 pazienti) di Kapural *et al*. SCS è stata usata nel trattamento del dolore pelvico viscerale in seguito ad un periodo di test positivi con blocchi dei nervi ipogastrici temporanei o permanenti (con agenti neurolitici). In un periodo di *follow-up* medio di 30,6 mesi, il punteggio VAS sul dolore medio è diminuito da 8 a 3, con una riduzione concomitante nell'uso di oppiacei (da 22,5 mg a 6,6 mg di morfina solfato al giorno). Poiché l'indice di disabilità del dolore è migliorato, SCS può essere usata nella gestione del dolore viscerale anche se necessita di ulteriori approfondimenti.

E' abbastanza chiaro che le terapie neuromodulari sono complesse e la selezione dei pazienti di fondamentale importanza per far sì che queste funzionino: i pazienti sono vulnerabili, spesso hanno risposto negativamente alle altre modalità di trattamento e sono psicologicamente fragili. Di conseguenza, l'opzione della neuromodulazione può essere presa in considerazione solo in centri specializzati che possano offrire cure multidisciplinari.

4.4 Stimolazione profonda dell'encefalo

Per il dolore cronico refrattario a tutte le altre forme di trattamento, la stimolazione cerebrale profonda (DBS – *Deep Brain Stimulation*) deve essere condotta da un neurochirurgo e, come per i metodi non invasivi di stimolazione dell'encefalo, lo scopo è quello di migliorare l'attività dei sistemi inibitori del dolore. Di solito la stimolazione viene effettuata nell'area talamica, nel grigio periventricolare e periacqueduttale e, più in superficie, anche nella corteccia motoria (MCS – *Motor Cortex Stimulation*). Le meta-analisi (anche se principalmente di *case report*) dimostrano che DBS ha un tasso di successo a lungo termine del 46%, mentre quello di MCS può variare, in base alle indicazioni, dal 40% al 75%. Sorprendentemente, in entrambe le procedure il fattore di rischio è relativamente basso, e quello peggiore è rappresentato dalle infezioni. Inoltre, la stimolazione cerebrale profonda è associata al rischio di emorragia intracranica (fino al 4%), una complicanza che non si presenta con quella della corteccia motoria. In conclusione, non esistono studi che accertino l'efficacia di MCS o di DBS in donne affette da CPP.

5. Considerazioni conclusive

Quando vengono valutati e pianificati i trattamenti per le pazienti affette da dolore pelvico cronico, è importante considerare il ruolo chiave che il sistema nervoso centrale ricopre nell'esperienza del dolore. I trattamenti che interessano CNS possono essere intrapresi inizialmente mentre sono in corso indagini diagnostiche, o prescritti da soli o in combinazione con terapie endocrine e/o chirurgiche se vi è il sospetto, o l'identificazione, di una patologia pelvica.

Sebbene esistano delle statistiche a supporto dell'efficacia di questi trattamenti per CPP in particolare, dati attendibili dimostrano che vi è una somiglianza tra i meccanismi che stanno alla base del dolore e le alterazioni del sistema nervoso centrale associate a dolore cronico, indipendentemente dalla sede specifica da cui origina la sensazione di dolore; pertanto è ragionevole considerare queste terapie per tutte le donne con CPP.

In generale, mentre le opzioni terapeutiche che prevedono l'uso di farmaci antidepressivi ed anticonvulsivanti sono ben tollerate e possono essere prescritte da un ginecologo o da un medico di base, quelle più recenti o invasive richiedono l'intervento di un *team* specializzato nella gestione del dolore. È importante che i ginecologi siano a conoscenza

di tali alternative così che le pazienti refrattarie ai trattamenti standard possano essere studiate da un *team* di specialisti prima di essere sottoposte ad interventi chirurgici radicali che ne possano compromettere la fertilità.

Anche se non è ancora chiaro fino a che punto le alterazioni del sistema nervoso centrale possano essere reversibili, il trattamento precoce dei sintomi algici può prevenire o, quanto meno, minimizzare lo sviluppo di alterazioni permanenti del sistema nervoso centrale associate a dolore cronico.

4.4 Revision with comments

~~Terapie mirate al~~Il ruolo del[1] sistema nervoso ~~per lenire il~~centrale[2] nel trattamento del[3] dolore pelvico cronico

1.~~-~~*Background*[4]

Il dolore pelvico cronico (CPP – *Chronic Pelvic Pain*[5]) è ~~stato~~[6] definito dal ~~Royal College~~ *Royal College*[7] ~~degli ostetrici e ginecologi~~ *of Ostetricians and Gynecologists*[8] (RCOG)[9] come ~~"~~"un dolore intermittente o costante al basso addome o alla pelvi di una donna ~~che duri~~ della durata di[10] almeno 6 mesi ~~e~~ che non si avverta solo ~~durane~~durante[11] il ciclo mestruale o ~~durante la~~in[12] gravidanza~~".~~". Le donne affette da CPP ~~possono~~[13] ~~provare~~manifestano[14] un dolore ciclico o costante senza cause apparenti o a causa di attività specifiche come urinare (~~dysuria~~disuria[15]), defecare ~~[aperture dell'intestino]~~[16] ~~(dyschezia~~(dischezia[17]) o nei rapporti sessuali (~~dyspareunia). Il~~dispareunia[18]). [19]CPP è associato ad un significativo abbassamento della qualità della vita e ~~studiato~~ riscontrato in donne affette ~~di~~da[20] frequente ~~da~~ stress psicologico. In Gran Bretagna, più di un milione di donne ~~sono~~

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[1] **LANGUAGE: mechanics (title) + sub-language (nominalization)** Titles must always be translated at last and that is why "Therapies targeting the Nervous System" is translated with "il ruolo del sistema nervosa centrale".

[2] **LANGUAGE: idiom** In Italian the adjective "centrale" must be specified when speaking about the "sistema nervoso".

[3] **LANGUAGE: sub-language (nominalization)** Throughout the whole text "per lenire/curare CPP" was replaced by "il trattamento di CPP".

[4] **PRESENTATION: typography** Italics is added to indicate the loan-word.

[5] **CONTENT: logic** Since the English acronym is maintained throughout the text, its disambiguation in italics is needed after a dash not to create ambiguity between the pathology name (in Italian) and its acronym (in English).

[6] **LANGUAGE: sub-language (present tense)** A general truth, thus the passive must be formed with the present rather than the past.

[7] **PRESENTATION: typography** Italics must be added to indicate the English name of the organisation.

[8] **LANGUAGE: mechanics** "Of Ostetricians and Gynecologists" must be written in English as this is the actual name of the organisation this article is issued from.

[9] **CONTENT: logic** The acronym is added as it is later mentioned in the text not to create ambiguity (*cf* foot-note 102)

[10] **LANGUAGE: sub-language** Verb forms are avoided in favour of nominal structures, more suitable for medical texts.

[11] **LANGUAGE: sub-language (spelling)**

[12] **LANGUAGE: sub-language** The compressed preposition "in" works better in terms of register.

[13] **TRANSFER: accuracy** When aspectual *can* is used in English with verbs of perception, it should not be translated.

[14] **LANGUAGE: sub-language** "Manifestare"= Collateral Term (lexical)

[15] **LANGUAGE: mechanics (wrong spelling)**

[16] **TRANSFER: accuracy (nonsense)** The literal translation into square brackets makes no sense in Italian.

[17] **LANGUAGE: mechanics (wrong spelling)**

[18] **LANGUAGE: mechanics (wrong spelling)**

[19] **LANGUAGE: mechanics** Determinate articles should not appear in front of English acronyms.

[20] **LANGUAGE: sub-language + smoothness** "Di frequente da stress" is replaced by the condensed form "da frequente stress".

~~affette~~è affetto[21] da CPP~~,~~,[22] tuttavia, tale patologia è sempre più difficile da curare dato che, [23]anche dopo molti anni dall'esordio della sintomatologia algica[24], alle pazienti non viene somministrata una terapia ~~analgesica~~ antalgica adeguata~~ anche dopo molti anni.~~. Anche se è noto che ~~il~~[25] ~~–~~CPP si manifesta insieme a varie patologie ginecologiche~~, –~~ [26](come~~, ad esempio, ~~[27]~~l'endometriosi, l'adenomiosi, l'infiammazione~~ endometriosi, adenomiosi, infiammazione pelvica[28] cronica ~~della pelvi~~ e ~~il~~ prolasso ~~dell'organo pelvico,~~di organi pelvici[29]), in molti casi non è stata ancora[30] individuata una ~~patologia~~specifica eziopatogenesi[31] a cui si possa associare tale ~~dolore (~~sindrome[32] – detta sindrome del dolore pelvico[33] cronico ~~della pelvi [~~(CPPS~~]). Inoltre~~ – *Chronic Pelvic Pain Syndrome*[34]). Tuttavia[35], anche quando vi è una causa ~~evidente, tipo l'endometriosi,~~apparente[36] (come l'endometriosi)[37], i sintomi di dolore ~~provato~~percepito[38] non sono ~~sproporzionati rispetto~~proporzionali[39] al grado di malattia identificato o persistono anche dopo la cura ottimale di tale ~~malattia.~~patologia[40].

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[21] **LANGUAGE: mechanics** Subject/verb agreement must always be respected.

[22] **LANGUAGE: mechanics (punctuation)**

[23] **LANGUAGE: smoothness** The anticipation of the temporal clause makes the text smoother.

[24] **LANGUAGE: sub-language (terminology sT)** Since this text is not done for publication, this correction could be intended as an example of over-tailoring.

[25] **LANGUAGE: mechanics** *Cf* footnote 19.

[26] **LANGUAGE: mechanics (puntuaction)** Thanks to the parenthetical sentence introducing examples the embedded subordinate "ad esempio" can be deleted.

[27] **LANGUAGE: mechanics** In a list, definite articles in front of specific pathologies should be avoided.

[28] **LANGUAGE: idiom** The adjective of relation "pelvica" is introduced to replace the complement of specification "della pelvi".

[29] **CONTENT: logic** Singular is rendered with plural as these organs include bladder, uterus and rectum.

[30] **LANGUAGE: smoothness**

[31] **LANGUAGE: sub-language (ternminology sT– over-tailoring)** *Cf* footnote 24.

[32] **CONTENT: logic** "Patologia" is substituted with "sindrome" so that it can introduce the Italian denomination of such a syndrome.

[33] **LANGUAGE: idiom** *Cf* footnote 28.

[34] **CONTENT: logic** *Cf* footnote 5.

[35] **LANGUAGE: smoothness.**

[36] **LANGUAGE: sub-language (CT) + idiom** The literal translation with "evidente" is wrong, "causa" collocates with "apparente".

[37] **LANGUAGE: mechanics (punctuation)** *Cf* footnote 26.

[38] **LANGUAGE: sub-language (lexical CT)**

[39] **LANGUAGE: smoothness**

[40] **LANGUAGE: sub-language (CT)**

~~Per provare~~La percezione del[41] dolore ~~c'è bisogno~~avviene a livello[42] del sistema nervoso centrale (CNS – *Central Nervous System*[43]) e un sempre maggior numero di ~~esperimenti~~ricerche[44] dimostra che il dolore, ~~al di là di quale sia il punto specifico da cui~~ indipendentemente[45] dall'organo d'origine[46], insorge e si ~~diffonde, può essere sia generato che perpetuato dallo~~perpetua[47] nello[48] stesso CNS. ~~Inoltre, il~~Il[49] dolore cronico, inoltre[50], viene associato ~~a cambiamenti a lunga termine~~ad alterazioni permanenti[51] sia della struttura che ~~del funzionamento del CNS che~~della funzione[52] del sistema nervoso centrale[53] che, [54]a prescindere dalla patologia dalla quale origina la sintomatologia algica[55], sono abbastanza simili ~~al di là della patologia che causa il dolore. Oggi esistono solide prove a favore del fatto~~. Recenti ricerche dimostrano[56] che tali alterazioni ~~del~~di[57] CNS ~~dipendano~~si manifestano[58] da ~~una vasta gamma~~un'ampia varietà[59] di patologie ginecologiche associate ~~a~~la[60] CPP, come ~~l'endometriosi, la~~:[61] [62]endometriosi, vulvodinia, ~~la~~ cistite interstiziale /sindrome del dolore ~~alla vescica~~vescicale[63] (IC – *Interstitial Cystitis*/BPS – *Bladder Pain Syndrome*[64]) e ~~la~~ dismenorrea. ~~Per~~

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[41] **LANGUAGE: sub-language (CT + nominalisation)**

[42] **LANGUAGE: sub-language (CT)**
[43] **CONTENT: logic** *Cf* footnote 5.
[44] **LANGUAGE: sub-language** Throughout the text the translation "esperimento" is replaced with "studio", "ricerca", "indagine" or "*trial*" for ethical purposes, in particular, not to equal test animals with patients.

[45] **LANGUAGE: sub-language**

[46] **LANGUAGE: sub-language (CT)**

[47] **LANGUAGE: sub-language (CT) + mechanics (simple present)** Right collateral terms must be used + Active voice is preferred to passive. Please note the use of the reflexive particle *si* in "si perpetua".

[48] **LANGUAGE: idiom** "Si perpetua in" not "da".

[49] **PRESENTATION: typography (capital letter)**

[50] **LANGUAGE: smoothness** Dislocation of the adding conjunctive "inoltre".

[51] **LANGUAGE: sub-language (sT+CT)** "Cambiamenti" is replaced throughout the whole text by "alterazioni", a more specific term. Likewise, "a lunga durata" is rendered with the collateral term "permanenti".

[52] **TRANSFER: accuracy** "Function = funzione", not "funzionamento".

[53] **CONTENT: logic** The repetition of the name in full avoids ambiguity because by keeping the acronym the reader could be obliged to go back in the text and look what the acronym means.
[54] **LANGUAGE: smoothness** Backward dislocation of the embedded clause.

[55] **LANGUAGE: sub-language (over-tailoring)**

[56] **LANGUAGE: smoothness**
[57] **LANGUAGE: mechanics** *Cf* footnote 19.
[58] **LANGUAGE: sub-language (CT) + mechanics** Simple present indicative rather than subjunctive.
[59] **LANGUAGE: sub-language**
[60] **LANGUAGE: mechanics** *Cf* footnote 19.
[61] **LANGUAGE: mechanics** Colon introducing examples
[62] **LANGUAGE: mechanics (no definite articles)** *Cf* footnote 27.
[63] **LANGUAGE: idiom (adj. of relation)** *Cf* footnote 28.
[64] **CONTENT: logic** *Cf* footnote 5.

~~di più~~[65]~~, la~~ La[66] disfunzione ~~del~~di[67] CNS può anche essere responsabile di molti sintomi associati ~~ala~~[68] CPP~~, come un'alterazione~~:[69] ne sono esempio[70] l[71]'alterazione del funzionamento degli organi pelvici[72] che può portare ad ~~urinare~~aumento di ~~frequente/~~frequenza[73] minzionale[74],[75] ritenzione ~~e~~urinaria[76], diarrea/costipazione~~,~~ e a disfunzioni endocrine, ed[77], in particolare~~ alle alterazioni dell'attività dell'asse~~, l'alterazione[78] dell'attività dell'asse ipotalamo-~~puititary-adrenal~~,ipofisi-surrene[79] che è potenzialmente ~~possono~~[80] ~~causare un incremento~~causa[81] di infezioni e patologie autoimmuni.

~~Le~~Di solito[82], le[83] donne ~~con~~affette da[84] CPP ~~di solito~~ vanno ~~dai~~da[85] ginecologi che, per ~~la maggior parte~~lo più[86], si ~~focalizzano sulla conformazione~~limitano[87] ad indagare[88] e ~~sul successivo trattamento della pelvi. Questa ricerca~~curare gli organi pelvici[89] di loro competenza[90]; al contrario[91],

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[65] **LANGUAGE: smoothness** Since the additive conjunctive adverb "inoltre" appears in the previous sentence, starting the following one with "per di più" would make the sentence much heavier.
[66] **PRESENTATION: typography (capital letter)**
[67] **LANGUAGE: mechanics** *Cf* footnote 19.
[68] **LANGUAGE: mechanics** *Cf* footnote 19.
[69] **LANGUAGE: mechanics** Colon introducing examples.
[70] **CONTENT: logic** The explicit reference helps the understanding of the text.
[71] **LANGUAGE: mechanics** The definite article works better than the indefinite.
[72] **LANGUAGE: idiom + CONTENT: logic (plural)** The addition of the adjective of relation avoids ambiguity within the text + *Cf* footnote 29.
[73] **LANGUAGE: sub-language (nominalization)**
[74] **LANGUAGE: sub-language (sT – over-tailoring)**
[75] **LANGUAGE: mechanics** Slash is turned into a comma. Although dividing two opposite terms, slash must be replaced as, linguistically speaking, these any longer share the adjective "urinaria": whereas the first phrase contains "minzionale", the second has "urinaria".
[76] **LANGUAGE: idiom + CONTENT: logic** "Ritenzione urinaria" + "Urinaria" must be added to avoid misunderstandings.
[77] **CONTENT: logic** The conjunction "and" is needed to avoid ambiguity: this is, in fact, another example altogether and not a consequence of the previous example.

[78] **LANGUAGE: mechanics** A collective singular replaces the plural "alterazioni".

[79] **LANGUAGE: sub-language (sT)** What had not be translated in the draft must be translated in the TT.

[80] **LANGUAGE: mechanics** "Possono" is a repetition of the adverb "potenzialmente"; thus, it must be deleted.
[81] **LANGUAGE: sub-language (nominalisation)**
[82] **LANGUAGE: smoothness** The initial temporal linker works better than the embedded one due to the length of this sentence.
[83] **LANGUAGE: mechanics** The definite article must be added to signal a restricted group of women, those with CPP.
[84] **LANGUAGE: sub-language (CT)**
[85] **LANGUAGE: mechanics** A more general "da" is preferred.
[86] **LANGUAGE: smoothnss** More concise.
[87] **TRANSFER: completeness** Although "si focalizzano" is not wrong, "si limitano" completes the meaning only implied by the ST.
[88] **TRANSFER: accuracy** The translation "conformazione della pelvi" is a clear mistranslation of the word 'assessment' referring to doctors' considerations and evaluations on the pelvis, therefore it is translated with the verb "indagare".

[89] **CONTENT: logic** *Cf* footnote 29.
[90] **LANGUAGE: idiom + TRANSFER: completeness** "Organi pelvici di loro competenza" collocates and adds the meaning of "their assessment" which is missing in the draft.
[91] **LANGUAGE: smoothnss + CONTENT: logic** The English full stop becomes in Italian the contrastive conjunctive "al contrario" to make the text smoother and more logical.

quest'articolo[92] prende in esame i trattamenti disponibili per ~~il~~[93] CPP che ~~si concentrano sul~~mirano[94] al[95] sistema nervoso centrale[96] piuttosto che ~~sulla~~alla pelvi. Sebbene molti di questi trattamenti siano già, o stiano diventando, ~~comuni negli~~ in uso presso gli[97] ambulatori di terapia del dolore cronico, non sono ancora ~~non vengono usati~~stati adottati[98] da molti ginecologi. ~~Tale studio~~Quest'articolo[99], inoltre[100], non prende in considerazione il trattamento ~~del~~di[101] CPP associato ~~al~~a[102] cancro o ~~della~~a dismenorrea ~~o della~~e dispareunia isolate dato che queste[103] non rientrano nella definizione RCOG[104] ~~del~~di[105] CPP~~. Tuttavia,~~[106] tuttavia, buona parte della discussione sarà comunque rilevante per queste patologie ~~visto che~~poiché incluse nelle definizioni di[107] altre organizzazioni, come ~~l'International Association for the Study of Pain~~ l'*International Association for the Study of Pain*[108] ([109]IASP) e ~~la European Association of Urology~~ *European Association of Urology* (EAU)~~, includono le ultime due all'interno delle loro definizioni, ed in particolare~~, secondo cui la dismenorrea è ~~stata~~[110] associata ad ~~alcuni cambiamenti centrali [=~~importanti[111] alterazioni[112] del sistema nervoso centrale~~] di particolare importanza~~.

Sebbene sarebbe più appropriato che alcune ~~opzioni terapeutiche descritte~~ trattamenti terapeutici descritti in questo studio ~~provenissero~~fossero prescritte[113] da un ginecologo, è opportuno ricordare che ~~una volta che~~ [114]il dolore ~~diventa~~[115] cronico ~~è probabile che dipenda da più fattori. In~~ ha origine

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[92] **TRANSFER: accuracy** The word "ricerca" is too general and could affect the understanding of the text, "this paper" clearly refers to the article being written, therefore, it is translated with "quest'articolo" (obviously implying the adjective "scientifico").
[93] **LANGUAGE: mechanics** *Cf* footnote 5.
[94] **LANGUAGE: sub-language** Active voice is preferred to reflexive *si*.
[95] **LANGUAGE: idiom** "Mirare a".
[96] **LANGUAGE: idiom** *Cf* footnote 2.
[97] **LANGUAGE: sub-language** More formal.
[98] **LANGUAGE: sub-language** More formal.
[99] **LANGUAGE: smoothness** Cohesion is added through the repetition of the word "articolo" reiterated by the demonstrative adjective "questo".
[100] **LANGUAGE: smoothness** The addition of the additive conjunctive adverb "inoltre" makes the sentences more strictly linked.
[101] **LANGUAGE: mechanics** *Cf* footnote 19.
[102] **LANGUAGE: smoothness** *Cf* footnote 27.
[103] **LANGUAGE: smoothness** Deictic anaphoric reference with "queste" adds cohesion to the text.
[104] Please note that, the presence of this acronym in the ST determined the addition of it at the very beginning of the text, *cf* footnote 9.
[105] **LANGUAGE: mechanics** *Cf* footnote 19.
[106] **LANGUAGE: mechanics (punctuation)** Full stop becomes a comma.
[107] **LANGUAGE: smoothness** Forward dislocation of the subordinate in which can be used a past participle thus making the sentence a bit lighter.
[108] **PRESENTATION: typography** Italics is added to indicate the English names of the two organisations.
[109] **LANGUAGE: mechanics (punctuation)** Parentheses introducing acronyms.
[110] **LANGUAGE: sub-language (present tense)** *Cf* footnote 6.
[111] **LANGUAGE: smoothness** More concise than "di particolare importanza".
[112] **LANGUAGE: sub-language (sT)** *Cf* footnote 51.
[113] **LANGUAGE: sub-language (lexical CT)**
[114] **LANGUAGE: smoothness (omission)**
[115] **LANGUAGE: sub-language (nominalisation)**

multi-fattoriale[116]; di conseguenza[117], in tutti i pazienti, ~~a parte in quelli che rispondono meglio~~ esclusi[118] coloro con risposta[119] adeguata[120] alla terapia, il risultato ~~è probabile che sia~~potrebbe[121] essere migliore se la gestione ~~della terapia è nelle mani di~~del trattamento[122] venisse affidata[123] ad un *team*[124] multidisciplinare che potenzialmente includa medici ~~specializzati in terapie ormonali, mediche, invasive/chirurgiche e psicologiche. Anche se~~ specialisti[125] in endocrinologia[126], chirurgia (ginecologia, urologia)[127] e psicologia. Inoltre[128], anche se[129] le terapie più invasive dovrebbero essere riservate ~~ai~~a pazienti refrattari alle cure standard ~~di qualsiasi~~ o dove non si riesca ad identificare una patologia ~~identificata o dove una patologia non può essere identificata, altre opzioni (ad es. antidepressivi, anticonvulsionanti, stimolazione locale (~~d'organo[130], terapie[131] alternative[132] (ad esempio[133], con antidepressivi e/o anticonvulsivanti[134] e la stimolazione elettrica transcutanea ~~del nervo~~ dei nervi [TENS – *Transcutaneous Electrical Nerve Stimulation*[135]]) possono essere ~~iniziate nel caso un paziente presenti~~applicate[136] in pazienti[137] affetti da[138] CPP ~~e continuate~~ mentre vengono ~~svolte analisi~~effettuate[139] indagini diagnostiche[140] più approfondite e/o altre cure. ~~Tale strategia~~Tali strategie[141], oltre ~~ad avere successo~~a diminuire[142] almeno ~~nella diminuzione parziale del~~ parzialmente

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[116] **LANGUAGE: sub-language (CT + grammar)** Semantically neutral verb "avere" + NP >> NP *ha* NP *cf* footnote 115.
[117] **CONTENT: logic + LANGUAGE: smoothness** Addition of the causal conjunctive "di conseguenza".
[118] **LANGUAGE: sub-language** More formal.
[119] **LANGUAGE: sub-language (nominalisation)**
[120] **LANGUAGE: idiom** "Risposta adeguata".
[121] **LANGUAGE: smoothness** The conditional "potrebbe" works better than the adeverb "probabile".
[122] **LANGUAGE: sub-language "**Trattamento" is here used as an hypernym of "terapia".
[123] **LANGUAGE: sub-language** More formal.
[124] **PRESENTATION: typography (italics)**
[125] **LANGUAGE: sub-language (sT) "**Specializzati" is wrong, it must be "specialisti".
[126] **LANGUAGE: sub-language (sT)** "Cure ormonali = endocrinologia", more specific.
[127] **TRANSFER: completeness** "Urologia e ginecologia" completes the meaning implied by the English "invasive". The literal translation "invasive/chirurguche" does not make sense in Italian.

[128] **LANGUAGE: smoothness** The additive conjunctive adverb "inoltre" adds cohesion to the text.
[129] **CONTENT: logic** The concessive "anche se" is added to make explicit the linkers within this sentence.
[130] **LANGUAGE: sub-language (sT) + idiom** "Patologia d'organo"
[131] **LANGUAGE: smoothness** The repetition of the word "terapie" adds cohesion to the text.
[132] **LANGUAGE: sub-language** More formal than "altre",

[133] **LANGUAGE: sub-language** Written in full.
[134] **LANGUAGE: mechanics (right spelling)**
[135] **CONTENT: logic** *Cf* footnote 5.
[136] **LANGUAGE: sub-language + idiom** More formal/specific than "iniziate" + "Applicate" is used as it collocates with both drugs (antidepressants and anticonvulsants) and local stimulation (TENS).
[137] **LANGUAGE: mechanics (plural)** As Serianni pointend out (*cf* 3.1.6.2 Depersonalisation of medical texts), patients must be treated as a broad, generic group, thus singular becomes plural.
[138] **LANGUAGE: sub-language (CT)** *Cf* footnote 84.
[139] **LANGUAGE: sub-language + idiom** More formal + "effettuare indagini".
[140] **LANGUAGE: sub-language (CT) + idiom (over-tailoring)**
[141] **CONTENT: logic** It must be a plural because, logically, these include antidepressants, anticonvulsants and local stimulation.
[142] **LANGUAGE: smoothness** Interestingly, a NP becomes a VP to make the sentence smoother; as a consequence the adjective "parziale" becomes an adverb.

il dolore, si presume ~~possa~~[143] ~~migliorare~~migliorino la qualità della vita ~~ed aiutare a prevenire lo sviluppo dei cambiamenti centrali a lungo termine~~ riducano[144] la progressione[145] delle alterazione[146] del sistema nervoso[147] centrale affinché[148] non diventino irreversibili[149].

2. Cure ~~Mediche~~mediche[150]

2.1 Cure con antidepressivi ed ~~anti-convulsionanti~~anticonvulsivanti[151]

~~I medicinali~~ Nonostante[152] i farmaci[153] antidepressivi ed ~~anti-convulsionanti sono~~ anticonvulsivanti[154] siano da molti anni un supporto per la gestione del dolore cronico ed[155], in particolare ~~nel dolore~~, per quello[156] neuropatico, ~~anche se~~ il loro funzionamento non è stato ancora completamente ~~capito.~~ chiarito[157]. ~~Pare~~Risulta che gli antidepressivi agiscano ~~alterando l'attività all'interno~~[158]potenziando[159] l'attività dei sistemi inibitori del dolore per mezzo ~~della modulazione della seratonina~~dell'inibizione del *re-uptake*[160] di serotonina, noradrenalina, dopamina e acetilcolina ~~e potenzialmente grazie agli effetti antagonisti dell'anti-infiammazione diretta, **opiodergic** o~~, [161]con un effetto anti-infiammatorio diretto, potendo l'attività degli oppioidi endogeni[162] (endorfine)[163] ed inibendo l'attività dell'acido N-

[143] **LANGUAGE: smoothness** "Possa" is deleted because already conveyed by "si presume".
[144] **LANGUAGE: smoothness** "Aiutare a prevenire" becomes "riuducano", a more concise form.
[145] **LANGUAGE: sub-language (CT)** "Progressione" is used as a collateral term for "sviluppo".
[146] **LANGUAGE: sub-language (sT)** *Cf* footnote 51.
[147] **LANGUAGE: idiom** Likewise the addition of "centrale" added in "sistema nervoso centrale" (*cf* footnote 2), "sistema nervoso" must be added in "alterazioni centrali" as it does not make sense in Italian.
[148] **LANGUAGE: smoothness + CONTENT: logic** The causal conjunction both adds cohesion and makes the text more logically structured.
[149] **LANGUAGE: smoothness + CONTENT: logic** This sentence at the end of the first paragraph recalls the very end of the paper, the only other occasion in which the adjective "irreversibili" appears. This lexical choice is believed to make makes the text more logical.

[150] **PRESENTATION: typography (no capital letter)**
[151] **LANGUAGE: mechanics (right spelling) + PRESENTATION: typography (no spacing)**
[152] **LANGUAGE: smoothness + sub-language** The backward dislocation of the concessive linker increases cohesion at the level of the sentence. "Nonostante" is preferred to "anche se" as it is more formal; "nonostante" also determines the choice of the subjunctive mode.
[153] **LANGUAGE: sub-language (CT)** "Farmaco" is used throught the text for "medicinale" unless a synonym is needed.
[154] **LANGUAGE: mechanics** *Cf* footnote 149.
[155] **LANGUAGE: smoothness** Addition of the coordinating conjunction "ed".
[156] **LANGUAGE: smoothness** Cohesion is achieved through anaphoric deixis.
[157] **LANGUAGE: sub-language** More appropriate.
[158] **LANGUAGE: smoothness (omission)**
[159] **LANGUAGE: sub-language (CT)**
[160] **LANGUAGE: smoothness (introduction of an Anglicism)** Adding an integral (Magris, 1992: 57), diagnostical (Serianni: 187) Anglicism to make the text smoother could sound contradictory yet, after having long discussed with a specialist, it was agreed that "modulation" could not be translated by "modulazione" but rather by" inibizione del *re-uptake*". The introduction of this Anglicism that does not appear in the ST is just an example of how important English has become for the Italian medical language (*cf* 3.1.5 English as the hegemonic language of science and 3.1.5.1 English influences on Italian).
[161] **TRANSFER: accuracy** Without the help of a specialist this passage would have remained partly bad translated or even not translated (*cf* footnote 160). The literal translation "effetti antagonisti" has been corrected with the introduction of three different forms, the noun "effetto" and the two verbs "potenziando/inibendo".
[162] **LANGUAGE: sub-language (sT) + idiom** "Opiodergic" is not translated in the draft because medical LSP translator should never invent drugs' names. After consultation with a specialist, it has become the compound term "oppioidi endogeni".
[163] **TRANSFER: accuracy** According to the specialist, in Italian the addition of the specification into parentheses is

~~methil-d-aspartate [???].~~metil-D-aspartato[164] (NMDA)[165]. Ciò che si sa è che la loro attività analgesica è indipendente ~~dalla loro attività~~da quella[166] antidepressiva e spesso si verifica a dosaggi ~~più bassi~~minori[167] rispetto a quelli necessari per produrre un effetto antidepressivo. Pare, inoltre[168], che ~~anche~~ i ~~medicinali anticonvulsionanti~~farmaci[169] anticonvulsivanti[170] agiscano grazie ~~alla combinazione~~all'interazione[171] di più meccanismi, inclusa l'inibizione dei canali ~~voltage-gated~~voltaggio dipendenti[172] di sodio e calcio e delle interazioni ~~con il~~col sistema acido ~~γ-aminobutirico~~γ[173]-aminobutirrico[174] (GABA). Dato che le donne ~~con~~affette da[175] CPP ~~di solito~~[176] dichiarano di aver ~~sospettato~~capito che il loro medico ~~pensasse che il dolore fosse~~ avesse ricondotto il dolore a fattori psicologici, quanto detto può tornare utile per spiegare loro che i farmaci antidepressivi ed anticonvulsivanti ai dosaggi prescritti hanno effetto sul dolore cronico e non sullo stato psicologico~~, questi fattori possono tornare utili quando si danno loro dei consigli medici prima di cominciare una cura con antidepressivi o anticonvulsionanti~~[177].

In generale, entrambe le classi di farmaci sono ben tollerate e[178] con effetti ~~avversi relativamente~~collaterali[179] minori (più comunemente[180] stanchezza e nausea~~ più comunemente), anche se~~), tuttavia[181], gli effetti ~~avversi~~collaterali[182] specifici variano tra ~~i~~le due[183]~~ farmaci. L'ampia~~. L'ampia varietà di ~~medicinali disponibile~~farmaci[184] disponibili[185] spesso si riflette ~~sul fatto che spesso~~

needed for better clarification.

[164] **LANGUAGE: mechanics (right spelling)**

[165] **TRANSFER: completeness** The ST acronym is missing in the draft.

[166] **LANGUAGE: smoothness** Anaphoric deixis for cohesion

[167] **LANGUAGE: sub-language** More formal than "più bassi".

[168] **LANGUAGE: smoothness** Addition of the embedded additive conjunctive "inoltre".

[169] **LANGUAGE: sub-language** *Cf* footnote 151.

[170] **LANGUAGE: mechanics** *Cf* footnote 132.

[171] **LANGUAGE: sub-language (CT) + idiom** In medical language, "Interazione" is more frequent than "combinazione".

[172] **LANGUAGE: smoothness** Although keeping "voltage-gated" as it is would not be wrong, it is translated not to be pedantic.

[173] **PRESENTATION: typography (Greek letter)**

[174] **LANGUAGE: mechanics (right spelling)**

[175] **LANGUAGE: sub-language** *Cf* footnote 83.

[176] **LANGUAGE: smoothness (omission)**

[177] **TRANSFER: accuracy** The literal draft translation did not work so the meaning implied by the ST has been paraphrased.

[178] **LANGUAGE: smoothness**

[179] **LANGUAGE: sub-language (sT)** "Adverse effect" is a misleading cognate word that must be translated in Italian with "effetti collaterali/indesiderati"

[180] **LANGUAGE: smoothness** Backward dislocation.

[181] **LANGUAGE: sub-language** The concessive linker "tuttavia" is more formal than "anche se".

[182] **LANGUAGE: smoothness (sT)** *Cf* footnote 177.

[183] **LANGUAGE: mechanics** Anaphoric reference with "le classi", thus it must be feminine.

[184] **LANGUAGE: sub-languge** *Cf* footnote 151.

[185] **LANGUAGE: idiom**

nella mancanza d[186]i un confronto ~~stretto~~approfondito[187] tra ~~-~~efficacia e possibilità di effetto ~~avverso non è stato fatto e perciò~~indesiderato[188]; di conseguenza[189], è difficile consigliare un ~~farmaco~~medicinale[190] rispetto ad un altro. I differenti meccanismi di azione, inoltre[191], fanno sì che se un farmaco non ~~funziona~~è efficace[192] potrebbe esserlo un altro ~~potrebbe funzionare~~, come potrebbe la combinazione di più terapie ~~nel~~in caso ~~venga riscontrata un'efficacia~~di efficacia[193] solo parziale~~. Allo;~~[194] allo stesso modo, se ~~l'effetto avverso~~l'effetto indesiderato[195] di un farmaco ~~specifico~~ non è ~~accettabile~~tollerato[196], probabilmente esiste un'alternativa che si ~~adatta~~adatti[197] meglio al paziente. Vale la pena ricordare che una curva dose-risposta esiste per entrambe le classi di farmaci ~~e~~ pertanto, in caso di assenza di risposta iniziale[198], le dosi ~~dovrebbero~~dovranno[199] venire aumentate gradualmente ~~nel caso non venisse rilevata alcuna risposta iniziale. Tuttavia, se non vi è una;~~ invece[200], in assenza di[201] risposta adeguata alle dosi somministrate o ~~se~~in caso[202] gli effetti ~~avversi~~indesiderati[203] non ~~sono~~siano[204] tollerati ~~allora~~ il farmaco ~~deve~~dovrà essere progressivamente[205] diminuito e sospeso.

Anche se ~~svariati studi~~molte ricerche[206] esplorano l'uso di questi farmaci ~~nel~~in[207] CPP, sono pochi gli ~~esperimenti validi~~ studi effettuati ~~su questi farmaci~~[208] ~~-~~validi[209] per questa indicazione.

2.1.1 Prove sull'uso di antidepressivi in CPP

Una ~~revisione~~*review*[210] sistematica ~~delle prove~~degli studi[211] disponibili sull'uso di antidepressivi nel

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[186] **LANGUAGE: sub-languge (nominalisation)**
[187] **LANGUAGE: sub-language + idiom**
[188] **LANGUAGE: sub-language (CT)** *Cf* footnote 177.
[189] **LANGUAGE: smoothess (causal conjunctive)**
[190] **LANGUAGE: smoothess** "Medicinale" is used as a synonym of "farmaco", *cf* footnote 177.
[191] **LANGUAGE: smoothess (additive conjunctive)**
[192] **LANGUAGE: sub-language (CT)**
[193] **LANGUAGE: sub-language (nominalisation)**
[194] **LANGUAGE: smoothess (punctuation)**
[195] **LANGUAGE: sub-language** *Cf* footnote 177.
[196] **LANGUAGE: sub-language (CT) + idiom**
[197] **LANGUAGE: sub-language (subjunctive)**
[198] **LANGUAGE: sub-language (nominalisation)**
[199] **TRANSFER: accuracy** Likewise in legal texts (cf 3.1.2 The Sci-Tech continuum), when deontic *should* is used in medical texts it is translated with the future of obligation "dovrà/dovranno" (*cf* Taylor, 2007: 127).
[200] **LANGUAGE: smoothness (contrastive linker)**
[201] **LANGUAGE: sub-language (nominalisation)**
[202] **LANGUAGE: smoothness** Repetition of "in caso" as in the first part of the sentence.
[203] **LANGUAGE: sub-language (sT)** *cf* footnote 177.
[204] **LANGUAGE: mechanics (subjunctive)**
[205] **LANGUAGE: idiom**
[206] **LANGUAGE: smoothness** Since "esperimenti" had to be replaced (*cf* footnote 43) with "studi", the synonym "ricerche" makes the text smoother.
[207] **LANGUAGE: mechanics** *Cf* footnote 18.
[208] **LANGUAGE: smoothness (omission)**
[209] **LANGUAGE: smoothness** Dislocation backward of the adjective "validi".
[210] **LANGUAGE: sub-language (Anglicism)** The word "revisione" does not encompass the same meaning as the loanword "review" (*cf* footnote 158)
[211] **LANGUAGE: sub-language**

dolore urologico cronico ~~fu fatta nel~~risale al[212] 2009. ~~Anche se si concentrava~~Pur[213] concentrandosi sulle condizioni relative al dolore urologico sia in ~~pazienti~~ uomini che donne (prostatite cronica, cistite interstiziale~~, prostatite cronica~~[214]), questa ~~revisione~~*review*[215] include anche ~~degli~~ studi in cui ai pazienti ~~veniva~~viene[216] diagnosticato ~~solo il~~ CPP~~. La sindrome da dolore alla vulva, però, non era compresa. Vennero identificati dieci studi che rispettavano~~ [217]da solo (vulvodinia esclusa)[218]. Dieci ricerche[219], che rispettano i criteri di inclusione[220] degli autori, ~~valutando l'efficacia dell'amitriptyline, sertraline, nortriptyline, duloxetine~~valutano l'efficacia di[221] amitriptilina, sertralina, nortriptilina, duloxitina e citalopram~~. Anche;~~[222] anche se la conclusione generale ~~era~~è che ~~"l'uso~~"l'uso di antidepressivi nella gestione del dolore pelvico[223] cronico ~~alla pelvi~~ non è supportato da un adeguato numero di ~~esperimenti a controllo random~~ *trial*[224] randomizzati controllati[225] ben strutturati~~",~~", si deve riconoscere che almeno per ~~l'amitriptyline~~[226]amitriptilina e ~~la sertraline, ci sono delle~~sertralina, esistono prove ~~sul~~a favore de[227]l loro effetto ~~benifico. Inoltre~~benefico. Di fatto[228], i farmaci studiati ~~erano~~vengono ben tollerati e sono in ~~generale~~genere sicuri~~, compreso l'uso~~ anche per assunzioni a lungo termine ~~dell'amitriptilyne~~[229].

2.1.2 Prove ~~sull'uso~~sull'uso degli ~~anticolvulsionanti~~anticonvulsivanti[230] in CPP

Ancora meno prove sono disponibili sull'uso di farmaci ~~anticonvulsionanti in CPP~~anticonvulsivanti[231] nel trattamento del dolore pelvico[232] cronico[233]. Sator-~~katz~~Katzenschlager[234] e ~~i suoi~~[235] colleghi hanno comparato l'efficacia e la tollerabilità di ~~amitriptyline~~amitriptilina[236] con

[212] **LANGUAGE: sub-language** More formal.
[213] **LANGUAGE: sub-language** More formal and concise.
[214] **CONTENT: logic (inversion)** The two pathologies must be inverted as the first one belongs to the second group and *vice-versa*.

[215] **LANGUAGE: sub-language** *Cf* footnote 208.
[216] **LANGUAGE: sub-language (simple present)**
[217] **LANGUAGE: idiom**
[218] **LANGUAGE: smoothness** A whole sentence becomes a very short parenthetical clause.
[219] **LANGUAGE: smoothness** More concise.
[220] **LANGUAGE: idiom** + **CONTENT: logic**
[221] **LANGUAGE: mechanics (no definite artcles)** *Cf* footnote 27.
[222] **LANGUAGE: mechanics (punctuation)**
[223] **LANGUAGE: idiom (adj. of relation)** *Cf* footnote 28.
[224] **LANGUAGE: sub-language (Anglicism)** *Cf* footnotes 43/158.
[225] **LANGUAGE: idiom** This is rendered in Italian with "randomizzati controllati" and not with "a controllo random".
[226] **LANGUAGE: mechanics (no definite article)** *Cf* footnote 27.
[227] **LANGUAGE: sub-language** More formal.
[228] **LANGUAGE: smoothness (conjunctive)**
[229] **LANGUAGE: smoothness (omission)**
[230] **LANGUAGE: mechanics (right spelling)** *Cf* footnote 132.
[231] **LANGUAGE: mechanics (right spelling)** *Cf* footnote 132.
[232] **CONTENT: logic** *Cf* footnote 52.
[233] **LANGUAGE: smoothness**
[234] **LANGUAGE: mechanics (right spelling)**
[235] **LANGUAGE: idiom** Omission of the possessive.
[236] **LANGUAGE: smoothness (right spelling)**

gabapentin e dei due farmaci insieme. ~~Questo~~Detto che questo studio non dispone di un gruppo placebo ed ~~era~~è relativamente ~~piccolo (n=~~limitato[237] (20 pazienti[238] per ogni farmaco da solo e ~~n=~~16 per la combinazione dei due farmaci~~); tuttavia,~~), le conclusioni ~~mostrano~~dimostrano che i farmaci ~~erano~~sono entrambi ben tollerati e che gabapentin da solo o in combinazione è più efficace di ~~amitriptyline~~amitriptilina[239] da solo, soprattutto per un sollievo dal dolore a lungo termine. ~~Siamo a conoscenza che~~Tuttavia[240], un progetto pilota ~~a controllo random~~randomizzato controllato[241] di gabapentin *versus*[242] placebo è ancora in corso. Un secondo studio esamina il ruolo ~~del lamotrigine~~di lamotrigina in CPP~~. L'interpretazione~~; l'interpretazione[243] dei risultati ~~di questo studio è~~è piuttosto difficile a causa del numero relativamente ristretto di pazienti ~~trovati~~arruolati[244] per le tre sottocategorie di CPP: addominale diffuso~~? (n=~~ (7 pazienti[245]), neuropatico (~~n=~~7 pazienti) e vulvodinia (~~n=~~17 pazienti). Anche se in tutti e tre i gruppi di donne si è riscontrata un'efficacia parziale, solo coloro che sono affette da vulvodinia hanno segnalato, nei questionari relativi alla percezione del dolore[246], una riduzione significativa ~~nella compilazione degli indici di dolore dopo~~ a termine delle 8 settimane di terapia (~~tuttavia, anche il~~ per quanto fosse un[247] gruppo relativamente ristretto[248], va specificato che anche in quello con la neuropatia ~~raggiungeva valori significativi per quanto fosse un gruppo particolarmente piccolo). Un altro studio~~ si sono raggiunti valori significativi[249]). Una terza ricerca[250] esamina gabapentin nel trattamento della vulodinia. In questo studio delle 17 pazienti con vulvodinia a cui viene somministrato gabapentin, 14 (~~82%) dichiarono~~l'82%) hanno dichiarato sollievo parziale o totale dal dolore. ~~Anche se~~Sebbene[251] questo studio non è~~sia~~ ben controllato, include donne per cui il trattamento con altri farmaci, come ~~l'amitriptyline~~amitriptilina[252], non aveva ~~funzionato~~avuto un effetto soddisfacente[253].

2.2 La tossina ~~Botulinica~~botulinica[254]

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[237] **LANGUAGE: sub-language** Throughout the text "piccolo" is replaced by more formal forms such as "limitato/ristretto" or "su piccolo scala".
[238] **LANGUAGE: mechanics** The very concise English way to express the number of patients involved must be made explicit in Italian.
[239] **LANGUAGE: mechanics (right spelling)**
[240] **LANGUAGE: smoothing (concessive linker)**
[241] **LANGUAGE: idiom** *Cf* footnote 223.
[242] **PRESENTATION: typography (italics for Latin words)**
[243] **PRESENTATION: typography (no capital letter) + LANGUAGE: smoothing (punctuation)**
[244] **LANGUAGE: sub-language (CT)**
[245] **LANGUAGE: mechanics** *Cf* footnote 236.
[246] **TRANSFER: accuracy** Paraphrasing.
[247] **LANGUAGE: smoothness**
[248] **LANGUAGE: sub-language** More formal.
[249] **LANGUAGE: smoothness**
[250] **LANGUAGE: smoothness (sequential temporal conjunctive)**
[251] **LANGUAGE: sub-language** More formal.
[252] **LANGUAGE: mechanics (right spelling)**
[253] **LANGUAGE: sub-language**
[254] **PRESENTATION: typography (no capital letter)**

Sebbene[255] gli studi che ne presentano l'effetto benefico siano ancora molto scarsi[256], l'uso di iniezioni della tossina botulinica ~~(~~, *onabotulinumtoxin A* o Botox[257]~~,~~ ®[258] (Allergan, Marlow, Bucks~~, GB) per alleviare il CPP sta aumentando sebbene gli studi che ne presentino l'effetto benefico siano ancora molto scarsi.~~ – UK), è in aumento per il trattamento di CPP. Oltre ad agire direttamente sui muscoli, si crede che la tossina botulinica abbia effetti ~~anche~~ sul sistema nervoso centrale[259] dato importante anche se non totalmente ~~compreso~~chiarito[260]. Due ~~piccoli~~ studi ~~di osservazione appartenenti di una revisione[?]~~osservazionali[261] su piccola scala[262] indicano ~~alcuni benefici delle iniezioni della~~come le pazienti con vulvodinia a cui viene iniettata la tossina botulinica nelle strutture del pavimento ~~della pelvi~~ pelvico[263] rispondano positivamente alla terapia senza ~~che si riscontrino~~manifestare[264] significativi effetti ~~avversi per quando riguarda la vulvodinia, ma~~indesiderati[265]; questi gruppi, tuttavia[266], non ~~erano~~sono stati né controllati ~~e potrebbero indurre ad errore[???].~~né adeguatamente selezionati[267]. La stessa situazione si ~~presenta per l'uso intravescicale delle punture della tossina botulinica~~verifica per le infiltrazioni[268] intravescicali della tossina botulinica nel trattamento di IC/BPS, eccetto per il fatto che ~~colpisca~~in questo caso si colpiscono le funzioni del muscolo[269] detrusore e quindi molti pazienti ~~di questi piccole ricerche~~[270] hanno avuto bisogno di auto-cateterizzazioni intermittenti.

Esiste un unico ~~centro di esperimenti a controllo random sull'uso~~studio[271] randomizzato controllato[272] sull'uso della tossina botulinica ~~nelle~~in donne ~~che abbiano avuto~~ con dolore pelvico della durata di più di ~~2~~due[273] anni ~~di dolore pelvico e "~~ed "evidenti segni di mialgia del pavimento pelvico~~",~~" come ~~dimostrato dalla presenza di~~dimostrano la contrazione dei[274] muscoli pelvici ~~contratti~~(rilevata alla

[255] **CONTENT: logic (concessive linker)**
[256] **LANGUAGE: smoothness** Backward dislocation of the subordinate.
[257] **CONTENT: logic** Together with the general active ingredient also Botox must go outside of the parentheses as these are both used in Italy; on the contrary, Allergan, Marlow, Bucks only exist in the UK.

[258] **PRESENTATION: typography** The symbol ® must be added as Botox is a registered trademark.
[259] **LANGUAGE: idiom** *Cf* footnote 2.
[260] **LANGUAGE: sub-language** More formal and appropriate.
[261] **LANGUAGE: idiom** "Studi osservazionali".
[262] **LANGUAGE: sub-language** Throughout the text "piccolo" is revised with the more formal "su piccolo scala".
[263] **LANGUAGE: idiom** *Cf* footnote 28.
[264] **LANGUAGE: sub-language (CT)**
[265] **LANGUAGE: sub-language** *Cf* footnote 177.
[266] **CONTENT: logic (adversative conjunctive addition)**
[267] **TRANSFER: accuracy**
[268] **LANGUAGE: sub-language (sT)**
[269] **LANGUAGE: idiom**
[270] **LANGUAGE: smoothness (omission)**
[271] **LANGUAGE: sub-language** *Cf* footnote 43.
[272] **LANGUAGE: idiom** *Cf* footnote 223.
[273] **LANGUAGE: mechanics**
[274] **LANGUAGE: sub-language (nominalisation)**

palpazione)[275] e ~~da un'elevata~~l'[276]elevata pressione vaginale (rilevata col manometro~~.~~)[277]. Al gruppo ~~in~~di terapia (~~n=~~composto da 30 pazienti[278]) è stato iniettato del ~~botulino~~la tossina botulinica[279] nei muscoli puborettali e pubococcigei mentre al gruppo di controllo (~~n=~~30 pazienti[280]) è stata iniettata ~~nei~~negli stessi[281] muscoli della soluzione ~~salina~~fisiologica[282]. I valori riferiti al dolore ~~provato~~percepito[283] sono diminuiti in entrambi i gruppi ma non sono significativi dal punto di vista ~~delle statistiche~~statistico. Messe a confronto con gli standard, le donne nel gruppo a cui è stato somministrato il botulino hanno riscontrato ~~una'importante~~un[284]'importante riduzione ~~della~~di dispareunia e di dolore pelvico non mestruale, inoltre la ~~pressione~~ tensione del pavimento pelvico ~~era~~è[285] diminuita. ~~Due~~In due pazienti a cui ~~era~~è stato ~~somministrato~~iniettata la tossina botulinica nei muscoli sopracitati ~~hanno riscontrato~~si è riscontrata incontinenza ~~da stress~~[286] ~~urinario[?],~~ urinaria ed in una delle ~~quali è stata affetta da~~due anche[287] 4 mesi di[288] incontinenza intermittente delle feci ~~ad intermittenza per 4 mesi.~~. Gli esperimenti sulla tossina botulinica ~~botulino~~ in donne con ~~una~~ vescica iperattiva suggeriscono che questa sia una terapia ben tollerata col potenziale di apportare un significativo miglioramento alla qualità della vita ~~di queste donne, delle~~, motivo[289] per il quale si continuano a condurre ricerche più approfondite sull'uso del ~~botulino~~ la tossina botulinica[290] ~~nella~~ nel trattamento di vulvodinia e ~~nella~~ CPP ~~sono così giustificate. Per di più, anche~~. Anche la tecnica del *dry needling*[291] (tanto ~~l'uso~~[292] ~~dell'agopuntura~~l'agopuntura come ~~quello degli~~gli aghi ipodermici ~~per arrestare[?] il punto di innesco[?]~~/utili per detendere[293] i punti *trigger*[294]/stimolare i muscoli senza iniezioni di ~~fluidi sia attivi che~~farmaci anestetici locali o placebo[295] ~~[inattivi])~~) merita ricerche più approfondite visti i buoni risultati, del tutto inaspettati, registrati anche nel gruppo di controllo a

[275] **LANGUAGE: smoothness + mechanics** Parenthetical clause containing extra information.
[276] **LANGUAGE: mechanics (determinate article)**
[277] **LANGUAGE: smoothness + mechanics** *Cf* footnote 271.
[278] **LANGUAGE: mechanics** *Cf* footnote 236.
[279] **TRANSFER: accuracy** "Botulino" and "tossina botulinica" are two different things that must not be confused.
[280] **LANGUAGE: mechanics** *Cf* footnote 236.
[281] **LANGUAGE: smoothness** Cohesion.
[282] **LANGUAGE: sub-language (sT)**
[283] **LANGUAGE: sub-language (CT)**
[284] **LANGUAGE: mechanics (right spelling)**
[285] **LANGUAGE: sub-language (present tense)**
[286] **LANGUAGE: smoothness (omission)**
[287] **LANGUAGE: smoothness (additive linker)**
[288] **LANGUAGE: smoothness** Backward dislocation of the temporal clause.
[289] **LANGUAGE: sub-language (nominalisation)**
[290] **TRANSFER: accuracy** *Cf* footnote 275.
[291] **PRESENTATION: typography (italics)**
[292] **LANGUAGE: smoothness (omission)**
[293] **TRANSFER: accuracy + LANGUAGE: sub-language (CT) "**Arrestare" is a mistranslation.
[294] **LANGUAGE: sub-language (Anglicism)** *Cf* footnote 158. The ST English word is kept in the TT. Italics must be added.
[295] **TRANSFER: accuracy** Paraphrasing

seguito della somministrazione di soluzione ~~salina~~fisiologica[296] descritta sopra.

2.3 Altro

Altre tre terapie farmacologiche che si concentrano sul sistema nervoso centrale sono state studiate ~~per lenire il~~ nel trattamento di[297] CPP.

Di particolare importanza, ~~è stato riscontrato che~~[298] la melatonina ~~riduce~~ha ridotto[299] notevolmente il dolore giornaliero, ~~il dolore~~quello[300] mestruale, [301]~~la~~ dischezia e ~~la~~ disuria in un gruppo di 40 donne ~~con~~affette da[302] CPP ed endometriosi confermata ~~da~~ in laparoscopia~~. Tuttavia,~~; questi dati, tuttavia[303], non possono essere applicati a donne con CPP a cui non sia stata diagnosticata l'endometriosi.

~~L'idrocloride lofexdine~~Lofexidina cloridrato[304], un agonista ~~dell'a2 adrenoceptor~~dell'α[305]-2 adrenorecettore[306] che agisce sia attraverso ~~l'azione~~un'azione diretta ~~di un antinocicettivo~~antinocicettiva[307] sia ~~per prevenire vasospasmi~~prevenendo il vasospasmo[308] nel letto utero-ovarico, è stato studiato in un gruppo di donne con CPP senza evidenti patologie in laparoscopia. ~~Anche se questa~~Questa[309] ricerca non ha riscontrato una differenza significativa rispetto al placebo~~, i numeri presi~~ e, anche se[310] il numero[311] di pazienti prese[312] in esame ~~erano~~è relativamente ~~piccoli~~limitato[313] (19 ~~lofexidine:~~pazienti nel gruppo trattato con lofexidina[314] e 20 in quello[315] placebo~~) ed~~), è stata messa in atto solo per ~~determinare~~verificarne un eventuale[316] effetto ~~sostanziale~~. Anche il solfato di ~~dexamfetamine, un'amina~~dexamfetamina[317], un'amina simpaticomimetica, è stato indicato come ~~un trattamento~~ farmaco efficace ~~contro il CPP,~~nel trattamento del dolore pelvico

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[296] **LANGUAGE: sub-language (sT)**
[297] **LANGUAGE: sub-language (nominalization)** *Cf* footnote 3.
[298] **LANGUAGE: smoothness (omission)**
[299] **LANGUAGE: mechanics** Even though throughout the text simple present has been preferred for general truth, on this occasion there is a present perfect as scientists are presenting the effect of melatonin in one particular (past) trial.
[300] **LANGUAGE: smoothness** Repetition of the word "dolore" has been avoid thanks to anaphoric deixis.
[301] **LANGUAGE: mechanics (no definite article)** *Cf* footnote 27.
[302] **LANGUAGE: sub-language (CT)** *Cf* footnote 83.
[303] **LANGUAGE: smoothness** Thanks to the embedded, rather than initial, contrastive the two sentences can be linked together.
[304] **LANGUAGE: mechanics** Never invent drugs' names!
[305] **PRESENTATION: typography (Greek letter)**
[306] **LANGUAGE: mechanics (right spelling)**
[307] **LANGUAGE: smoothness** The adjective works better than the complement of specification.
[308] **LANGUAGE: mechanics (singular)**
[309] **PRESENTATION: typography (capital letter)**
[310] **LANGUAGE: smoothness** Forward dislocation of the concessive.
[311] **LANGUAGE: mechanics (singular)**
[312] **LANGUAGE: mechanics (feminine)**
[313] **LANGUAGE: sub-language** *Cf* footnote 235.
[314] **LANGUAGE: mechanics** *Cf* footnote 236.
[315] **LANGUAGE: smoothness (anaphoric deixis)**
[316] **TRANSFER: accuracy** Translating "substantial" with "sostanziale" does not actually make sense in Italian.
[317] **LANGUAGE: mechanics (right spelling)**

cronico[318] ma solo in associazione con ~~un'edema ortostatica, idiopatica~~un edema ortostatico idiopatico[319] coesistente ~~che è~~ patologia estremamente rara. Per tanto, ~~altri esperimenti a controllo random~~ulteriori[320] studi[321] randomizzati controllati[322] sono necessari prima che questo trattamento possa essere ~~raccomandato~~consigliato[323] per ~~il~~ CPP ~~generico~~[324].

3. Trattamenti non invasivi e non farmacologici

L'applicazione esterna di stimolazioni sia elettriche che magnetiche può essere usata per alterare la neurofisiologia localmente (~~all'altezza~~a livello della[325] percezione[326] del dolore) o centralmente ([327]~~cervello o~~a livello di midollo spinale~~), che~~ ed encefalo[328]) e potenzialmente ~~producono l'analgesia. In più, la~~per produrre l'analgesia. La stimolazione elettrica può essere effettuata direttamente sui nervi periferici, sul midollo spinale o ~~sul cervello~~sull'encefalo; tali metodi saranno discussi ~~nella sessione~~al punto 4 di quest'articolo.

3.1 Stimolazione locale

3.1.1 ~~Elettrica~~Stimolazione elettrica

La stimolazione elettrica~~,~~ transcutanea dei nervi (TENS) è una forma conosciuta di analgesia usata durante ~~le doglie. L'esatto~~il parto[329], ma l'esatto meccanismo per il quale questa[330] eserciti un effetto analgesico non è ~~noto.~~del tutto chiaro[331]. Per molto tempo si è creduto che funzionasse per mezzo della teoria ~~'gate-control' per~~ *gate control*[332] secondo cui ~~l'attività di~~l'attività delle fibre ~~AB~~Aβ[333] di largo diametro ~~inibiscono l'attività delle fibre più piccole (Ad e C:~~ inibisce[334] l'attività di quelle di diametro inferiore[335] dello stesso segmento[336] (Aδ[337] e C, che trasmettono il dolore~~) dagli stessi segmenti.~~). Tuttavia, anche la stimolazione ~~elettrica~~ delle piccole fibre ~~da sole~~ può ~~anche~~ produrre ~~un'inibizione~~l'inibizione segmentale ed extra-segmentale che ~~porta all'analgesia. Inoltre, l'uso della~~

[318] **CONTENT: logic** *Cf* footnote 52.
[319] **LANGUAGE: mechanics (masculine)**
[320] **LANGUAGE: sub-language** More formal.
[321] **LANGUAGE: sub-language** *Cf* footnote 43.
[322] **LANGUAGE: idiom** *Cf* footnote 223.
[323] **LANGUAGE: sub-language** More appropriate.
[324] **LANGUAGE: smoothness (omission)**
[325] **LANGUAGE: sub-language**
[326] **LANGUAGE: sub-language (CT)**
[327] **CONTENT: logic** Brain and spinal cord are inverted because, logically, the spinal cord is stimulated to then reach the brain.
[328] **LANGUAGE: sub-language (sT)** In terms of register, "encefalo" is preferred to "cervello"
[329] **LANGUAGE: sub-language** "Parto" is used as an hypernym of "doglie".
[330] **LANGUAGE: smoothness (anaphoric deixis)**
[331] **LANGUAGE: sub-language** More appropriate.
[332] **PRESENTATION: typography (italics)**
[333] **PRESENTATION: typography (Greek letter)**
[334] **LANGUAGE: mechanics** Subject/verb agreement "l'attività delle fibre inibisce".
[335] **LANGUAGE: sub-language** More formal and specific.
[336] **TRANSFER: accuracy (singular)**
[337] **PRESENTATION: typography (Greek letter)**

~~stimolazione elettrica a bassa frequenza aumenta il rilascio di oppioidi endogeni, e quindi~~determina[338] l'effetto analgesico[339]. Mentre[340] una ~~maggiore~~ riduzione del dolore ~~sia in situazioni acute che croniche. E'~~è stata dimostrata ~~l'efficacia nella riduzione del dolore~~ negli uomini ~~con CPPS~~affetti da[341] CPP/prostatite ~~ma~~cronica, ciò non è ~~stata studiata nelle~~ avvenuto per le donne con CPP ~~nello specifico.~~. In vista della localizzazione del dolore ~~nelle donne con~~in pazienti affette da CPP, la stimolazione intravaginale elettrica (IVES – *Intravaginal Electrical Stimulation*[342]) è stata proposta come strategia alternativa. ~~–~~I dati preliminari suggeriscono che ~~IES~~IVES[343] è associata ad una significativa riduzione del dolore e di dispareunia, con ~~la riduzione del~~un sollievo[344] dal dolore ~~mantenuta~~mantenuto per i 7 mesi di *follow-up*[345]~~[?].~~. Di recente, IVES per CPP è stata valutata in ~~esperimenti~~studi[346] placebo (stimolazione ~~finta) a controllo random.~~*sham*[347]) randomizzati controllati[348]. Ciò conferma che la stimolazione attiva è superiore a quella ~~finta,~~placebo[349] con una significativa riduzione dell'intensità del dolore ~~alla fine~~segnalata a termine[350] delle 5 settimane di trattamento~~. Tuttavia,~~[351] ciononostante, non esiste un *follow-up*[352] a lungo termine di questo studio.

3.1.2 ~~Magnetica~~Stimolazione magnetica

Molti sono i meccanismi proposti attraverso i quali il magnetismo può influenzare il dolore, come, ad esempio: i) l'attenuazione selettiva della depolarizzazione neuronale ~~che altera~~alterando il potenziale di ~~rilassamento[?]~~riposo[353] della membrana~~;~~, ii) ~~l'aumento del~~l'aumento di flusso sanguigno (che potenzialmente accelera ~~la guarigione del tessuto e rimuove~~ la rimozione dei mediatori ~~nocivi);~~ chimici dell'infiammazione[354]), e iii) l'alterazione dei legami cinetici ~~a ioni[???]~~dei canali ionici[355] e quindi il regolare rilascio ~~regolare della citocinesi~~delle citochine[356] e degli altri mediatori infiammatori~~[?].~~. Nonostante esistano alcune prove sui benefici ~~nei~~in pazienti con osteoartrite (anche se ~~potenzialmente~~ probabilmente in relazione con una guarigione accelerata del tessuto piuttosto che

[338] **LANGUAGE: sub-language** More formal.
[339] **LANGUAGE: idiom** "Effetto analgesico".
[340] **LANGUAGE: smoothness** The contrastive gives the chance to link the two sentences together.
[341] **LANGUAGE: sub-language** *Cf* footnote 83.
[342] **CONTENT: logic** *Cf* footnote 5.
[343] **LANGUAGE: mechanics (right spelling)**
[344] **LANGUAGE: sub-language**
[345] **PRESENTATION: typography (italics)**
[346] **LANGUAGE: sub-language** *Cf* footnote 43.
[347] **LANGUAGE: sub-language(Anglicism)** *Cf* footnote 292.
[348] **LANGUAGE: idiom** *Cf* footnote 223.
[349] **LANGUAGE: sub-language (sT)**
[350] **LANGUAGE: sub-language** More formal.
[351] **LANGUAGE: smoothness (punctuation)**
[352] **PRESENTATION: typography (italics)**
[353] **LANGUAGE: sub-language (CT)**
[354] **TRANSFER: accuracy** The specialist suggested not to translate "noxious" neither with "nocivi" nor with "tossici" as these translation would not be accurate enough.
[355] **LANGUAGE: sub-language (sT)**
[356] **TRANSFER: accuracy + LANGUAGE: sub-language (sT)**

un effetto analgesico diretto), solo tre ~~piccole~~ ricerche su piccola scala[357] sono state condotte su donne ~~con CPP.~~ affette da CPP. Nel primo studio, in 20 donne con dolore pelvico acuto o cronico[358] si sono ~~usati~~applicati[359] campi elettromagnetici a pulsione nella zona in cui ~~si situa~~insorgeva[360] il dolore ~~in 20 donne con dolore pelvico acuto o cronico.~~. Tutte e nove le donne con CPP ~~mostravano~~hanno mostrato un ~~buon~~adeguato[361] miglioramento per quel che riguarda l'intensità del dolore ~~dopo il~~percepito[362] a seguito del[363] trattamento, ~~anche se~~tuttavia, è opportuno specificare che quattro di queste venivano ~~curate~~già trattate[364] per una sindrome acuta ~~che stava~~ alla base ~~della~~di[365] CPP (rottura di ~~una~~ cisti ovarica o infezione del tratto urinario). La seconda ricerca ~~mirava ad usare~~, invece[366], prevedeva l'uso di magneti placebo in uno studio randomizzato in doppio-cieco di una terapia a campo magnetico statico; ~~tuttavia,~~ alla fine dello studio, però[367], tutti coloro che indossavano magneti attivi erano a conoscenza del gruppo ~~di trattamento~~[368] in cui si trovavano. Al termine del periodo di trattamento di 4 settimane, anche se i valori associati ~~al dolore~~alla sofferenza[369] non erano diminuiti in maniera significativa, queste donne dichiaravano di ~~provare~~percepire[370] molto meno dolore rispetto a quelle del gruppo placebo (misurato ~~con l'indice~~rispetto all'indice di disabilità relativa al dolore, un metodo di auto-valutazione ~~che determina la disabilità relativa al dolore~~[371] ~~in~~basato su sette diversi domini, come: casa, lavoro, attività sociali e sessuali). ~~L'ultimo~~Infine[372], nell'ultimo studio ~~stimolava~~condotto su 48 pazienti con CPPS[373] si sono effettuate stimolazioni magnetiche a ripetizione (rMS – *Repetitive Magnetic Stimulation*[374]) sia ~~il~~sul punto da cui si ~~diffonde~~diffondeva il dolore sia ~~il~~sul midollo spinale sacrale ~~con stimolazioni magnetiche a ripetizione (rMS) in 48 pazienti con CPPS. Una~~[375]: una remissione ~~al~~del[376] dolore è stata registrata nel 67% ~~dei~~delle[377] pazienti ed un esperimento controllato ~~verso~~*versus* placebo è ancora in corso.

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[357] **LANGUAGE: sub-language** *Cf* footnote 260.
[358] **LANGUAGE: smoothness** Backward dislocation of the subordinate
[359] **LANGUAGE: sub-language** More formal.
[360] **LANGUAGE: sub-language (CT)**
[361] **LANGUAGE: sub-language** More formal.
[362] **LANGUAGE: sub-language (CT)**
[363] **LANGUAGE: sub-language** More formal.
[364] **LANGUAGE: sub-language (CT)**
[365] **LANGUAGE: mechanics (no definite article)** *Cf* footnote 19.
[366] **CONTENT: logic (addition of the contrastive)**
[367] **LANGUAGE: smoothness**
[368] **LANGUAGE: smoothness (omission)**
[369] **LANGUAGE: sub-language (CT)** Synonym of "dolore".
[370] **LANGUAGE: sub-language (CT)**
[371] **LANGUAGE: smoothness (omission)**
[372] **LANGUAGE: smoothness (temporal conclusive conjunctive addition)**
[373] **LANGUAGE: moothness** Backward dislocation of the subordinate.
[374] **CONTENT: logic** *Cf* footnote 5.
[375] **LANGUAGE: smoothness (punctuation)** Colon introducing results.
[376] **LANGUAGE: Idiom** "Remissione del " not "al".
[377] **TRANSFER: accuracy (feminine)**

3.2 Stimolazione transcraniale

I metodi non invasivi di stimolazione cerebrale possono essere elettrici (~~la~~ stimolazione transcraniale ~~diretta~~ a corrente diretta[378] [tDCS~~] e la~~ – *Transcranial Direct Current Stimulation*[379]] e stimolazione craniale con elettroterapia [CES – *Cranial Electrotherapy Stimulation*[380]]) o magnetici (~~la~~ stimolazione transcraniale magnetica ripetitiva [rTMS~~]).~~ – *Repetitive Transcranial Magnetic Stimulation*[381]]). Queste tecniche[382] mirano a modulare il dolore con un effetto diretto sull'attività cerebrale~~. Ci sono buoni risulati di esperimenti che~~ e risultati attendibili[383] suggeriscono che ~~queste tecniche possono~~sono in grado sia di produrre un'immediata ~~alterazione~~ modificazione ~~nella~~della concentrazione dei neurotrasmettitori~~ principali neurotrasmettitori di inibizione~~[384], GABA ~~compresi~~ -incluso, sia di indurre dei cambiamenti sinaptici a lungo termine. ~~Nel caso~~In particolare, nel trattamento di ~~dolore cronico,~~CPP si crede che l'analgesia si produca a seguito di una riduzione nell'attività delle reti cerebrali implicate nell'elaborazione~~[?]~~ del dolore e di ~~un'agevolazione~~una facilitazione[385] dei meccanismi inibitori ~~dell'abbassamento del dolore~~discendenti[386]. Sebbene gli studi clinici intrapresi sulle condizioni del dolore cronico supportino in generale un effetto analgesico di rTMS e tDCS, il sollievo dal dolore ottenuto non è sufficiente per essere considerato significativo dal punto di vista clinico. Solo uno studio ~~ha~~si è interessato ~~nello specifico~~[387] ~~l'efficacia~~all'efficacia di tali tecniche ~~nella~~in CPP~~.~~: Fenton e ~~i suoi~~ colleghi hanno confrontato tDCS con tDCS ~~finta~~placebo[388] in sette donne con CPP refrattarie al trattamento~~. Gli studiosi~~[389] ed hanno individuato una modesta riduzione del dolore ~~dopo il~~a seguito del[390] trattamento attivo, ~~ma~~tuttavia[391], il campione era troppo esiguo per trarre delle conclusioni d'interesse senza che vengano fatte delle ricerche più approfondite.

~~4. Trattamenti chirurgici/invasivi~~

4. Interventi[392] di chirurgia invasiva

4.1 Blocchi ~~ai~~dei[393] nervi~~[?]~~

[378] **TRANSFER: accuracy** The adjective “diretta” refers to “corrente”, not to “stimolazione”.
[379] **CONTENT: logic** *Cf* footnote 5.
[380] **CONTENT: logic** *Cf* footnote 5.
[381] **CONTENT: logic** *Cf* footnote 5.
[382] **LANGUAGE: smoothness** Cohesion.
[383] **LANGUAGE: sub-language (CT)**
[384] **LANGUAGE: smoothness (omission)**
[385] **LANGUAGE: sub-language (CT)**
[386] **LANGUAGE: sub-language (sT)**
[387] **LANGUAGE: smoothness (omission)**
[388] **LANGUAGE: sub-langauge (sT)**
[389] **LANGUAGE: smoothness (omission)**
[390] **LANGUAGE: smoothness**
[391] **LANGUAGE: sub-language** More formal.
[392] **LANGUAGE: sub-language (sT)**
[393] **LANGUAGE: idiom** “Blocco dei”, not “ai”.

Solo due ~~piccoli studi~~ricerche su piccola scala[394] si sono ~~interessati ai benefici~~interessate all'esecuzione[395] dei blocchi dei nervi[396] ipogastrici, riscontrando benefici solo parziali. Altre ricerche, pur non essendo supportate da evidenze scientifiche[397], prendono in esame le tecniche di ~~iniezione~~visualizzazione delle strutture e ~~la gestione~~di esecuzione[398] pratica ~~senza prove[???]~~del blocco o descrivono trattamenti multimodali in un centro ~~che includa vari~~ attrezzato per[399] l'esecuzione di diversi tipi di blocchi di nervi.

4.2 ~~Neuroctomia~~ Neurectomia[400]/ablazione dei nervi

~~L'interruzione~~Il blocco[401] del ~~sensore~~[402] ganglio paracervicale[403] di Lee-~~Frank del plesso nervoso[?]~~Frankenhauser[404], che si effettua[405] attraverso l'ablazione in laparoscopia del nervo uterosacrale (LUNA~~)~~ *– Laparoscopic Uterosacral Nerve Ablation*[406]), è stato ampiamente praticato ~~per alleviare il~~ come trattamento del[407] dolore pelvico fino ~~alla pubblicazione~~alle pubblicazioni[408] di un più ~~grande esperimento~~vasto[409] studio[410] e di ~~LUNA ed~~[411] una successiva[412] meta-analisi di tutti gli ~~esperimenti~~studi LUNA ~~avvenuta~~, avvenute[413] rispettivamente nel 2009 e 2010. La meta-analisi ha rinforzato le conclusioni tratte ~~dagli esperimenti~~ dalle pubblicazioni[414] che dimostrano che ~~la~~tale[415] procedura ~~LUNA~~ non ~~funziona per alleviare il~~ha effetti benefici[416] sul dolore~~. Per tanto, ci sono alcune prove che le~~; in particolare, nelle pazienti ~~donne~~[417] sottoposte ~~alla procedura~~[418] a LUNA ~~soffrano di~~

[394] **LANGUAGE: sub-language** *Cf* footnote 260.
[395] **LANGUAGE: sub-langauge (CT)**
[396] **LANGUAGE: idiom** "Nervi ipogastrici".
[397] **LANGUAGE: smoothness** Backward dislocation of the subordinate.
[398] **TRANSFER: accuracy**
[399] **LANGUAGE: idiom** "centro attrezzato per".
[400] **LANGUAGE: mechanics (right spelling)**
[401] **LANGUAGE: smoothness** Cohesion: "blocco" is preferred to "interruzione" as the use of a synonym could be ambiguous.
[402] **TRANSFER: accuracy** "Sensory" refers to "nervo" and not to "blocco".
[403] **LANGUAGE: sub-langauge (sT)** As explained in 3.1.4.1.1 Term formation, eponyms must be translated with their exact correspondent. After a lot of heart-searching, "il plesso del nervo sensoriale" has been replaced by "il ganglio paracervicale".
[404] **LANGUAGE: mechanics (right spelling)**
[405] **LANGUAGE: smoothness (introduction of the embedded relative clause)**
[406] **CONTENT: logic** *Cf* footnote 5.
[407] **LANGUAGE: sub-language** *Cf* footnote 3.
[408] **LANGUAGE: mechanics (plural)**
[409] **LANGUAGE: sub-language** More formal.
[410] **LANGUAGE: sub-language** *Cf* footnote 43.
[411] **LANGUAGE: smoothness (omission)**
[412] **CONTENT: logic** "Successiva" is added on the basis of the year in which it was published.
[413] **LANGUAGE: mechanics (plural)**
[414] **LANGUAGE: smoothness (repetition)**
[415] **LANGUAGE: smoothness** Cohesion through demonstrative adjective.
[416] **LANGUAGE: sub-language (nominalisation)** NP *ha* (semantically neutral verb) NP, *cf.* 3.1.6.1 Nominalisation in scientific writing.
[417] **LANGUAGE: smoothness (omission)** "Donne" can be deleted as already indicated by the feminine determinate article "le".
[418] **LANGUAGE: smoothness (omission)**

~~più a~~ la percezione[419] del dolore nel breve ~~termine~~periodo è maggiore[420] rispetto a ~~quelle~~quella percepita[421] da coloro che non vi[422] si sottopongono ~~a tale procedura~~.

~~La~~Un'altra tecnica utilizzata[423] è la ~~neuroctomia~~ neurectomia[424] presacrale (PNS~~)~~ – *Presacral Neurectomy*[425]) che comporta la transezione totale dei nervi presacrali che si trovano entro i confini del triangolo interiliaco~~[?] (una~~ (procedura che può essere ~~fatta~~eseguita[426] per via laparoscopica). ~~I~~Nonostante[427] i dati sull'efficacia ~~delle procedure~~di tale procedura[428] nel ~~lenire il~~trattamento del[429] dolore pelvico ~~sono~~siano[430] limitati e in conflitto tra loro~~. Tuttavia~~, il più grande e recente ~~esperimento a controllo random~~*trial*[431] randomizzato controllato[432] suggerisce che PSN ~~possa~~può essere efficace per il trattamento di ~~una~~grave[433] dismenorrea ~~severa~~ causata da endometriosi. La ~~PSN~~neurectomia presacrale[434] laparoscopica, però[435], richiede delle competenze chirurgiche e di specializzazione molto ~~alte ed è aperta a complicazioni~~elevate[436] poiché gravata[437] da complicanze[438] vascolari e linfatiche a causa della vicinanza dei ~~grandi~~grossi[439] vasi sanguigni ~~ai canali~~e dei dotti[440] linfatici. Un'alternativa a questa tecnica[441] è la neurolisi presacrale laparoscopica che prevede l'iniezione di una soluzione neurolitica (ad ~~es. phenol) per~~ esempio[442], fenolo[443]) al fine di[444] distruggere chimicamente ~~l'architettura~~la struttura[445] neurale microscopica dei nervi presacrali. ~~Esiste~~Sebbene[446] esista[447] uno studio che ~~porta delle prove sulla possibilità di considerare~~fornisce[448] dati a favore di

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[419] **LANGUAGE: sub-language (CT)**
[420] **LANGUAGE: sub-language** More formal than "di più".
[421] **LANGUAGE: smoothness (repetition for cohesion)**
[422] **LANGUAGE: smoothness** More concise.
[423] **CONTENT: logic**
[424] **LANGUAGE: mechanics (right spelling)**
[425] **CONTENT: logic** *Cf* footnote 5.
[426] **LANGUAGE: sub-language** More formal than "fatta".
[427] **LANGUAGE: smoothness** Backward dislocation of the contrastive becoming a concessive gives the chance to strictly link these two sentences. It also determines the choice of the subjunctive.
[428] **LANGUAGE: smoothness (cohesion)**
[429] **LANGUAGE: sub-language (nominalisation)** *Cf* footnote 3.
[430] **LANGUAGE: mechanics** *Cf* footnote 423.
[431] **LANGUAGE: sub-language (Anglicism)** *Cf* footnotes 43/158.
[432] **LANGUAGE: idiom** *Cf* footnote 223.
[433] **LANGUAGE: idiom** In Italian, "patologia grave" is better than "severa".
[434] **CONTENT: logic** *Cf* footnote 53.
[435] **CONTENT: logic** Addition of the contrastive.
[436] **LANGUAGE: sub-language** More formal than "alte".
[437] **TRANSFER: accuracy**
[438] **LANGUAGE: sub-language (CT)**
[439] **LANGUAGE: idiom** "Grossi vasi" and not "grandi".
[440] **LANGUAGE: sub-language (sT) + idiom** "Dotti linfatici".
[441] **LANGUAGE: smoothness** Reiteration of the subject.
[442] **LANGUAGE: mechanics** Written in full.
[443] **LANGUAGE: mechanics (right spelling)**
[444] **LANGUAGE: sub-language** More formal than "per".
[445] **LANGUAGE: sub-langauge (CT)**
[446] **CONTENT: logic** Addition of the concessive. It determines the choice of the subjunctive.
[447] **LANGUAGE: mechanics** *Cf* footnote 445.
[448] **LANGUAGE: sub-language** More formal than "porta".

questa tecnica ~~un~~come trattamento per il dolore pelvico, sia come ~~trattamento singolo~~terapia[449] singola che in combinazione con ~~altri. Però~~altre, senza ~~altri dati che supportino un equilibrio favorevole tra efficacia~~ulteriori[450] dati a favore dell'efficacia e sicurezza di tali tecniche è impossibile ~~poter raccomandare~~consigliare[451] tanto la neurectomia presacrale quanto la neurolisi.

4.3 Neuromodulazione

Il ruolo della neuromodulazione nella gestione delle sindromi da dolore pelvico cronico non è ancor stato indagato a pieno, ~~mentre~~al contrario, quello nella gestione della vescica iperattiva o dell'incontinenza fecale è stato maggiormente ~~compreso. Anche se ci sono~~chiarito[452]. Sebbene[453] vengano pubblicati sempre più ~~prove di~~ studi pilota e serie di ~~o piccole ricerche di serie di casi~~e *case report*[454] su piccola scala[455] a favore dell'efficacia di tale tecnica nel trattamento del dolore pelvico, sono ~~ancora~~ necessarie ulteriori ricerche ~~più approfondite e~~[456] controllate~~ a dovere. Oggi~~. Oggigiorno[457], gli specialisti considerano la neuromodulazione uno strumento da usare ~~per il~~nel trattamento del dolore pelvico solo contestualizzandolo in un progetto più ampio di gestione del dolore~~. Le;~~[458] le[459] tecniche disponibili includono: la stimolazione periferica dei nervi (ad ~~es.~~[460] ~~la stimolazione~~esempio quelle[461] del nervo tibiale posteriore, ~~stimolazione~~ della radice~~/~~ o nervo sacrale e ~~la stimolazione~~ del nervo pudendo) e la stimolazione del midollo spinale.

La stimolazione percutanea ad intermittenza del nervo tibiale (PTNS – *Intermittent Percutaneous Tibial Nerve Stimulation*[462]) è un'opzione di trattamento molto poco invasiva ~~che è stato dimostrato sia~~ in grado di diminuire significativamente ~~le lamentele[?]~~la sofferenza[463] che ~~accompagnano~~accompagna[464] il dolore nei pazienti con una disfunzione ~~al~~del tratto urinario più basso, come urgenza e incontinenza, ~~urgenza [da sola] e/~~associata o meno a[465] frequenza. ~~Uno~~In uno

[449] **LANGUAGE: sub-langauge** "Terapia" is used as an hyponym of "trattamento".
[450] **LANGUAGE: sub-language** More formal than "altri".
[451] **LANGUAGE: idiom**
[452] **LANGUAGE: sub-language** More appropriate than "compreso".
[453] **CONTENT: logic** Addition of the concessive linker.
[454] **LANGUAGE: sub-language (Anglicism)** In Italian, "casi in serie" does not really exemplify the meaning of *case report*. *Cf* footnote 158.
[455] **LANGUAGE: sub-language** *Cf* footnote 261.
[456] **LANGUAGE: smoothness (omission)**
[457] **LANGUAGE: sub-language** More formal than "oggi".
[458] **LANGUAGE: mechanics (punctuation)**
[459] **PRESENTATION: typography (no capital letter)**
[460] **LANGUAGE: mechanics** Written in full.
[461] **LANGUAGE: smoothness (anaphoric deixis)**
[462] **CONTENT: logic** *Cf* footnote 5.
[463] **LANGUAGE: sub-langauge (CT) + idiom**
[464] **LANGUAGE: mechanics** Subject/verb agreement.
[465] **TRANSFER: accuracy**

studio di ~~van~~Van[466] Balken ~~ed altri ha valutato~~ *et al.*[467] condotto[468] su 33 pazienti con CPP ~~dopo la~~ in seguito alla terapia con PTNS~~. Il~~, si segnala che il punteggio nella scala visuale analogica (VAS~~) è aumentato~~ – *Visual Analogue Scale*[469]) è migliorato in maniera soggettiva nel 42% dei pazienti, con 7 pazienti (21%) che hanno ~~votato~~espresso[470] un punteggio VAS[471] addirittura minore di 3 ~~nella scala di valori VAS dopo~~ a termine delle[472] 12 settimane di trattamento. ~~In tutti i pazienti~~Inoltre[473], sia il punteggio sulla qualità della vita sia quello relativo all'intensità di dolore ~~provato erano~~ percepito[474] sono[475] migliorati significativamente~~. Questi~~ in tutti i pazienti. Dato che questi risultati ~~si riflettono nello studio condotto~~ sono accertati dagli studi condotti da Kim~~,~~ *et al.*, Aggamy~~, Goky ed altri. Di conseguenza, la~~ *et al.*, e Gokyildiz[476] *et al.*[477], PTNS ~~deve~~può[478] essere ~~usata~~considerata nel trattamento ~~dei~~di[479] pazienti con CPP che ~~hanno~~abbiano già ~~tentato~~provato altre terapie e a cui non ~~rimaner~~rimanga nessun'altra opzione. ~~Tutti~~In ogni caso[480], tutti gli autori~~, però,~~ concordano ~~sul fatto~~ che studi più approfonditi debbano necessariamente essere condotti in futuro.

~~La~~ Nonostante[481] la neuromodulazione sacrale (SNM~~) o~~ – *Sacral Neuromodulation*[482]) e la neurostimolazione sacrale (SNS~~) sono~~ – *Sacral Neurostimulation*[483]) siano[484] state introdotte come terapie per CPPS[485] per la prima volta nel 1999 ~~come terapie contro la CPPS~~ da Feler e colleghi, ~~anche se~~ la letteratura che rimane è piuttosto scarsa. ~~La differenza fra i due termini si basa sul fatto che la~~Mentre[486] SNS si concentra sulla stimolazione del nervo che rappresenta il principale ~~vettore[?]motore~~*driver*[487] di ~~una~~ risposta positiva, ~~mentre~~ diversi autori ~~credono~~concordano[488] che la neurostimolazione ~~sia il~~corrisponda[489] al punto da cui ~~scaturisce~~inizia[490] la risposta ma che il

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466 **PRESENTATION: typography (capital letter)**
467 **LANGUAGE: mechanics + PRESENTATION: typography (italics)**
468 **LANGUAGE: idiom**
469 **CONTENT: logic** *Cf* footnote 5.
470 **LANGUAGE: idiom**
471 **LANGUAGE: smoothness** More concise.
472 **LANGUAGE: sub-language** More formal than “dopo”.
473 **CONTENT: logic** Addition of the additive conjunctive.
474 **LANGUAGE: sub-language (CT) + idiom**
475 **LANGUAGE: sub-language (simple present)**
476 **LANGUAGE: mechanics (right spelling)**
477 **LANGUAGE: mechanics + PRESENTATION: typography (italics)**
478 **TRANSFER: accuracy** The modal “may have” most definitely cannot be translated with “deve” but rather with “può”.
479 **LANGUAGE: mechanics (singular)** *Cf* 3.1.6.2 Depersonalisation of medical texts.
480 **LANGUAGE: smoothness**
481 **LANGUAGE: smoothness** Anticipation of the concessive linker. It determines the choice of the subjunctive.
482 **CONTENT: logic** *Cf* footnote 5.
483 **CONTENT: logic** *Cf* footnote 5.
484 **LANGUAGE: mechanics** *Cf* footnote 480.
485 **LANGUAGE: smoothness (backward dislocation)**
486 **LANGUAGE: smoothness** More concise.
487 **LANGUAGE: sub-language** *Cf* footnote 158.
488 **LANGUAGE: idiom**
489 **LANGUAGE: sub-language**
490 **LANGUAGE: sub-language**

mantenimento a lungo termine dipenda dall'impatto della modulazione sul sistema neurale. ~~Essenzialmente~~In breve[491], sia il nervo ~~sacrale~~[492] ~~sia~~che la radice sacrale vengono inizialmente stimolate per poi essere modulate in un secondo momento~~, dal momento~~[493] visto che il posizionamento ~~del filo[?]~~ dell'elettrodo ~~ricopre~~coinvolge[494] entrambe le ~~parti. In conclusione, per~~strutture[495]. Per lo scopo di questa ricerca, la neuromodulzione sacrale viene sì[496] considerata ~~un'entità[?]opzione~~un'opzione terapeutica, dando però[497] per vero che entrambi i componenti del sistema neurale sacrale vengano modulati.

I casi ~~di studio~~studiati, come ~~dicono~~riportano[498] Lavano e ~~suoi~~[499] colleghi ~~negli studi del~~nel 2006, hanno dimostrato che in cinque pazienti su sette ~~l'SNM~~[500]SNM ha ridotto drasticamente i punteggi relativi al dolore~~. In~~; anche se[501] in letteratura si trovano ricerche simili ~~ma gli insiemi di~~, l'insieme dei dati ~~rimangono~~rimane piuttosto ~~esigui~~esiguo. Uno dei gruppi di studio più ampi ~~ha studiato~~ era formato[502] da 78 pazienti in terapia dal 1994 al 2008~~. Un'SNM permanente è stata impiantata in pazienti che hanno mostrato~~ e, a coloro che mostravano[503] almeno un 50% di miglioramento dei ~~loro~~ sintomi ~~con~~(~~[504]~~rilevato da un test di valutazione temporanea sui nervi periferici~~.~~), è stato impiantato SNM permanente. Il *follow-up*[505] ~~mediano era~~medio[506] è di 61~~.~~,[507]5 (SD ~~+-~~ ± 27~~.~~,7) mesi e un esito positivo a lungo termine è stato riscontrato nel 72% dei pazienti~~. Si~~ ; l'impianto[508] si è dovuto rimuovere ~~l'impianto~~ nel 28% dei casi per lo più a causa ~~dell'esito~~di esito insoddisfacente (54% dei pazienti con risultati negativi). Il tasso di revisione~~[?]~~ di questo studio è del 50% che è molto ~~più alto di~~maggiore[509] rispetto a quello riscontrato ~~nella~~in letteratura ~~generale sull'SNM che tratta le~~su[510] SNM relativa a disfunzioni ~~alla vescica~~vescicali e ~~all'intestino~~intestinali[511]. In altre ricerche caso-controllo fondate sull'osservazione retrospettiva~~, a 34 pazienti donna è stato impiantato~~ un dispositivo

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491 **LANGUAGE: smoothness** "Essenzialmente" immediately followed by "inizialmente" sounds cacophonic.
492 **LANGUAGE: smoothness (omission of the repetition)**
493 **LANGUAGE: smoothness** The word "momento" appears twice in this sentence and, stylistically, that should not happen.
494 **LANGUAGE: sub-language**
495 **LANGUAGE: sub-language (CT)**
496 **LANGUAGE: smoothness (more emphasis)**
497 **CONTENT: logic** Addition of the contrastive.
498 **LANGUAGE: idiom**
499 **LANGUAGE: mechanics** No possessive adjective.
500 **LANGUAGE: mechanics (no definite article)** *Cf* footnote 19.
501 **CONTENT: logic** Addition of the concessive.
502 **LANGUAGE: idiom**
503 **LANGUAGE: smoothness**
504 **LANGUAGE: mechanics** Parenthetical clause introducing extra info.
505 **PRESENTATION: typography (italics)**
506 **LANGUAGE: idiom**
507 **LANGUAGE: mechanics** In Italian, decimal figures are separated by a comma and not by a point.
508 **LANGUAGE: smoothness** Backward dislocation of the subject.
509 **LANGUAGE: sub-language** More formal than "più alto".
510 **LANGUAGE: mechanics (no definite article)** *Cf* footnote 19.
511 **LANGUAGE: sub-language + idiom (adjectives of relation)**

permanente~~.~~ è stato impiantato in 34 pazienti donna[512]. I punteggi VAS medi relativi al dolore pre- e post-operatorio ~~erano~~sono[513] 6~~.~~,[514]5 ~~+-~~± 2~~.~~,9 / 2~~.~~,4 ~~+-~~± 1~~.~~,1 (*P*<0~~.~~,01~~). Questi~~); questi risultati positivi si sono mantenuti dopo un periodo di *follow-up*[515] medio di 8~~.~~,6 ~~+-~~±9~~.~~,8 mesi~~. Il~~ [516]e il tasso di ~~ri-operazione~~ reintervento ~~era~~è del 25~~%. Per~~%, per tanto~~, l'SNM~~[517] SNM può essere ~~usata ma~~utilizzata[518] senza però[519] sottovalutare la possibilità che ci siano delle complicanze.

~~Si pensa che la~~[520]La neurostimolazione del pudendo (PNS~~) nella~~ – *Pudendal Neurostinulation*[521]) per CPPS refrattaria ~~abbia un risultato migliore nei~~è considerata un'opzione terapeutica per quei pazienti per cui le altre opzioni ~~terapeutiche~~ non ~~abbiano funzionato.~~siano state efficaci[522]. In ~~un eventuale[?]~~uno studio prospettico[523], incrociato[524] in singolo-cieco ~~cross-over sulla PNS e la SNM in~~su 22 pazienti con BPS ~~(n=22), la PNS~~sottoposti a PNS e SNM, la neurostimolazione del pudendo[525] ha dato ~~un risultato finale del~~ il 59% di miglioramento dei sintomi, ~~mentre per la SNM si ha un~~rispetto al 44% di ~~miglioramento~~ quella[526] sacrale (*P*=0~~.~~,05). ~~Molti~~Inoltre[527], molti pazienti che hanno provato sia l'elettrodo sacrale sia quello del pudendo hanno scelto PNS quale ~~il~~ miglior sito~~[?]posto~~[528] per ottenere sollievo dal dolore. ~~Sembra~~Di fatto[529], sembra che le opzioni di neuromodulazione siano ben tollerate e che più del ~~99%~~ 90%[530] dei pazienti sottoposti a neuromodulazione ~~abbiano~~abbia[531] dichiarato che si ~~sottoporrebbero~~sottoporrebbe all'intervento una seconda volta. ~~La~~In particolare, PNS può ~~funzionare~~essere efficace[532] nella neuralgia del pudendo che ~~in realtà~~ è una lesione del nervo periferico, ed, in quanto tale, dovrebbe rispondere alla neuromodulazione con impianti di generatori ~~[equivalenti/modulari]~~ di impulso~~. Tuttavia~~; infine, è importante ricordare che la stimolazione ~~sia~~deve essere realizzata ~~nello~~nel punto stesso ~~punto~~ in cui si ~~sente~~avverte il dolore.

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[512] **LANGUAGE: smoothness (backward dislocation)**
[513] **LANGUAGE: sub-language (simple present)**
[514] **LANGUAGE: mechanics** *Cf* footnote 506. This error is repeated up to 6 times in this sentence.
[515] **PRESENTATION: typography (italics)**
[516] **LANGUAGE: smoothness** The coordinating "e" gives the chance to link the two sentences.
[517] **LANGUAGE: mechanics (no definite article)** *Cf* footnote 19.
[518] **LANGUAGE: sub-language** More formal than "usata".
[519] **LANGUAGE: smoothness (addition of the contrastive)**
[520] **LANGUAGE: smoothness (omission)**
[521] **CONTENT: logic** *Cf* footnote 5.
[522] **LANGUAGE: sub-language** More formal.
[523] **TRANSFER: completeness**
[524] **LANGUAGE: sub-language** The Anglicism is translated into Italian.
[525] **CONTENT: logic** *Cf* footnote 53.
[526] **LANGUAGE: smoothness (anaphoric deixis)**
[527] **LANGUAGE: smoothness** Addition of the conjunctive.
[528] **LANGUAGE: sub-language** "Sito " is more formal than "posto".
[529] **LANGUAGE: smoothness** Addition of the conjunctive.
[530] **TRANSFER: accuracy** 99% is wrong, the ST says 90%.
[531] **LANGUAGE: mechanics** Subject/verb agreement.
[532] **LANGUAGE: sub-language**

La stimolazione del midollo spinale (SCS – *Spinal Cord Stimulation*) è considerata un'importante opzione di trattamento per certe forme di dolore neuropatico cronico che altrimenti resisterebbero al trattamento. ~~Il~~Sebbene il funzionamento ~~nel~~in CPPS ~~è~~sia ancora incerto~~. L'SCS~~, SCS può essere efficace per ~~gli~~ le afferenti toraco-lombari~~. Tuttavia,~~[533] tuttavia, è piuttosto difficile ottenere una stimolazione appropriata ~~usando l'SCS per quanto riguarda i~~sui nervi sacrali~~–~~, pudendo compreso~~–~~, e ciò ne limita l'uso nella gestione del dolore pelvico cronico. ~~Ciò nonostante, nel~~Nel caso in cui venga individuata una causa viscerale specifica, come succede per l'endometriosi, c'è, però[534], una possibilità che questa abbia un impatto positivo. ~~In un piccolo (n=6)~~Infatti[535], in uno studio su piccola scala[536] (effettuato su 6 pazienti[537]) di Kapural ~~ed altri, l'SCS~~*et al.*[538] SCS è stata usata ~~per curare il~~ nel trattamento del[539] dolore pelvico viscerale ~~dopo~~in seguito ad[540] un periodo di test positivi con blocchi dei nervi ipogastrici ~~e blocchi ipogastrici~~temporanei o permanenti[541] ([542]con agenti neurolitici~~.~~). In un periodo di *follow-up* [543]medio di 30~~.~~,6 mesi, il punteggio VAS sul dolore medio è diminuito da 8 a 3, con una riduzione concomitante nell'uso di oppiacei ([544]da 22~~.~~,[545]5 mg a 6~~.~~,6 mg di morfina ~~solfata. Anche~~solfato[546] al giorno[547]). Poiché[548] l'indice di disabilità del dolore è migliorato ~~per tanto l'SCS~~, SCS può essere usata nella gestione del dolore viscerale ~~che, però,~~anche se necessita ~~ancora~~ di ~~altri~~ulteriori[549] approfondimenti.

~~E'~~ È[550] abbastanza chiaro che le terapie neuromodulari sono complesse e la selezione dei pazienti ~~è~~ di fondamentale importanza per far sì che queste funzionino~~. Questi:~~[551] i pazienti sono vulnerabili, spesso hanno risposto negativamente alle altre modalità di trattamento e sono psicologicamente fragili. Di ~~fatto~~conseguenza[552], l'opzione della neuromodulazione può essere presa in considerazione solo in centri specializzati ~~e in quei centri~~ che possano offrire delle ~~attenzioni[?]~~cure multidisciplinari.

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[533] **LANGUAGE: mechanics (punctuation)**
[534] **LANGUAGE: smoothness (forward dislocation)**
[535] **LANGUAGE: smoothness**
[536] **LANGUAGE: sub-language** *Cf* footnote 262.
[537] **LANGUAGE: mechanics** *Cf* footnote 236.
[538] **LANGUAGE: mechanics**
[539] **LANGUAGE: sub-language (nominalisation)** *Cf* footnote 3.
[540] **LANGUAGE: sub-language** More formal.
[541] **CONTENT: logic**
[542] **LANGUAGE: mechanics** Parenthetical sentence introducing extra info.
[543] **PRESENTATION: typography (italics)**
[544] **LANGUAGE: mechanics** *Cf* footnote 541.
[545] **LANGUAGE: mechanics** *Cf* footnote 513.
[546] **LANGUAGE: mechanics (masculine)**
[547] **TRANSFER: completeness**
[548] **CONTENT: logic (addition of the causal linker)**
[549] **LANGUAGE: sub-language** More formal than "altri".
[550] **PRESENTATION: typography (right accent)**
[551] **LANGUAGE: mechanics (punctuation)**
[552] **CONTENT: logic (addition of the causal linker)**

4.4 Stimolazione profonda ~~del cervello~~dell'encefalo[553]

Per il dolore cronico refrattario a tutte le altre forme di trattamento, la stimolazione cerebrale[554] profonda ~~del cervello~~ (DBS – *Deep Brain Stimulation*[555]) deve essere condotta da un neurochirurgo~~.~~ ~~Come~~ e[556], come per i metodi non invasivi di stimolazione ~~al cervello,~~dell'encefalo[557], lo scopo è quello di migliorare l'attività dei sistemi inibitori del dolore ~~e di.~~[558] Di[559] solito la stimolazione viene effettuata nell'~~aria~~ area[560] talamica ~~[letteralmente, su uno o su più talami,?], sulla materia grigia~~, nel grigio[561] periventricolare e ~~su quella periacquedottale. Più~~ periacqueduttale[562] e[563], più in superficie, anche ~~la~~nella corteccia motoria ~~può essere stimolata~~ (MCS~~).~~ – *Motor Cortex Stimulation*[564]). Le meta-analisi (anche se principalmente di ~~casi in serie~~serie di *case report*[565]) dimostrano che ~~la~~ DBS ha un tasso di successo a lungo termine del 46%, mentre quello ~~della~~di[566] MCS può variare, ~~a dipesa delle~~in base alle[567] indicazioni, dal 40% al 75%. Sorprendentemente, in entrambe le procedure ~~hanno una probabilità~~il fattore di ~~complicazione~~ rischio[568] è relativamente ~~bassa in cui le~~basso[569], e quello peggiore è rappresentato dalle[570] infezioni ~~rappresentano il rischio più alto. La DBS~~. Inoltre[571], la stimolazione cerebrale profonda[572] è associata al rischio di emorragia intracranica (fino al 4%), una ~~complicazione~~complicanza[573] che~~, tuttavia,~~ non si presenta ~~nella MCS. Non~~con quella della corteccia motoria[574]. In conclusione[575], non esistono studi che accertino l'efficacia ~~della~~di[576] MCS o ~~della~~di DBS ~~nelle~~in[577] donne ~~con~~affette da[578] CPP.

5. Considerazioni conclusive

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553 **LANGUAGE: sub-language (sT)** *Cf* footnote 327.
554 **LANGUAGE: sub-language + idiom (adjective of relation)**
555 **CONTENT: logic** *Cf* footnote 5.
556 **LANGUAGE: smoothness (coordinating conjunction)**
557 **LANGUAGE: sub-language (sT)** *Cf* footnote 327.
558 **LANGUAGE: mechanics (punctuation)**
559 **PRESENTATION: typography (capital letter)**
560 **LANGUAGE: sub-language (CT) + idiom**
561 **LANGUAGE: sub-language (sT)**
562 **LANGUAGE: mechanics (right spelling)**
563 **LANGUAGE: mechanics (coordinating conjunction)**
564 **CONTENT: logic** *Cf* footnote 5.
565 **LANGUAGE: sub-language** Since in Italian the Anglicism "case report" only refers to one of them, the word "serie" is added. *Cf* footnotes 158/453.
566 **LANGUAGE: mechanics(no definite article)** *Cf* footnote 19.
567 **LANGUAGE: sub-language**
568 **LANGUAGE: sub-language (CT)** The right term for "probabilità di complicanze" is "fattore di rischio".
569 **LANGUAGE: mechanics (masculine)**
570 **LANGUAGE: smoothness + idiom** "Peggiore fattore di rischio"
571 **LANGUAGE: smoothness (additive linker)**
572 **CONTENT: logic** *Cf* footnote 53.
573 **LANGUAGE: sub-language (CT)**
574 **CONTENT: logic** *Cf* footnote 53.
575 **CONTENT: logic** Addition of the conclusive linker.
576 **LANGUAGE: mechanics (no definite article)** *Cf* footnote 19.
577 **LANGUAGE: mechanics (more general preposition)** *Cf* footnote 136.
578 **LANGUAGE: sub-language (CT)** More formal than "con". *Cf* footnote 83.

Quando vengono valutati e pianificati i trattamenti per le pazienti ~~donne~~[579] ~~con CPP,~~ affette da dolore pelvico cronico[580], è importante ~~–~~considerare ~~l'importanza~~il ruolo chiave che ~~ha~~ il ~~CNS nella percezione di~~sistema nervoso centrale[581] ricopre nell'esperienza[582] del dolore. I trattamenti che interessano ~~il~~ CNS possono essere intrapresi ~~isolatamente~~ inizialmente mentre ~~il pazienti è ancora sotto indagine~~sono in corso indagini diagnostiche[583], o prescritti da soli o in combinazione con terapie ~~ormonali~~endocrine e/o chirurgiche se vi è il sospetto, o ~~l'individuazione~~l'identificazione[584], di una patologia pelvica.

~~Anche se esistono~~Sebbene[585] esistano[586] delle statistiche a supporto dell'efficacia di questi trattamenti per ~~il~~ CPP in particolare, ~~prove solide~~dati attendibili[587] dimostrano che vi è una somiglianza tra i meccanismi che stanno alla base del dolore e ~~i cambiamenti centrali associati al~~le alterazioni[588] del sistema nervoso centrale[589] associate a[590] dolore cronico, ~~senza contare il~~indipendentemente[591] dalla sede[592] ~~punto specifico~~ specifica[593] da cui ~~parte~~ origina[594] la sensazione di dolore~~. Pertanto,~~[595] pertanto è ragionevole ~~pensare di poter usare questi trattamenti in~~ considerare[596] queste terapie[597] per tutte le donne con CPP.

~~Le~~In generale[598], mentre[599] le opzioni terapeutiche[600] che prevedono l'uso di farmaci antidepressivi ed ~~anticonvulsionanti~~anticonvulsivanti[601] sono ben tollerate ~~per cui~~e possono essere prescritte da un ginecologo o da un medico ~~del pronto[?] soccorso. Le altre opzioni terapeutiche~~ di base[602], quelle[603] più ~~nuove~~recenti o invasive richiedono l'intervento di un *team* [604]specializzato nella gestione del

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579 **LANGUAGE: smoothness (omission)** Already conveyed by the definite feminine article.
580 **CONTENT: logic** *Cf* footnote 53.
581 **CONTENT: logic** *Cf* footnote 53.
582 **LANGUAGE: sub-language (CT)**
583 **LANGUAGE: sub-language (CT)**
584 **LANGUAGE: idiom**
585 **LANGUAGE: sub-language** More formal than "anche se". It determines the choice of the subjunctive.
586 **LANGUAGE: mechanics** *Cf* footnote 584.
587 **LANGUAGE: sub-language (CT) + idiom**
588 **LANGUAGE: sub-language (sT)** *Cf* footnote 51.
589 **TRANSFER: completeness + LANGUAGE: idiom**
590 **LANGUAGE: idiom**
591 **LANGUAGE: sub-language** More formal than "senza contare".
592 **LANGUAGE: sub-language (CT)**
593 **LANGUAGE: mechanics (feminine)**
594 **LANGUAGE: sub-language (CT) + idiom**
595 **LANGUAGE: smoothness (punctuation)**
596 **LANGUAGE: sub-language**
597 **LANGUAGE: sub-language** *Cf* footnote 448.
598 **LANGUAGE: smoothness (addition of the linker)**
599 **CONTENT: logic (addition of contrastive the linker)**
600 **LANGUAGE: idiom**
601 **LANGUAGE: mechanics (right spelling)**
602 **TRANSFER: accuracy**
603 **LANGUAGE: smoothness (anaphoric deixis)**
604 **PRESENTATION: typography (italics)**

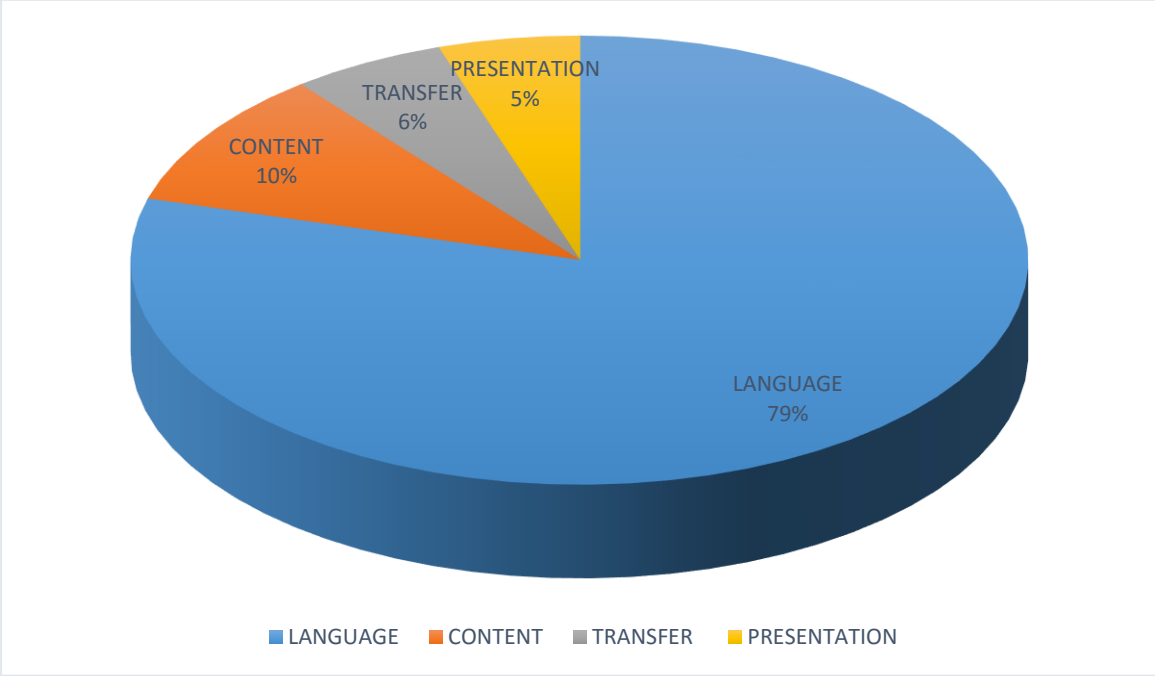
dolore. ~~Tuttavia~~[605]~~, è importanti~~È[606] importante che i ginecologi siano a conoscenza di tali ~~opzioni~~alternative così che ~~i~~le[607] pazienti ~~refrattari~~refrattarie[608] ai trattamenti standard possano essere ~~studiati~~studiate da un *team*[609] ~~specializzato~~di specialisti[610] prima di ~~eseguire un intervento chirurgico radicale o~~essere sottoposte[611] ad interventi chirurgici radicali[612] che ne ~~comprometta~~possano compromettere la fertilità~~ [???].~~.

Anche se non è ancora ~~non si sa~~chiaro[613] fino a che punto ~~i cambiamenti centrali~~le alterazioni[614] del sistema nervoso centrale[615] possano essere ~~invertiti~~[?]~~ribaltati~~reversibili[616], il trattamento ~~immediato~~precoce[617] dei sintomi ~~di dolore~~algici[618] può prevenire o, quanto meno, minimizzare lo sviluppo di ~~cambiamenti a lungo termine associati al~~alterazioni permanenti[619] del sistema nervoso centrale[620] associate a[621] dolore cronico.

[605] **LANGUAGE: smoothness (omission of the linker)**
[606] **PRESENTATION: typography (capital letter)**
[607] **CONTENT: logic** Given that the paper is written by the Royal College of Obstetricians and Gynaecologists, patients must be referring to women.
[608] **LANGUAGE: mechanics (feminine)**
[609] **PRESENTATION: typography (italics)**
[610] **LANGUAGE: sub-language (CT) + idiom**
[611] **LANGUAGE: idiom**
[612] **LANGUAGE: mechanics (plural)**
[613] **LANGUAGE: sub-language** More appropriate.
[614] **LANGUAGE: sub-language (sT) + idiom** *Cf* footnote 51.
[615] **TRANSFER: accuracy** "Cambiamenti centrali" does not make sense in Italian, the whole prepositional phrase must be added.
[616] **LANGUAGE: sub-language (CT) + idiom** *Cf* footnote 149.
[617] **LANGUAGE: idiom**
[618] **LANGUAGE: sub-language (sT)**
[619] **LANGUAGE: sub-language (sT) + idiom** *Cf* footnote 51.
[620] **TRANSFER: accuracy** The complement of specification is needed for better understanding of the text.
[621] **LANGUAGE: idiom**

4.5 Statistics

The self-revision assignment has been conducted on the basis of Mossop's TCLP parameters. The first interesting consideration about the application of these parameters is that deciding which one had to be chosen was not completely straightforward; in fact, one error may be associated to more than one parameter. After having checked the whole draft translation by using all the four groups of parameters (Mossop 2001: 125-126), 646 errors have been encountered in the TT. From a statistical point of view, these are divided into: 513 Language, 64 Content, 36 Transfer and, finally, 33 Presentation errors. Please, find below a chart including the respective percentages:



With no doubt, Language changes represent the predominant group in the chart and this clearly reflects what has been said earlier about the complexity of lexis in scientific and medical texts.

The vast majority of changes concerns the linguistic level (79%); in particular, as regards the various sub-groups belonging to this category, Sub-language (38%) occupies the first place, Smoothness (24%) the second just after Mechanics (23%), Idiom (14%) the third and Tailoring the last one with only 1% of changes encountered for this group. The use of Sub-language in the draft translation was, admittedly, quite poor. Not only were specific and collateral terms almost never used in the draft, but also were pathologies', scientists' and drugs' names often misspelt, abbreviated or even invented. One of the main relevant point about Sub-language is that in no other way than with the active help of a specialist doctor such a parameter could have improved to this extent. Yet, this was not always necessary since the purpose of this translation is quite limited as it is going to last for

a relatively short period and is aimed for personal use only[86]. In general, Sub-language errors affect different linguistic features. From the grammatical point of view, the changes related to the need for nominalization (e.g. the title: ~~*Terapie mirate al sistema nervoso centrale per lenire il dolore pelvico cronico*~~ > *Il ruolo del sistema nervoso centrale nel trattamento del dolore pelvico cronico*) and for simple present indicative tenses definitely were the most evident corrections made in the TT in order to make it more stylistically adapt to the medical register. From the lexical point of view, a consistent number of both specific (e.g. ~~*una patologia a cui si possa associare il dolore*~~ > *una specifica eziopatogenesi*, ~~*sintomi di dolore*~~ > *sintomatologia algica,* ~~*convulsionanti*~~ > *convulsivanti,* ~~*medicili specializzati in terapie ormonali*~~ > *specialisti in endocrinologia*, ~~*cervello*~~ > *encefalo*, ~~*plesso nervoso di lee Frankenhauser*~~ > *ganglio paracervicale di Lee-Frankenhauser,* etc.) and lexical and structural collateral technicisms (e.g. ~~*provare un dolore*~~ > *manifestare un sintomo, causa evidente* > *causa apparente,* ~~*dolore sentito*~~ > *dolore percepito,* ~~*cambiamenti*~~ > *alterazioni,* ~~*medici specializzati*~~ > *specialisti,* ~~*con CPP*~~ > *affetto da CPP,* ~~*dopo*~~ > *in/a seguito a/di/a termine di*, etc.) were introduced to make the text more formal and, in general, more suitable for medical purposes. As just mentioned, these changes were actually not essential in relation to the translation brief; in this view, some of these corrections could be regarded as examples of over-Tailoring; as a consequence, it must be said that, as far as Sub-language is concerned, the TT ultimately over-suits its readers and the use they will make of it. Smoothness is the second most encountered type of mistakes as it covers the area of style. After all, style can be increasingly enhanced and one of the biggest problem in revising was in fact that of trying to understand when to stop (something that was not totally achieved given that the total number of changes made is 646). In the TT, fluency is achieved through a number of different ways: the forward/ backward dislocation of conjunctions/conjunctives and subordinate sentences; the rearrangement of clauses/parts of speech within a sentence; the introduction of all sorts of linguistic connectors between different sentences; the use of deictic elements, synonyms and repetitions increasing the cohesion in the text; and the omission of some irrelevant units, thus minimising the number of source-language words (something a translator should always aim at!). Third, Mechanics includes errors in grammar, spelling, punctuation, house-style and correct usage. As regards this group, the most frequent error encountered was that of English acronyms preceded by definite articles, which have been deleted throughout the TT (*dal CPP* > *da CPP*, *l'SNM* > *SNM,* etc.). In addition, the other Mechanics errors encountered include: wrong spelling of uncommon words, illnesses or drugs names, and surnames (e.g. *acquedottale* > *acqueduttale*, *dysuria* > *dysuria,*

[86] In Mossop's words these kinds of translations are called "ephemeral". Yet, differently from Mossop who believes that it does not make sense to waste time revising ephemeral texts, the author of this dissertation agrees with Chakhachiro who affirms that it is important to convey the source-language message with all its terminologies and nuance also for this type of texts (*cf.* 2.1.2 Revision).

amytriptiline > amitriptilina, Lee-Frank > Lee-Frankenhauser); subject/verb agreements (e.g *più del 99% dei pazienti sottoposti a neuromodulazione ~~abbiano~~ dichiarato che si ~~sottoporrebbero~~ > abbia/sottoporrebbe*); correct names of English organizations (*Royal college ~~degli ostetrici e ginecologi~~ >* "*Royal College of obstetricians and Gynaecologists"*) and right mathematical signs (e.g. *~~+-~~1.1 > ±1,1;* note also the replacement of the point separating figures with a comma). Also, punctuation was employed for different purposes (e.g. the use of colon followed by exemplifications, the addition of parenthetical clauses/end appositions for introducing extra information), but especially to link with commas, semi-colons or colons very short sentences divided by full-stops – not at all a very common practice in Italian writing. Idiom regards the possible combinations of words that are actually used in a language. These errors were very few in the text, totalizing 14% of the overall amount of mistakes. Besides the corrections of very straightforward Idiom errors, like *causa ~~evidente~~ > causa* apparente, other examples of this group of mistakes are: the impossibility to translate "central changes" with *cambiamenti centrali*, which is very ambiguous in Italian, but rather with *alterazioni del sistema nervoso centrale*; the addition of the adjective *centrale* in the translation of "nervous system" > *~~sistema nervoso~~ > sistema nervoso centrale* to be more specific; and the translation of "pelvic pain/inflammation" with the adjective of relation *pelvico* rather than with the draft translation *alla pelvi*. As it can be seen deciding to what extent this latter example (*dolore pelvico*) could be considered as a Sub-language, an Idiom or even a Smoothness mistake is very blurry and, in some other occasions, it has led the reviser to deep confusion.

As far as Content is concerned, this group occupies 10% of the overall number of mistakes encountered. Interestingly, such errors belong exclusively to the Logic sub-group, in fact no Facts mistake has been found. One of the most frequent error of this group is the addition of logical linkers only implied by the ST, as in:

> *Di solito, le donne affette da CPP vanno da ginecologi che, per lo più, si limitano ad indagare e curare gli organi pelvici di loro competenza; al contrario, quest'articolo prende in esame i trattamenti disponibili per CPP che mirano al sistema nervoso centrale piuttosto che alla pelvi.*

In this sentence the English full stop becomes the Italian contrastive conjunctive "al contrario", thus making the text smoother and more logical. Another example connected with this error type is the addition of the disambiguation of English acronyms which helps avoiding contradictions (e.g. *il dolore pelvico cronico (CPP) > il dolore pelvico cronico (CPP – "Chronic Pelvic Pain")*: without this specification the reader could find illogical the association between the illness name (in Italian) and its acronym (in English). Also, in *della tossina botulinica ("onabotulinumtoxin" A o Botox®, Allergan, Marlow, Bucks – UK),* the two elements *onobotulinumtoxin A* and Botox® had to be,

logically, taken out of the parenthetical clause because these drugs are used both in Italy and in the UK; in contrast to the other three which exist only in the UK. A further example can be studied in the sentence *dolore urologico sia in uomini che donne (cistite interstiziale, prostatite cronica)* that has been revised with the inversion of the elements contained in the parenthetical clause *(prostatite cronica, cistite interstiziale)* as the first pathology is connected with the second group of patients (women) and *vice-versa*.

The third group of errors detected is Transfer[87], further sub-divided into Accuracy and Completeness. Likewise Sub-language, also this group is strongly indebted to the contribution of a specialist doctor whose help happened to be necessary for the actual understanding of some parts of the text. Differently from Sub-language in which the changes were often cases of over-tailoring, in this case Transfer mistranslations had to be necessarily corrected in order to make the text comprehensible. In fact, as this group concerns the actual meaning of the text, it encompasses the most important feature of any translation and, as already explained, of this one in particular. Luckily, the number of Transfer errors encountered reaches only 4%, therefore, the quality of the translation was not particularly bad. In general, it can be said that Transfer accuracy errors affect both the micro- and macro-structure. At the level of words, some examples are represented by the correction of single nouns (e.g. "function" > ~~*funzionamento*~~ > *funzione*; or "botulinum toxin" > ~~*botulino*~~ > *tossina botulinica*) and of modal verbs (whereas the English aspectual *can/may* accompanying verbs of perception should not be translated: "may experience […]pain > ~~*possono provare un dolore*~~ > *manifestano un dolore*, deontic *shall/should* is to be translated with a future of obligation rather than with a conditional: "dosis should be increased"> *le dosi* ~~*dovrebbero*~~ *venire aumentate gradualmente* > *dovranno*). At the level of the sentence, the most stricking example is contained in:

> Given that women with CPP frequently report feeling that their doctor thought their pain was psychological, these points can be useful in counselling women prior to commencing an antidepressant or anticonvulsants medication.
>
> *Dato che le donne con CPP di solito dichiarano di aver sospettato che il loro medico pensasse che il dolore fosse psicologico, questi fattori possono tornare utili quando si danno loro dei consigli medici prima di cominciare una cura con antidepressivi ed anticonvulsivanti.*
>
> *Dato che, di solito, le donne affette da CPP dichiarano di aver capito che il loro medico avesse ricondotto il dolore a fattori psicologici, quanto detto può tornare utile per spiegare loro che i farmaci antidepressivi ed anticonvulsivanti alle dosi prescritte hanno effetto sul dolore cronico e non sullo stato psicologico.*

Besides all the Language errors, an Accuracy mistake is evident in the last part of this extract: whereas the very literal draft translation does not convey the actual meaning of the ST, the TT translation,

[87] Please remember that, differently from CLP parameters, Transfer is the only one that requires comparison reading with the ST.

however taking the distance from the ST[88], ultimately explains what the original means. Other occasions in which Transfer errors occur are mainly in relation with scientific topics which are almost utterly ignored by the translator/reviser. The following example shows how, without the co-operation between the translator and a specialist doctor, some parts of the text would have actually remained incomprehensible. The draft translation

> ~~*Pare*~~ *che gli antidepressivi agiscano* ~~*alterando*~~ *l'attività* ~~*all'interno*~~ *dei sistemi inibitori del dolore per mezzo* ~~*della modulazione*~~ *della seratonina, noradrenalina, dopamina e acetilcolina* ~~*e potenzialmente grazie agli effetti antagonisti dell'anti-infiammazione diretta,* **opiodergic**~~ *o N-methil-d-aspartate [???]*

of

> It appears that antidepressants act by altering activity within pain inhibitory systems via modulation of serotonin, noradrenaline, dopamine and acetylcholine and potentially by direct anti-inflammatory, opiodergic, or N-methil-D-aspartate (/NMDA) antagonist effects.

is indeed revised into

> *Risulta che gli antidepressivi agiscano potenziando l'attività dei sistemi inibitori del dolore per mezzo dell'inibizione del "re-uptake"*[89] *di serotonina, noradrenalina, dopamina e acetilcolina con un effetto anti-infiammatorio diretto, potenziando l'attività degli oppioidi endogeni (endorfine) e inibendo l'attività dell'acido N-metil-D-asparto (NMDA).*

Above all, this example offers an insight in how complicate can be to unravel quite a long, meaning-dense, noun-only English string into Italian. Another relevant mistranslation error concerning specific medical issues is related to the eponym contained in the ST: the draft translation of "the interruption of the Lee-Frankenhauser sensory nerve plexus" > ~~*l'interruzione del sensore Lee Frank del plesso nervoso*~~ is totally wrong as "sensory" is an adjective obviously related to the word "nerve" and not a tool invented by this scientist as the draft translation conveys; consequently, it was corrected with its exact correspondent *il blocco del ganglio paracervicale di Lee-Frankenhauser.* As for Completeness, only a couple of mistakes were encountered in the draft. One example is the addition of the acronym NMDA in "N-methil-D-aspartate (NMDA)" > ~~*N-methil-d-aspartate*~~ > *N-metil_D-aspartato (NMDA)* which was missing in the draft. A further, more general, Completeness error occurs in "those with exerpetise in […] invasive/surgical" > ~~*medici specializzati in terapie […] invasive/chirurgiche*~~ > *medici specializzati in […] chirurgia (urologia, ginecologia)* where the paranthetical clause completes the meaning implied by the English "invasive".

The very last group is Presentation, with only 3% of errors encountered. Typography mistakes mainly concern the selection of the italics font in case of English loanwords (e.g "*follow-up*") or

[88] "Accuracy does not mean source-oriented" (Mossop 2001: 126).

[89] Please note the addition of the Anglicism *re-uptake* as a confirmation of the hegemonic role of English in scientific writing.

names in general (e.g. "*Central Nervous System*"), Greek letters for chemical components and consistent capitalisation throughout the whole text. Furthermore, the very few Layout errors found only regards the deletion of extra spacing within words.

To conclude, it must be said that, although very literal, the draft translation served its first purpose of helping a professional doctor in the writing of her PhD dissertation on pain management, thus demonstrating how even an "overt translation" (House, 2015: 56) could turn out to be useful when in need for a quick, source-oriented translation. Yet, this example of revision also exemplifies how much a TT can be worked upon in order to improve all the linguistic features within it and thus attempt to transform an overt translation in a covert, target-oriented one that could even aspire to be published[90]. Undoubtedly, without the help of a professional doctor the TT result would have been very different from the present version. The expert was necessary to correct Sub-language and Transfer errors and, in particular, to better understand those parts of the text strictly related to how drugs work or to specific biological processes which would have otherwise remained partly mistranslated or not translated. Moreover, the most difficult problem encountered during the revision was that of avoiding perfectionism (Mossop's principles – Mossop, 2001: 156); after all, language and style may be increasingly improved by making use of a whole range of different strategies; yet a translator, and a reviser as well, should always be careful not to waste time gilding the lily.

[90] In fact, recalling House's words: "a particular ST does not necessarily require once and for all either a covert or an overt translation given the different, dynamic ways of viewing a text and different purposes for which a translation may, in the course of time, be required" (House 1997: 77).

5. Conclusion

This Dissertation sets the objectives to describe and analyse revision in the process of medical translation. This analysis was possible thanks to the available literature, findings from different research papers and practical research in general. The choice of this particular topic proved to be good: despite the scarce literature existing on the subject of revising, it was possible to treat revision from different points of view (theoretical, practical, the perspective of the self-reviser, etc.) and make up a consistent overview of the basic facts as well as more concrete issues. This Dissertation treats the topic in a logical and consistent manner, therefore, it should be understandable also to amateur translators. To this end, this Dissertation might serve medical translation trainees to get a complete idea of what revision involves and how to deal with it. As explained in the theoretical part, revision is a complex part of the translation process with its own theoretical basis, ethics, models and principles. As a tool of quality assurance and assessment, revision is an indispensable element in the overall translation process. In brief, the quality of revision is part of the focus of this investigation because revision can substantially improve the quality of a translation. In particular, this Dissertation shows how, differently from what Mossop believes, also the quality of "ephemeral" texts can be increasingly improved, especially if the reviser is not overburdened by strict deadlines or stressful external factors.

In the example proposed in the practical part of this Dissertation, Mossop's revision principles are applied to the whole draft and, as a result, it can be said that the revised version was a little longer than the original translation given that in medical translation the most frequently used technique is paraphrasing. The majority of the errors encountered occurred in the matters of Language, thus of style and register, followed by Content, Transfer and Presentation. More specifically, changes most often lied in altering translation equivalents which led to a less literal rendition of the translation. To this end, the co-operation with a specialist doctor was indeed essential for the actual revision process as this figure helped the reviser understand some peculiar scientific issues that would have otherwise remained obscure. In addition, the expert's help focused on the changes related to Language as, differently to the translator/reviser, the specialist doctor was much more acquainted with a whole series of specific and collateral terms all peculiar to the medical register. These features contributed in the construction of a medical text which could be suitable even for publication. On this matter, it can be said that this example of medical revision shows how the switch from the draft to the TT has improved the latter text enormously. Whereas the "overt translation" of the draft did not match the same function of the ST, the function encompassed by the "covert translation" of the TT ultimately corresponds to that of the ST. Yet, this change was not actually required by the translation requester

as, in the end, the TT happens to over-suits the commissioners' needs and the use they will make of it. To conclude, it must be said that this Dissertation attempts to show how revision should be a part of every translator's work habits (especially when they work alone). After all, quality in translation is something both professional and amateur translators all long for, yet they should always bear in mind that revision is the most powerful tool to achieve quality because, in Bush's words, "quality is the journey, not the destination".

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Appendix A

The revision parameters by Brian Mossop (2001: 125)

Group A – Problems of meaning transfer (Transfer)

1. Does the translation reflect the message of the source text? (Accuracy)
2. Have any elements of the message been left out? (Completeness)

Group B – Problems of content (Content)

3. Does the sequence of ideas make sense? Is there any nonsense or contradiction? (Logic)
4. Are there any factual, conceptual or mathematical errors? (Facts)

Group C – Problems of language and style (Language)

5. Does the text flow? Are the connections between sentences clear? Are the relationships among the parts of speech of each sentence clear? Are there any awkward, hard-to-read sentences? (Smoothness)
6. Is the language suited to the users of the translation and the use they will make of it? (Tailoring)
7. Is the style suited to the genre? Has correct terminology been used? Does the phraseology match that used in the original target-language texts on the same subject? (Sub-language)
8. Are all the word combinations idiomatic? Does the translation observe the rhetorical preferences of the target language? (Idiom)
9. Have the rules of grammar, spelling, punctuation, house-style and correct usage been observed? (Mechanics)

Group D – Problems of physical presentation (Presentation)

10. Are there any problems in the way the text is arranged on the page: spacing, indentation, margins, etc.? (Layout)
11. Are there any problems of text formatting: bolding, underlining, font type, font size, etc.? (Typography)
12. Are there any problems in the way the document as a whole is organized: page numbering, headers, footnotes, table of contents, etc.? (Organization)

Appendix B Continuum of scientific and technical texts; based on chart from Göpferich (1995) and on Wright's (2005: 250) revision of it (in *italics*).

Sci/Tech text type/ Communicative function	***Legal texts & standards***	**Leading-edge knowledge (discovery)**		**Dictating-Instructive texts (Integration & Teaching)**			**Selection/Compression**	**Collective & combinatory knowledge resources**	
1^{st} **Order variants: Theory and practice**				Theorical knowledge (unidirectional)		Human-tech interaction (bidirectional, practice- oriented)			
2^{nd}**Order variants: information-presentation mode**		Content-oriented, simple presentation	High print quality presentation	*Pedagogical orientation*	Arouse interest			Encyclopedic	*Sub-sentence units*
Primary text variants classified by primary function	Standards guides specification patents, patent docs, governament *regulation*	Research & test reports, proceedings, journal articles, monographs, theses, memos, etc.	Journal articles, specialized *web resources* , etc.	Text- books, teaching materials	Popular science, popular technical articles & books, product info, etc.	Operating istructions, shop manuals, procedures, software manuals, *on-line & on screen GUI, help, machines displays & texted controls, etc.*		Encyclopedias, lexicons, *data resources*	Collected formulas, parts lists, catalogues, tables, *terminologies, glossaries, ontologies* , etc.
		Selection/Compression						**S/C**	
Secondary text variants (integrated or separate)	Scope, abstract, *commentaries definitions*	Abstracts, reviews	Abstracts, sidebars, review articles, review	Work-books, posters, etc.	Summaries, reviews blurbs, sidebars	Reference manuals, *reference cards & charts, short intros & tutorials, signage*		Reviews, *e-entries* etc.	Review, *e-entries, graphs* , etc.
Indicative translation	*Gisting, MT, summary translation*	*Gisting, MT, summary translation*	*Gisting, MT, summary translation*	-	-	*Controlled language source + higher quality MT*		-	-

Appendix C

All the tables below are taken from Marella Magris' work "*La traduzione del linguaggio medico*" (pp. 31-50) with the only difference that the column relative to German has been taken out and that 'meaning' is given in English rather than in Italian.

Derivation

Table 1: Prefixes

Italian	**English**	**Meaning**
a(n)- *aplasia, anemia*	a(n)- aplasia, anaemia	absence
ab- *abduzione*	ab- abduction	moving away
ana- *anabolismo* *anamnesis*	ana- anabolism anamnesis	 increase repetition
ante- anti- *antiversione*	ante- anteversion antemortem[1]	 in front of before
anti- *anticorpo*	anti- antibody	against
bi- *bicipite*	bi- bicipital	two, double
cata- *catabolismo*	cata- kata- katabolism	inferior
circum- circo- *circoncisione*	circum- circumcision	around
con- *conglutinazione*	con- conglutination	union
contr(o)- *controindicazione*	contra- contraindication	opposite
de- *demielinizzazione*	de- demyelination	subtraction
di- *diplegia*	di- diplegia	two, twice
dia- *dialisi*	dia- dialysis	through
dis- *dislocazione*	dis- dislocation	separation
dis- *distrofia*	dys- dystrophy	abnormality
ecto- *ectoderma*	ecto- ectoderm	outside

[1] In this acceptation, Italian uses the Latin preposition *ante* rather than the prefix (e.g. *ante mortem*, *ante partum*).

emi- *emiparesi*	hemi- hemiparesis	half
endo- *endometrio*	endo- endometrium	inside
ep(i)- *epidermide,* *ependima*	ep(i)- epidermis ependyma	above
eso- *esoforia*	eso-[2] esophoria	inside
eso- *esocrino*	exo- exocrine	outside
eu- *eugenetica*	eu- eugenics	good
extra- *extraepatico*	extra- extrahepatic	out of
in- *increzione* *insufficienza*	in- incretion insufficiency	inside without
infra-[3] *infraorbitario*	infra- infraorbital	under, below
inter- *intervertrebale*	inter- intervetebral	between, among
intra- intro-[4] *intracellulare* *introversione*	intra- intro- intracellular introversion	within, inside
iper- *ipertensione*	hyper-[5] hypertension	In excess
ipo- *ipospadia*	hypo- hypospadias	insufficiency
meta- *metacarpo* *metanefro* *metastasi*	meta- metacarpus metanephros metastasis	between, among after modification
par(a)- *paradidimo* *parastesia*	par(a)- paradidymis paraesthesia	nearby deviation from the norm
peri- *peritoneo*	peri- peritoneum	around
post- *postinfartuale* *postcentrale*	post- postinfarction postcentral	after behind
pre- *prediabete*	pre- prediabetes	before
pro-[6] *profilassi*	pro- prophylaxis	before

[2] A much more frequent prefix in English
[3] Often *sotto-* in Italian.
[4] Often *endo-* in Italian.
[5] In Eglish, often implied.
[6] In Italian, it is sometimes substitued with *pre-* (*preacrosomico*)

retro- *retroversione*	retro- retroversion	backward
semi- *semicircolare*	semi- semicircular	half, partly
sin- *sindattilia*	syn- syndactylia	together
sovra- supra *sovrapubico*	supra- suprapubic	above
sub-[7] *suboccipitale*	sub- suboccipital	under
super-[8] *superfecodazione* *supernatante*	super- superfecundation supernatant	 in excess above
tra(ns)- *transuretrale* *trapianto*	trans- transurethral transplantation	 across, through beyond
ultra- *ultrasuono*	ultra- ultrasound	beyond

Table 2: Suffixes

Italian	**English**	**Meaning**
-asi *transaminasi*	-ase transaminase	enzyme
-ene *azulene*	-ene azulene	unsaturated hydrocarbon with double bond
-ia *anemia*	-ia anaemia, anemia	pathology
-iasi *candidiasi*	-iasis candisiasis	pathological process
-(o)ide *carcinoide*	-(o)id carcinoid	similar to
-ile *metile*	-yl methyl	unsaturated hydrocarbon
-ilene *etilene*	-ylene ethylene	various: hormons, enzymes, etc
-ina *insulina* *pepsina* *emolisina* *nicotina*	-in(e) insulin pepsin hemolysin nicotine	condition, state
-ismo *albinismo*	-ism albinism	small structurs
-ite[9] *epatite*	-itis hepatitis	salt

[7] In Ita., it is often substitued with *sotto- (sottooccipitale*)
[8] In Ita., it is often substitued with *iper-*
[9] As Serianni (2005: 200-204) underlines, the most common suffix in medical Italian writing is –ite.

-ite *neurite* *dendrite*	-ite neurite dendrite	tumour
-ito *solfito*	-ite sulfite	phlogosis
-oma *linfoma*	-oma lymphoma	tumour
-osi *linfocitosi*	-osis lymphocytosis	degenerative process
-osio *saccarosio*	-ose saccharose	sugar
-uro *solfuro*	-ide sulfide	Binary compound of a non-metallic element

Composition:

Greek and Latin roots

aden(o)- *adenopatia*	aden(o)- adenopathy	gland
-algia *mialgia*	-algia myalgia	pain
all(o)- *alloplastica*	all(o) alloplasty	other, different
andr(o)- *androgina*	andr(o)- androgyny	man
angi(o)- *angioplastica*	angi(o)- angioplasty	vessel (esp. blood vessels)
artr(o)- *artrolisi*	arthr(o)- arthrolysis	articulation
auto- *autoimmunità*	auto- autoimmunity	by him/herself, on him/herself
balan(o)- *balanopostite*	balan(o)- balanoposthitis	glans
bio- *biopsia*	bio- biopsy	life
-blasto *megacarioblasto*	-blast, -plast megakaryoblast	undifferentiated cell
bleno- *blenorragia*	blenno- blennorrhagia	mucus
brachi- *brachicefalia*	brachy- brachycephalia	short, brief
brachi(o)- *brachialgia*	brachi(o)- brachialgia	arm
bradi- *bradicardia*	brady- bradycardia	slow
cardi(o)- *cardiomegalia*	cardi(o)- cardiomegaly	heart
cario- *cariogamia*	caryo- karyo- karyogamy	nucleus

-cele *spermatocele*	-c(o)ele spermatocele	hernia
-centesi *amniocentesi*	-centesis amniocentesis	injection
cervic(o)- *cervicobrachiale*	cervic(o)- cervicobrachial	neck
cian(o)- *cianopsia*	cyan(o)- cyanopsia	blue
cine- cinesi(o)- cinet(o)- *cineangiografia* *cinsesiterapia* *cinetoplasto*	kine- kinesi(o)- kinet(o)- kineangiography kinesitherapy kinetoplast	movement
cist(o)- *cistoscopia*	cyst(o)- cystoscopy	bladder
-cito –cita cito- *condrocita* *citopenia*	-cyte cito- chondrocyte cytopenia	cell
col(e)- *colemesi*	chol(e)- cholemesis	bile
colp(o)- *colpoplastica*	colp(o)- colpoplasty	vagina
condr(o)- *condrolisi*	chondr(o)- chondrolysis	cartilage
cript(o)- *criptorchidismo*	cript(o)- krypto- cryptorchidism	hidden
derm(ato)- *dermografismo*	derm(ato)- dermographism	skin
desm(o)- *desmocranio*	desm(o)- desmocranium	ligament
dolico- *dolicocefalia*	dolico- dolichocephaly	long
-ectomia *appendicetomia*	-ectomy appendictomy	surgical removal
em(o)- emat(o)- *emostatico* *amatomielia*	h(a)em(o)- h(a)emat(o)- hemostatic- hematomyelia	blood
-emia *glicemia*	-(a)emia glycemia	blood
epat(o) *epatoptosi*	hepat(o)- hepatoptosis	liver
encefal(o)- *encefalocele*	encephal(o)- encephalocele	brain
enter(o)- *enterotomia*	enter(o)- enterotomy	intestine
eritro- *eritrocito*	erythro- erytrocyte	red
-estesia *anestesia*	-aesthesia an(a)esthesia	sensitivity
etero- *eteromorfo*	hetero- heteromorphic	other, different

euri- *eurignatismo*	eury- eurygnathism	large
fag(o)- *fagocitosi*	phag(o)- phagocytosis	nutrition
fleb(o)- *flebotomo*	phleb(o)- phlebotome	vein
fren(o)- *frenospasmo* *frenologia*	phreno- phrenospasm phrenology	 diaphragm mind
-fugo *vermifugo*	-fuge vermifuge	keeping away
galatto- *galattorrea*	galact- galactorrhea	milk
gastr(o)- *gastroenterite*	gastr(o)- gastroenteritis	stomach
-gene –geno *antigene*	-gen antigen	determining agent
-genesi *oncogenesi*	-genesis oncogenesis	origin
gero(nto)- *gerontologia*	gero(nto)- gerontology	old age
gin- gine(co)- *ginecomastia*	gyn- gyn(a)e(co)- gynecomastia	woman
gloss(o)- *glossectomia*	gloss(o)- glossectomy	tongue
gon(o)- *gonocito* *gonorrea*	gon(o)- gonocyte gonorrhea	 reproductive sperm
-grafia *tomografia*	-graphy tomography	writing
iatro- *iatrogeno*	iatro- iatrogenic	doctor
idio- *idiopatico*	idio- idiopathic	 oneself, self-producing?
ist- ist(i)o- *istamina* *istiocitoma*	hist- hist(i)o- histamine histiocytoma	tissue
ister(o)- *isterotomia*	hystere(o)- hysterotomy	uterus
laparo- *laparoscopia*	laparo- laparoscopy	sides, abdomen
lepto- *leptocefalo*	lept(o) leptocephalus	thin, delicate
leuc(o)- *leucocito*	leuc(o)- leuk(o)- leukocyte	white
lip(o)- *lipocito*	lip(o)- lipocyte	fat
-lisi *emolisi*	-lysis hemolysis	melting

lit(o)- *litolisi*	lith(o)- lithoysis	stone, kidney stone
logo- *logorrea*	logo- logorrhea	word, language
mast(o)- *mastectomia*	mast(o)- mastoctemy	breast
-melia *micromelia*	-melia micromelia	limb
men(o)- *menorragia*	men(o)- menorrhagia	menstruation
mer(o)- *meroacrania*	mer(o)- meroacrania	partial
metr(o)- *metropatia*	metr(o)- metropathy	uterus
mic(o)- *micotossicosi*	myc(o)- mycotoxicosis	fungus
miel(o)- *mielomatosi*	myel(o)- myelomatosis	marrow
mi(o)- *miastenia*	my(o)- myasthenia	muscle
mix(o)- *mixadenoma*	myx(o)- myxoadenoma	mucus
morf(o)- *morfogenesi*	morph(o)- morphogenesis	shape
nefr(o)- *nefralgia*	nephr(o)- nephralgia	kidney
neur(o)- *neuroglia*	neur(o)- neuroglia	nerve
nict(o)- *nicturia*	nyct(o)- nycturia	night
odont(o)- *odontoblasto*	odont(o)- odontoblast	tooth
oftalm(o)- *oftalmoplegia*	ophtalm(o)- ophtalmoplegia	eye
om(e)o- *omeopatia*	hom(e)o- homeopathy	similar to
onco- *oncogeno*	onco- oncogenic	tumour
onfal(o)- *onfalotomia*	omphal(o)- omphalotomy	navel
oo- ovi- ovo- *oogenesi* *ovidotto* *ovocita*	oo- ovi- ovo- oogenesis oviduct ovocyte	egg
oofor(o)- *ooforectomia*	oophor(o)- oophorectomy	ovary
orchi(d)(o)- *orchiotomia* *orchidectomia*	orchi(d)(o)- orchiotomy orchidectomy	testicle

oro- *orofaringe*	oro- oropharunx	mouth
osteo- *osteodistrofia*	osteo- osteodystrophy	bone
ot(o)- *otoscopia*	ot(o)- otoscope	ear
pat(o)- *patologia*	path(o)- pathology	disease
-penia *leucocitopenia*	-penia leukocytopenia	deficiency
pielo- *pielografia*	pyelo- pyelography	renal pelvis
pio- *piosalpinge*	pyo- pyosalpinx	pus
-plegia *tetraplegia*	-plegia tetraplegia	paralysis
-plessia *apoplessia*	-plexy apoplexy	bout, access
-pnea *ortopnea*	-pnoea orthopnoea	respiration
pneum(at)(o)- *pneumatorace*	pneum(at)(o)- pneumathorax	air
pneu(o)- *pneumomicosi*	pneum(o)- pneumomycosis	lung
-poiesi *ematopoiesi*	-poiesis hematopoiesis	formation, production
procto- *proctopessi*	procto- proctopexy	rectum
prosop(o)- *prosopoagnosia*	prosop(o)- prosopoagnosia	face
pseudo- *pseudoartrosi*	pseudo- pseudoarthrosis	false
rin(o)- *rinoscopia*	rhin(o)- rhinoscopy	nose
rizo- *rizomelico*	rhizo- rhizomelic	root
-rragia *metrorragia*	-rrhage –rrhagia metrorrhagia	loss, abundant flow
sarc(o)- *sarcolemma*	sarc(o)- sarcolemma	meat
schiz(o)- *schizofrenia*	schiz(o)- schizophreny	separate
s(c)ialo- *sialolito*	sial(o)- sialolith	saliva
-scopia *broncoscopia*	-scopy bronchoscopy	inspection
sfigm(o)- *sfigmografia*	sphygm(o)- sphygmography	wrist
somat(o)- *somatotopico*	somat(o)- somatotopic	body

spir(o)- *spirometria*	spir(o) spirometry	respiration
splancn(o)- *splancnomegalia*	splanchn(o)- splanchnomegaly	innards, viscera
splen(o)- *splenopatico*	splen(o)- splenopathic	spleen
spondil(o)- *spondiloartrite*	spondyl(o)- spondylarthritis	vertebra, vertebral
spongi(o)- *spongioblastoma*	spongi(o)- spongioblastoma	sponge
steat(o)- stear(o)- *steatolisi*	steat(o)- stear(o)- steatolysis	fat
steno- *stenocardia*	steno- stenocardia	shrinkage
steto- *stetoscopio*	steth(o)- stethoscope	thorax
stomat(o)- *stomatomicosi*	stomat(o)- stomatomycosis	mouth
tachi- *tachicardia*	tachy- tachycardia	rapid, quick
tele- tel(e)o- *teleopsia* *telangectasia*	tele(o)- teleopsia telangiectasis	 distant extremity
terato- *teratospermia*	terato- teratospermia	malformation
-tomia *tracheotomia*	-tomy tracheotomy	surgical incision
top(o)- *topagnosia*	top(o)- topagnosia	place
tric(o)- *tricomicosi*	trich(o)- trichomycosis	hair
-trofia *miotrofia* *distrofia*	-trophy dyotrophy dystrophy	 nutrition growth
-tropismo *chemiotropismo*	-tropism chemotropism	affinity with
uran(o)- *uranoschisi*	uran(o)- uranoschisis	palate
xant(o)- *xantodermia*	xanth(o)- xanthoderma	yellow
xer(o)- *xeroftalmia*	xer(o)- xerophtalmia	dry

Appendix D

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Royal College of Obstetricians & Gynaecologists

Therapies Targeting the Nervous System for Chronic Pelvic Pain Relief

Scientific Impact Paper No. 46

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Therapies Targeting the Nervous System for Chronic Pelvic Pain Relief

1. Background

Chronic pelvic pain (CPP) is defined by the Royal College of Obstetricians and Gynaecologists as 'intermittent or constant pain in the lower abdomen or pelvis of a woman of at least 6 months in duration, not occurring exclusively with menstruation or intercourse and not associated with pregnancy'.[1] Women with CPP may experience constant or cyclical pain, which can be unprovoked or associated with specific activities including urination (dysuria), bowel opening (dyschezia) or sexual intercourse (dyspareunia). CPP is associated with a significant reduction in quality of life and psychological distress is frequently seen in these women. Over one million women in the UK suffer with CPP[2] yet it is a condition that is frequently difficult to treat, with many patients not achieving adequate analgesia even after many years.[3] While CPP is known to occur in association with a number of gynaecological pathologies, including endometriosis, adenomyosis, chronic pelvic inflammatory disease and pelvic organ prolapse, in many cases an underlying pathology cannot be identified (chronic pelvic pain syndrome [CPPS]).[4] Moreover, even where a cause is found, such as endometriosis, the painful symptoms experienced may be disproportionate to the extent of disease identified or persist after optimal treatment.[5]

The experience of pain necessitates the involvement of the central nervous system (CNS) and there is increasing evidence that pain, no matter where it is perceived to originate from, can be both generated and perpetuated by the CNS itself.[6] Furthermore, chronic pain is associated with long-lasting changes both to the structure and function of the CNS which are relatively similar no matter the underlying pain condition.[6] There is now good evidence that such alterations in the CNS occur in a wide variety of gynaecological conditions associated with CPP, including endometriosis, vulvodynia, interstitial cystitis/bladder pain syndrome (IC/BPS)* and dysmenorrhoea.[7] Moreover, CNS dysfunction can also be responsible for many of the symptoms associated with CPP, including altered regulation of organ function leading to urinary frequency/retention and diarrhoea/constipation, and endocrine dysfunction, particularly alterations in the activity of the hypothalamic–pituitary–adrenal axis, potentially resulting in increased rates of infections and autoimmune conditions.

Women with CPP frequently present to gynaecologists, of whom the majority will focus their assessment and treatments on the pelvis. This paper will therefore review the available treatments for CPP that target the nervous system rather than the pelvis. Although many of these treatments are already, or are becoming, commonplace in chronic pain clinics, they are unfamiliar to the majority of gynaecologists. It will not specifically consider the treatment of CPP associated with cancer or of isolated dysmenorrhoea or dyspareunia as they do not fall within the RCOG definition of CPP.[1] However, much of the discussion is still relevant to these conditions since other organisations, such as the International Association for the Study of Pain (IASP) and the European Association of Urology (EAU), do include the latter two within their definitions[4,8] and dysmenorrhoea, in particular, has been associated with significant central changes.[7]

While it would be appropriate for some of the therapeutic options described in this paper to be initiated by a gynaecologist, it should be remembered that once pain has become chronic it is likely to be multifactorial. In all but the most responsive of patients, the outcome is likely to be best if management is by a multidisciplinary team potentially including those with expertise in hormonal, medical, invasive/surgical and psychological therapeutic modalities. Although more invasive therapies should be reserved for patients who are refractory to standard treatment of any identified pathology or where no such

* The International Association for the Study of Pain (IASP) no longer recommends the use of the term interstitial cystitis (IC), having replaced it with the more correct bladder pain syndrome (BPS). However, as gynaecologists still use IC, we have used the two terms together (IC/BPS) throughout this document.

pathology can be identified, other options (e.g. antidepressants, anticonvulsants, local stimulation [transcutaneous electrical nerve stimulation, TENS]) can be commenced whenever a patient presents with CPP and continued while further investigation and/or treatment is carried out. Such a strategy, if successful in at least partly alleviating pain, would be expected to improve quality of life and may help to prevent the development of long-lasting central changes.

2. Medical treatments

2.1 Antidepressant and anticonvulsant medication

Antidepressant and anticonvulsant drugs have been a mainstay of the management of chronic pain, particularly neuropathic pain, for many years,[9–13] although the mechanisms of action are not completely understood. It appears that antidepressants act by altering activity within pain inhibitory systems via modulation of serotonin, noradrenaline, dopamine and acetylcholine and potentially by direct anti-inflammatory, opioidergic or *N*-methyl-D-aspartate (NMDA) antagonistic effects.[14] What is known is that their analgesic activity is independent of their antidepressant activity and often occurs at lower doses than would be required to produce an antidepressant effect. Anticonvulsant drugs also appear to act through a combination of mechanisms, including inhibition of voltage-gated sodium and calcium channels and interactions with the γ-aminobutyric acid (GABA) system.[14] Given that women with CPP frequently report feeling that their doctors thought their pain was psychological, these points can be useful in counselling women prior to commencing an antidepressant or anticonvulsant medication.

In general, both classes of drugs are well tolerated with relatively minor adverse effects (drowsiness and nausea most commonly), although specific adverse effects vary between drugs. The wide variety of drugs available means that head-to-head comparisons of efficacy and adverse effect profiles have frequently not been undertaken and it is therefore difficult to recommend any particular drug over another. The varying mechanisms of action mean that if one drug is not successful another may well be, as may combination therapy if only partial efficacy is achieved. Similarly, if the adverse effect profile of a specific drug is not acceptable, there is likely to be an alternative that may suit the patient better. It is worth remembering that a dose–response curve likely exists for both classes of drugs[14] and therefore doses should be gradually increased if no initial response is observed. However, if no response is seen with adequate doses or if adverse effects are not tolerated then the drug should be tapered and withdrawn.

While a number of papers report the use of these drugs in CPP, few good quality trials of these drugs for this indication have been undertaken.

2.1.1 Evidence for the use of antidepressants in CPP

A systematic review of the evidence available for the use of antidepressants in chronic urological pain was undertaken in 2009.[15] Although focusing on urological pain conditions in both male and female patients (interstitial cystitis, chronic prostatitis), this review also included studies where patients only had a diagnosis of CPP. Vulval pain syndromes, however, were not covered. They identified ten studies meeting the authors' criteria, assessing the effectiveness of amitriptyline, sertraline, nortriptyline, duloxetine and citalopram. While the main conclusion was that 'the use of antidepressants in the management of chronic urological pelvic pain is not supported by an adequate number of well designed randomized controlled trials', it was acknowledged that for amitriptyline and sertraline, at least, there was some evidence of benefit. Moreover, the drugs investigated were well tolerated and generally safe, including the more long-term use of amitriptyline.

2.1.2 Evidence for the use of anticonvulsants in CPP

Even less evidence is available to support the use of anticonvulsant medication in CPP. Sator-Katzenschlager and colleagues compared the effectiveness and tolerability of amitriptyline with gabapentin and the

two drugs combined.[16] This study had no placebo arm and was relatively small (n = 20 for each drug alone and n = 16 for the combination); however, it did conclude that the drugs were both well tolerated and that gabapentin alone or in combination appeared to be more effective than amitriptyline alone, particularly for long-lasting relief of pain. We are aware that a pilot randomised controlled trial of gabapentin versus placebo is currently underway.[17] A second study investigated the role of lamotrigine in CPP.[18] The interpretation of the results of this study is difficult due to the relatively small cohort of patients recruited into the three subcategories of CPP: diffuse abdominal (n = 7), neuropathic (n = 7) and vulvodynia (n = 17). Although there appeared to be some efficacy in all three groups of women, only those with vulvodynia had a significant reduction in their pain ratings after 8 weeks of treatment (although the neuropathic group approached significance and was a markedly smaller sample). A further study investigated gabapentin specifically in the treatment of vulvodynia.[19] In this study, 17 patients with vulvodynia were treated with gabapentin, with 14 (82%) reporting partial or complete relief of pain. While this study was not well controlled, it did include women who had failed treatment with other pharmacological options including amitriptyline.

2.2 Botulinum toxin

The use of botulinum toxin (onabotulinumtoxin A or Botox®, Allergan, Marlow, Bucks, UK) injections to relieve CPP is increasing although studies presenting the evidence of benefit are thus far poor. As well as affecting muscles directly, it is thought that botulinum toxin has effects on the central nervous system, which are important although not yet fully understood. Two small observational studies in a review appear to indicate some benefit from botulinum toxin injections to structures in the pelvic floor without significant adverse effects in vulvodynia, but these groups were uncontrolled and have selection bias.[20] The story is similar for the use of intravesical botulinum toxin injections for IC/BPS, except that because detrusor function is affected, significant numbers of patients in these small studies required intermittent self-catheterisation.[20,21]

There is a small single centre randomised controlled trial on the use of botulinum toxin in women who had greater than 2 years of pelvic pain and 'objective evidence of pelvic floor myalgia', as demonstrated by the presence of contracted pelvic muscles on palpation and elevated vaginal manometry pressures.[21] The treatment group (n = 30) had the puborectalis and pubococcygeus muscles injected with botulinum toxin while the control group (n = 30) had these muscles injected with saline. Pain scores were reduced in both groups but were not statistically significant. Compared to baseline, the women in the botulinum toxin arm had a significant reduction in dyspareunia and nonmenstrual pelvic pain and their pelvic floor pressures were reduced. Two patients who were treated with botulinum toxin into the puborectalis and pubococcygeus muscles had urinary stress incontinence and one of these was also incontinent of faeces intermittently for 4 months. Trials of botulinum toxin in women with overactive bladder suggest that it is a well-tolerated treatment with the potential to significantly improve quality of life in these women[20] and thus further investigation of the use of botulinum toxin in vulvodynia and CPP is justified. Furthermore, dry needling (the use of either acupuncture or hypodermic needles to disrupt trigger points/stimulate muscle without injection of either active or placebo [inactive] fluid)[22] also appears worthy of further research given the greater than expected effect seen in the control group after saline injection described above.[21]

2.3 Other

Three other pharmacological treatments targeting the nervous system have been investigated for the relief of CPP.

Of particular note, melatonin was found to significantly reduce daily pain, menstrual pain, dyschezia and dysuria in a cohort of 40 women with CPP and laparoscopically confirmed endometriosis.[23,24] However, this finding may not be generally applicable to women with CPP where no endometriosis is present.

Lofexidine hydrochloride, an α_2-adrenoceptor agonist that acts both via a direct antinociceptive action and to prevent vasospasm in the utero-ovarian bed, was investigated in a cohort of women with CPP and no obvious pathology on laparoscopy.[25] While this study did not find a significant difference compared to placebo, the numbers investigated were relatively small (19 lofexidine: 20 placebo) and it was only powered to detect a substantial effect.

Dexamfetamine sulfate, a sympathomimetic amine, has also been reported as a successful treatment for CPP, but only in association with coexisting idiopathic orthostatic oedema which is extremely rare.[26,27] Further randomised controlled trials are therefore required before this treatment can be recommended for CPP in general.

3. Non-invasive nonpharmacological treatments

External application of both electrical and magnetic stimulation can be used to alter neurophysiology locally (at the site of pain) or centrally (brain or spinal cord), potentially producing analgesia. Additionally, electrical stimulation can be performed directly on the peripheral nerves, spinal cord or brain and will be discussed in section 4.

3.1 Local stimulation

3.1.1 Electrical

Transcutaneous electrical nerve stimulation (TENS) is a familiar form of analgesia used during labour. The exact mechanism by which it exerts an analgesic effect is not known. It had long been assumed to work via the 'gate-control' theory, whereby activity in large diameter Aβ fibres inhibits activity in smaller fibres (Aδ and C: those transmitting pain) from the same segments. However, electrical stimulation of small fibres alone can also produce segmental and extrasegmental inhibition leading to analgesia.[14] Furthermore, the use of low-frequency electrical stimulation increases the release of endogenous opioids, thereby further reducing pain in both acute and chronic situations.[28] It has been shown to be effective in reducing pain in men with CPPS/prostatitis[29,30] but has not been evaluated in women with CPP specifically. In view of the location of pain in women with CPP, intravaginal electrical stimulation (IVES) has been proposed as an alternative strategy. Preliminary data suggested that IVES is associated with a significant reduction in pain and dyspareunia, with the reduction in pain being maintained at 7 months' follow-up.[31] More recently, IVES for CPP was assessed in a placebo- (sham stimulation) controlled randomised trial.[32] This confirmed that active stimulation was superior to sham, with a significant reduction in pain intensity at the end of the 5-week course of treatment. However, there was no long-term follow-up in this study.

3.1.2 Magnetic

A number of mechanisms have been proposed by which magnetism may influence pain, including: i) selective attenuation of neuronal depolarisation by altering membrane resting potential; ii) increasing blood flow (potentially accelerating tissue healing and removing noxious mediators); iii) altering ion binding kinetics and therefore modulating release of cytokines and other inflammatory mediators.[33] While there is some evidence of benefit in osteoarthritis sufferers (although potentially related to accelerated tissue healing rather than a direct analgesic effect),[34] only three small studies have been undertaken in women with CPP. The first of these used pulsed electromagnetic fields at the area of the pain in 20 women with acute or chronic pelvic pain.[35] All nine women with CPP showed a good improvement in pain intensity after treatment, although it should be noted that four of these women were being treated for an acute event on the background of CPP (ovarian cyst rupture or urinary tract infection). The second study attempted to use placebo magnets in a randomised double-blind study of static magnetic field therapy;[33] however, by the end of the study all of those wearing active magnets were aware which treatment group they were in. At the end of the 4-week treatment period, although there

was not a significantly greater decrease in pain scores in the treatment group, these women did report significantly less pain disability than those in the placebo group (measured with the pain disability index, a self-report measure that assesses pain-related disability in seven domains including home, work, social and sexual activities). The final study reported stimulating both the site of pain and the sacral spinal cord with repetitive magnetic stimulation (rMS) in 48 patients with CPPS.[36] Pain remission was reported in 67% of patients and a placebo-controlled trial is currently being undertaken.

3.2 Transcranial stimulation

Non-invasive methods of brain stimulation can be electrical (transcranial direct current stimulation [tDCS] and cranial electrotherapy stimulation [CES]) or magnetic (repetitive transcranial magnetic stimulation [rTMS]). They aim to modulate pain by a direct effect on brain activity. There are good experimental data suggesting that these techniques can both produce an immediate alteration in neurotransmitter concentrations, including the major inhibitory neurotransmitter GABA, and induce long-term synaptic changes. In the context of chronic pain, it is thought that analgesia is produced secondary to a reduction of activity in brain networks involved in the processing of pain and the facilitation of descending pain inhibitory mechanisms.[37] Although clinical studies undertaken across chronic pain conditions do in general support an analgesic effect of rTMS and tDCS, the pain relief obtained is not sufficient to be considered clinically meaningful.[37] Only one study has specifically addressed the effectiveness of such techniques in CPP.[38] Fenton and colleagues compared tDCS to sham tDCS in seven women with CPP refractory to treatment. They did identify a modest reduction in pain after active treatment, but the sample size was too small to draw any meaningful conclusions without further studies.

4. Surgical/invasive treatments

4.1 Nerve blocks

Only two small case series have looked at the benefit of hypogastric blocks and found limited benefit. Other papers discuss injection techniques and practical management without evidence[39,40] or describe multimodal treatments at one centre that included various nerve blocks.[41]

4.2 Neurectomy/nerve ablation

Interruption of the Lee–Frankenhauser sensory nerve plexuses by laparoscopic uterosacral nerve ablation (LUNA) was widely practised to alleviate pelvic pain until the publication of the largest trial of LUNA and a meta-analysis of all LUNA trials in 2009 and 2010 respectively.[42,43] The meta-analysis[43] reinforced the conclusions drawn from the trial[42] that the LUNA procedure is not effective in alleviating pain. Indeed, there is some evidence that women who have the LUNA procedure may suffer from more pain in the short term than those who do not.

Presacral neurectomy (PSN) involves the total transection of the presacral nerves lying within the boundaries of the interiliac triangle (a procedure that can be performed laparoscopically). Data on the efficacy of the procedure in the alleviation of pelvic pain are limited and conflicting.[44–48] However, the largest and most recent randomised controlled trial suggests that PSN may be effective for the treatment of severe dysmenorrhoea caused by endometriosis.[47] Laparoscopic PSN demands very significant surgical skills and expertise from the surgeon and is open to vascular and lymphatic complications because of the vicinity of the great vessels and lymphatic channels. An alternative is laparoscopic presacral neurolysis that involves the injection of a neurolytic solution (e.g. phenol) to chemically destroy the microscopic neural architecture of the presacral nerves. There is evidence from one study[49] to suggest that this technique can be considered in the treatment of pelvic pain, either as a single treatment or as an adjunctive procedure. However, without more data supporting a favourable balance of both efficacy and safety, neither presacral neurectomy nor neurolysis can be recommended.

4.3 Neuromodulation

The role of neuromodulation in the management of chronic pelvic pain syndromes is yet to be fully determined. Its role in overactive bladder and faecal incontinence, however, is much better established. While there is growing evidence of efficacy in pelvic pain from small case series or pilot studies, more properly controlled research is required. At present, it is generally agreed that neuromodulation should only be considered by specialists in pelvic pain management within the context of a broader pain management plan. Techniques available include peripheral nerve stimulation (e.g. posterior tibial nerve stimulation, sacral nerve/root stimulation and pudendal nerve stimulation) and spinal cord stimulation.

Intermittent percutaneous tibial nerve stimulation (PTNS) is a minimally invasive treatment option which has been shown to significantly decrease accompanying pain complaints in patients with lower urinary tract dysfunction, such as urge incontinence or urgency and/or frequency. In a study by van Balken et al.,[50] 33 patients with CPP were assessed after PTNS therapy. The visual analogue scale (VAS) score was seen to subjectively improve in 42% of all patients, with seven patients (21%) reporting a mean VAS score of less than 3 after 12 weeks of treatment. In all patients, both quality of life and total pain intensity score were significantly improved. The results of this study are mirrored by those carried out by Kim et al.,[51] Aggamy et al.[52] and Gokyildiz et al.[53] Thus PTNS may have a place in the treatment of patients with CPP who have already tried many other therapies and are left with no further options. However, all authors make the point that long-term follow-up studies are required.

Sacral neuromodulation (SNM) or sacral neurostimulation (SNS) was first introduced as a possible therapy in CPPS in 1999 by Feler and co-workers, but there still remains a paucity of literature. The difference between the two terminologies lies in the fact that SNS focuses on the stimulation of the nerve being the main driver of the positive response, whereas several authors believe that neurostimulation may be the start of the response but the maintenance of the long-term effect is due to the modulatory impact on the neural system. Essentially, both the sacral nerve and sacral root are stimulated initially, and modulated eventually, as the placement of the electrode lead often covers both sites. Thus, for the purposes of this document, sacral neuromodulation will be considered to be the therapeutic entity and it is assumed both components of the sacral neural system are being modulated.

Case studies, as reported by Lavano and co-workers in 2006,[54] showed that in five out of seven patients SNM reduced pain scores significantly. Similar reports are found throughout the literature but the data sets remain small. One of the largest groups studied included 78 patients treated from 1994 to 2008. Permanent SNM implantation was performed in patients who showed at least 50% improvement in their symptoms with a temporary peripheral nerve evaluation test. Median follow-up was 61.5 (SD ± 27.7) months and good long-term success was seen in 72% of the patients. Implants had to be removed in 28%, with the most frequent reason for device removal being poor outcome (54% of the failed patients). The revision rate in this study was 50%,[55] which is much higher than that seen in the general SNM literature for bladder and bowel dysfunction. In another observational, retrospective, case–controlled review, 34 female patients underwent permanent device implants. The mean pre-/postoperative VAS pain scores were 6.5 ± 2.9/2.4 ± 1.1 ($P < 0.01$). These positive results were sustained over a mean follow-up period of 86 ± 9.8 months. The reoperation rate was 25%.[56] Thus, SNM has a role but it is not without a significant complication rate.

Pudendal neurostimulation (PNS) in refractory CPPS is thought to have a better outcome in patients in whom other therapeutic options have failed.[57] In a prospective, single-blind, cross-over trial of PNS and SNM for patients with BPS (n = 22), PNS gave an overall 59% improvement in symptoms, whereas SNM gave an overall 44% improvement ($P = 0.05$). Most patients who tested both a sacral and pudendal electrode chose PNS as the better site for their pain relief. It would appear that neuromodulation options are well tolerated and over 90% of patients treated with neuromodulation stated that they would undergo implantation again.[58] PNS may also have a role in pudendal neuralgia, which is really a peripheral nerve

injury and as such should respond to neuromodulation by implanted pulse generators. However, it is important that the stimulation is perceived in the same site as the perceived pain.

Spinal cord stimulation (SCS) is considered an important treatment option for certain forms of chronic neuropathic pain that are otherwise resistant to treatment.[14] Its role in CPPS remains uncertain. SCS may be effective for thoracolumbar afferents. However, it is difficult to obtain appropriate stimulation from SCS for the sacral nerves, including pudendal, thus limiting the use of this therapy in chronic pelvic pain management. Nevertheless, where a specific visceral cause has been determined, such as in endometriosis, there is a possibility that it does have some impact. In a small (n = 6) study by Kapural et al.,[59] SCS was used to treat visceral pelvic pain after a successful test period with hypogastric blocks or neurolytic hypogastric blocks. Over an average follow-up period of 30.6 months, the mean pain VAS score decreased from 8 to 3, with a concomitant reduction in opiate use from 22.5 mg to 6.6 mg of morphine sulfate. The pain disability index also improved, thus suggesting that SCS may have a role in visceral pain management, which deserves further investigation.

Quite clearly neuromodulatory therapies are complex and patient selection is therefore key to their success. These patients are vulnerable, have often failed to respond to other treatment modalities and are psychologically frail. Thus, if neuromodulation is being considered then it should only be undertaken in specialised centres and in centres that can provide multidisciplinary care.

4.4 Deep brain stimulation

For chronic pain refractory to all other treatment options, deep brain stimulation (DBS) can be undertaken by a neurosurgeon. As with the non-invasive methods of brain stimulation, the aim is to enhance activity in pain inhibitory systems and stimulation is usually performed on one or more of the thalamus, periventricular grey and periaqueductal grey. More superficially, the motor cortex can also be stimulated (MCS).[60] Meta-analyses (albeit of mainly case series) suggest that DBS has a long-term success rate of 46%,[61,62] while MCS success rates vary, dependent on the indication, between 40% and 75%.[60] Surprisingly, both procedures have a relatively low complication rate with infection being the biggest risk. DBS is associated with a risk of intracranial haemorrhage (up to 4%); a complication that does not occur with MCS, however.[60] No studies have specifically assessed the efficacy of MCS or DBS in CPP in women.

5. Opinion

When assessing and planning treatment for women with CPP, it is important to consider the key role that the CNS plays in the experience of pain. Treatments targeting the CNS can be initiated alone while a patient is under investigation, or prescribed alone or combined with hormonal therapies and/or surgery if pelvic pathology is suspected or identified.

While there are few data supporting the efficacy of these treatments in CPP specifically, there is good evidence to suggest that the underlying pain mechanisms and central changes associated with chronic pain are similar no matter where the pain is perceived to originate from and it is therefore reasonable to consider these treatment options for all women with CPP.

Medical options such as antidepressant and anticonvulsant drugs are well tolerated and could therefore be started by a gynaecologist or primary care physician. Other more novel or invasive therapies are likely to require referral to a pain management team. However, it is important that gynaecologists are aware that such options exist so that referral can be considered for patients who are refractory to standard treatments prior to performing radical or fertility-removing surgery.

While little is known about the extent to which central changes can be reversed, prompt treatment of pain symptoms may prevent or at least minimise the development of long-term changes associated with chronic pain.

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SINTESI

Questa tesi magistrale tratta l'argomento della revisione, e dell'auto-revisione, in ambito della traduzione medico-scientifica e mostra come i traduttori non debbano mai sottovalutare questo processo insito in qualsiasi lavoro di traduzione. La tesi si divide in due parti, quella teorica parla sia del processo di revisione che della lingua speciale dei testi medici mentre quella pratica offre un esempio di auto-revisione di una traduzione (eseguita da me) dell'articolo medico *Therapies Targeting the Nervous System for Chronic Pelvic Pain Relief* preso dal *Scientific Impact Paper No. 46* del *Royal College of Obstetricians & Gynaecologists*.

La prima parte della sezione teorica si focalizza su tre argomenti relativi al processo della revisione: definisce la revisione in genere e la figura del revisore in particolare, tenta di approdare al concetto di qualità in traduzione e descrive nel dettaglio il processo della revisione. In primo luogo si è ritenuto necessario disambiguare i termini relativi ai concetti inerenti a tale processo col fine di fornire una definizione esaustiva di revisione. Dato che sono ancora molti coloro che usano termini come *revision*, *proof-reading*, *post- e pre-editing* ed *edting* in maniera erronea, le definizioni fornite da Mossop sono servite a chiarire le differenze tra tali termini. Secondo lo studioso, infatti, la revisione è un aspetto della professione del traduttore che è, implicitamente o esplicitamente, sempre obbligato a rileggere (auto-revisione) o far rileggere a qualcun altro (inter-revisione) la versione iniziale al fine di correggerla e migliorarla secondo alcuni parametri prestabiliti e quindi di produrre una traduzione di qualità o, quantomeno, adeguata allo scopo. Il *proofreading*, invece, può essere applicato sia a traduzioni che a testi semplici e consiste nel correggere errori di ortografia, grammatica, o di presentazione del testo. *Pre-* e *post-editing* sono altri termini spesso confusi con revisione anche se in realtà indicano la preparazione precedente o la correzione a posteriori di un testo tradotto automaticamente. Infine, *translation criticism* si riferisce allo studio dei meta-testi che sono stati prodotti in una data lingua, e dunque, in una cultura d'arrivo al fine di riscontrare delle costanti per contribuire alla formazione di un atteggiamento generale da assumere per tradurre quei tipi di testo. A fronte di tali considerazioni si è giunti alla conclusione che, nello specifico, il lavoro di revisione viene affidato ad un traduttore esperto che compara il testo d'origine con la brutta copia della traduzione al fine di produrre un testo d'arrivo migliore dal punto vista dell'accuratezza semantica e stilistica (in americano tale pratica viene chiamata anche *editing*). In tale contesto, Mossop, uno dei più recenti studiosi della revisione, fa un'interessante distinzione fra testi propriamente detti e quelli che lui chiama "effimeri": a suo dire, non bisognerebbe mai perdere tempo prezioso cercando la parola giusta da inserire in quei testi considerati di breve durata, ovvero che non aspirano ad essere

pubblicati; al contrario, come dimostrato nella sezione pratica, io concordo col pensiero di Chakhachiro per cui tutti i testi, specialmente se il traduttore/revisore non è vessato da tempi di consegna molto stretti o da particolari stati psicologici, meritano di essere trattati in maniera appropriata usando sempre la terminologia corretta e conferendo loro le dovute sfumature linguistiche. Secondo Horguelin che, insieme ad Hosington e Brunette, ha scritto la prime monografie su questo tema, la revisione può essere catalogata in tre diverse maniere: rispetto allo status del testo da revisionare, in base alla funzione della revisione o in relazione al numero di persone implicate. La prima può essere di due tipi: *unilingual reading* consiste nel revisionare la brutta copia da sola mentre *comparative reading* nel compararla col testo d'origine. Per quel che concerne la funzione, invece, la revisione può essere pragmatica, nel caso un testo venga migliorato secondo dei criteri prestabiliti, o didattica, che, oltre a migliorare la traduzione, serve ad insegnare il mestiere a revisori inesperti e, pertanto, avviene maggiormente in ambito accademico. Infine, in base al numero di traduttori che svolgono il lavoro, la revisione può essere condotta dalla stessa persona che ha eseguito la traduzione (auto-revisione), da un revisore esterno (inter-revisione) o da un gruppo di revisori (revisione collettiva). In particolare, l'auto-revisione è considerata un processo fondamentale che dovrebbe accompagnare qualsiasi lavoro di traduzione ma, allo stesso tempo, anche la più complessa poiché in tale processo interferiscono quelli che sono stati definiti *familiarity* e *expectancy effects* che, aumentando il senso di proprietà nei confronti del lavoro di traduzione, limitano l'oggettività durante l'individuazione degli errori. Nel caso dell'inter-revisione, poi, la collaborazione di più revisori può essere molto proficua ma, allo stesso tempo, complicata dato che ogni revisore ha la sua visione di buona traduzione e quindi i vari punti di vista potrebbero contrastare tra loro. In sintesi, il revisore occupa una posizione molto prestigiosa anche se non interamente riconosciuta, e deve possedere una serie di qualità, abilità e conoscenze che caratterizzino il proprio *individual pattern* affinché possa essere identificato attraverso i propri prodotti e quindi essere maggiormente richiesto. La figura del revisore rimane piuttosto labile in quanto esso può essere sia monolingue che bilingue sia inesperto che esperto, anche se i primi non possono assicurare la stessa qualità dei secondi. In ogni caso, dato che la revisione è un processo insito nella traduzione i revisori che si preferiscono sono anche traduttori. Come i traduttori, infatti, anche i revisori possono essere impiegati in un'azienda a tempo indeterminato, a contratto o essere dei *freelancer*. In generale, i revisori devono possedere le stesse competenze dei traduttori, ovvero devono essere in grado di identificare un errore e di usare delle strategie appropriate al fine di correggerlo. In fin dei conti, un revisore è sempre una persona e in quanto tale è fallace soprattutto in momenti di stress e se lavora con tempi stretti, tuttavia, la regola generale rimane sempre quella di rispettare le traduzioni altrui e di correggere solo ed esclusivamente quegli errori che necessitano di essere corretti senza sprecare tempo e denaro in correzioni inutili.

Tutti gli esperti concordano che la revisione è uno strumento per assicurare la qualità di una traduzione ma la definizione di qualità, soprattutto in traduzione, diventa un concetto astratto e molto soggettivo dato che la scrittura in genere è sempre un atto individuale. Un veloce *excursus* mostra come da un approccio totalmente soggettivo di equivalenza formale tra testo di partenza e quello d'arrivo si è passati alla visione di Nida e Taber secondo i quali la qualità di una traduzione dipende dall'equivalenza dinamica tra i due testi che, in ultima analisi, devono essere recepiti dal lettore nella stessa maniera. Si passa poi alla visione di Reiss e Vermeer che distinguono tra equivalenza, a livello di funzione comunicativa, ed adeguatezza, a livello di *skopos*; tuttavia anche questo modello viene scartato dato che gli autori danno eccessiva importanza al testo d'origine rispetto a quello d'arrivo. Si arriva, dunque, al modello pragmatico-funzionale di House (utilizzato nella sezione pratica della tesi) secondo cui una traduzione non deve corrispondere al testo d'origine solo a livello della funzione ma si deve basare su delle dimensioni situazionali equivalenti sia a livello del fruitore della lingua (*language user*) che dell'uso che se ne fa di quest'ultima (*language use*). Secondo House, al primo livello appartengono l'origine geografica, la classe sociale e il tempo, mentre al secondo il mezzo, la partecipazione, la relazione tra ruoli sociali, il comportamento sociale e ciò che lei definisce *province*. Attraverso quest'analisi si ottiene un profilo testuale del testo d'origine e il grado di corrispondenza tra la funzione del testo d'origine e quello del testo d'arrivo determina l'adeguatezza di quest'ultimo in termini di qualità. Da qui, House individua ciò che lei chiama *covertly erraneous mismatches*, ovvero quegli errori pragmatici che avvengono a livello delle dimensioni situazionali, che contraddistingue dagli *overtly erraneous mismatches*, cioè quegli errori denotativi non dimensionali che dipendono dalla non corrispondenza con la lingua d'arrivo su vari livelli come, ad esempio, quello culturale. Dopo aver stilato una lista di tali errori, si ottiene o una *covert* o una *overt translation*: nel primo caso la traduzione è *covert* perché il testo d'arrivo riesce a rivolgersi in egual maniera tanto alla cultura di partenza che a quella d'arrivo anche grazie all'utilizzo di filtri culturali (questa, ovviamente, è l'unica traduzione in cui si verifica l'equivalenza funzionale); al contrario, il secondo tipo di traduzione non può essere considerata un 'secondo originale', e pertanto si definisce *overt*, poiché ancora strettamente legata al testo, e alla cultura, d'origine. Dopo essere stata ampiamente criticata, House ripensa al suo schema inserendo nel suo modello la categoria 'genere' che viene inteso come collegamento tra 'registro' (ciò che realizza il 'genere'), attuata attraverso il modello tripartitico di Halliday *mode*, *field* e *tenor*, e 'funzione individuale del testo' (ciò che esemplifica il 'genere'). In tal modo, House offre uno schema che si sviluppa su quattro livelli e mette in discussione il precedente inserendo tali categorie in modo da dare più rilievo al fatto che nel processo di traduzione interferiscono troppi fattori – sociali, politici, ideologici ma anche linguistici – che non sono controllabili dal traduttore stesso. Tuttavia, anche la revisione del modello di House risulta

troppo complessa da mettere in atto e, dato che la corrispondenza finale tra testo d'origine e d'arrivo non può essere comprovata empiricamente, anche inefficace. Tutto ciò, porta ad una visione moderna di qualità concepita da Mossop il quale sostiene che questa è sempre relativa al bisogno e che, di conseguenza, non esiste una definizione di qualità assoluta. In questa visione, Brunette offre cinque metodi che devono essere usati per determinare la qualità di una traduzione: la traduzione didattica o formativa, la valutazione della qualità della traduzione, il controllo della qualità, la revisione pragmatica e infine quello che chiama *fresh look*, ovvero la lettura unilingue del testo di arrivo che deve conformarsi alle aspettative linguistiche e culturali del lettore. Mossop spiega la differenza tra controllo e valutazione della qualità associando il primo al testo in sé e la seconda all'attività commerciale; di fatti, a differenza del controllo che deve assicurare il raggiungimento degli obiettivi prestabiliti, la valutazione può essere condotta dopo la consegna della traduzione e viene applicata solo a delle porzioni di testo per assicurare l'adesione della stessa agli standard professionali. In questa visione moderna, la pratica ha maggiore importanza della teoria e la qualità viene stabilità in base al livello di soddisfazione/numero di reclami dei clienti e ad appositi questionari; ma, anche in questo caso, al soggettività gioca un ruolo fondamentale. L'ultima parte della prima sezione teorica tratta, infine, della revisione intesa come processo metacognitivo che include ogni segno grafico, ogni ricorso a dizionari/internet/letteratura precedente e, soprattutto, ogni decisione concernente la risoluzione dei problemi riscontrati. Esistono moltissimi modelli riguardo al processo di traduzione e tutti indicano la revisione quale ultimo momento della traduzione che consta di tre fasi principale da svolgersi in ordine cronologico: l'individuazione del problema, la proposta di una soluzione e la valutazione della soluzione. Molte sono le strategie usate durante il processo di revisione, fra le più importanti ricordiamo: far passare un lasso di tempo minimo tra traduzione e revisione, chiedere a qualcun altro di rileggere il testo d'arrivo, e iniziare con la lettura unilingue per poi proseguire con quella comparativa in caso di dubbio. Qualsiasi testo deve essere sempre controllato in base a dei parametri prestabiliti e, per dare una visione d'insieme, la tesi offre un confronto diacronico tra i modelli offerti da Horguelin e Hosington, Mossop e Gouadec. In tutti gli autori i parametri vengono suddivisi su quattro livelli principali diversamente distribuiti tra loro. A mio avviso, i più importanti riguardano: l'accuratezza semantica, la logicità del contenuto, le caratteristiche del linguaggio e, il più recente di tutti, la presentazione del testo. Tali parametri vengono definiti al fine di poter individuare gli errori, catalogati nelle maniere più disparate dai vari autori, in base solo ad alcuni di questi o nella loro totalità e quindi poter correggere gli errori per mezzo di una scelta metacognitiva individuale. Il capitolo si conclude con i princìpi che Mossop indica per svolgere una buona revisione, il più importante di tutti è certamente quello di correggere un'unità di testo solo ed esclusivamente se strettamente necessario, e quindi se tali errori inducono ad incomprensione o ambiguità.

La seconda parte teorica prende in considerazione la lingua speciale dei testi medico-scientifici e dà qualche consiglio utile sulla traduzione di tali testi dall'inglese all'italiano. Secondo la definizione di Cortelazzo, una lingua speciale è una varietà funzionale di una lingua naturale che appartiene ad un settore specialistico e che utilizza una determinata terminologia e delle specifiche forme morfo-sintattiche attingendo così a quelli che Serianni chiama termini "specifici" e "collaterali". I testi medici rappresentano solo una branca dei testi scientifici, genere che di per sé deve essere considerato un *continuum* in grado di sfociare nell'intertestualità anche con testi legali o letterari. La funzione di tali testi scientifici, e per inclusione di quelli medici, è prevalentemente quella informativa, anche se in alcuni casi tali testi potrebbero avere funzione espressiva, appellativa o fatica. Anche in questo contesto, il registro ha una funzione fondamentale poiché oltre a determinare la funzione dei testi, può individuarne anche la struttura. In particolare, i testi medici sono cambiati moltissimo negli ultimi anni in relazioni ai diversi lettori: di fatto, il cambio di registro definisce le caratteristiche dei testi specialistici rivolti ad un pubblico esperto che sono diverse da quelle dei testi rivolti ad un pubblico non esperto che, a loro volta, cambiano nei testi non specialistici rivolti ad un pubblico non esperto. Il ruolo del registro diviene di particolare importanza anche a livello lessicale poiché, contrariamente da ciò che pensano alcuni studiosi secondo i quali nella terminologia specifica può esistere solo una corrispondenza univoca tra significato e significante di un dato termine, questa corrispondenza è solo ideale in quanto i vari sinonimi 'pancia, stomaco, addome, ventre, intestino' o, addirittura, 'pancino' possono tutti apparire in diversi testi medici in base ai differenti contesti situazionali. Come si evince, il lessico ricopre un'importanza fondamentale nei testi medici scientifici e la formazione di tali termini avviene, secondo Cortelazzo, attraverso quattro processi principali: il riutilizzo di una parola, o di un termine, pre-esistente, le neo-formazioni per mezzo della derivazione (con affissi greci e latini) e della composizione (con radici greche e latine), gli eponimi e i più recenti acronimi. Un'altra peculiarità del linguaggio medico italiano è la stretta dipendenza col mondo anglofono, infatti, a parte gli anglicismi largamente in uso nel mondo medico italiano, l'inglese ha avuto influenze anche sulle strutture morfo-sintattiche della nostra lingua. Dal punto di vista grammaticale, poi, il linguaggio medico si distingue per: la preferenza verso i verbi indicativi attivi usati per indicare una verità scientifica, per introdurre delle definizioni e per indicare la ripetizione di un'azione; l'altissima frequenza della nominalizzazione spesso accompagnata dalla presenza di copule semanticamente neutrali; e quella che Serianni chiama la depersonalizzazione dei testi medici attuata attraverso la cancellazione dei pronomi personali riferiti tanto ai dottori quanto ai pazienti. Questa prima parte, infine, si concentra sui metodi necessari per rendere un testo medico coeso ed, in particolare, studia come a differenza dell'italiano che preferisce la referenza anaforica o cataforica, l'inglese fa largo uso della ripetizione. La seconda parte, poi, si interessa della traduzione medica che si affida

principalmente alla tecnica della parafrasi. Il principale compito del traduttore medico è quello di rispettare l'accuratezza semantica del testo di partenza, anche perché commettere un errore a livello semantico potrebbe avere delle conseguenze fatali! Dopo aver sfatato alcuni miti relativi alla traduzione medica come, ad esempio, quello che tali traduzioni sono molto semplici dal punto di vista morfo-sintattico e che, a livello lessicale, richiedono solo la consultazione di un buon dizionario medico o che i medici sono in grado di capire qualsiasi strafalcione solo unendo tra loro i vari pezzi di una traduzione, la tesi propone alcuni suggerimenti che, in un suo articolo, Newmark applica alla traduzione medica. Secondo lo studioso, non bisogna mai accettare le definizioni offerte dai dizionari ma piuttosto consultare la letteratura disponibile; si deve sempre fare attenzione ai 'falsi amici' e alle collocazioni; e non bisogna inventare mai parole nuove, specialmente in caso di farmaci. Newmark, inoltre, suggerisce di tradurre titolo e *abstract* alla fine e di fare tesoro delle foto e dei grafici che costituiscono i testi medici. Per concludere, questa seconda parte della sezione teorica fa riferimento alla traduzione medica come attività commerciale e spiega cosa avviene a livello professionale in ambito di tale traduzione. In breve, la traduzione viene commissionata ad un traduttore e, nella migliore delle ipotesi, il *project manager* e il *translation service provider* contattano l'autore del testo di partenza per evidenziare eventuali problemi. Tuttavia, gli autori non sono quasi mai a conoscenza del fatto che il loro testo venga tradotto e, anche in caso contrario, non essendo dei traduttori, non sono in grado di far luce sulle eventuali problematiche. A questo punto, colui che ha commissionato la traduzione dovrebbe fornire tutti i dettagli necessari (*brief*) affinché la traduzione sia adatta alla lingua, e cultura, d'arrivo ma ciò spesso non avviene dato che il richiedente non ha quasi mai tali conoscenze specifiche e, di conseguenza, il traduttore spesso si trova a lavorare senza avere ricevuto le indicazioni necessarie.

Nella parte pratica viene presentato un esempio di auto-revisione di un testo medico scritto da degli specialisti per degli specialisti che studia il ruolo del sistema nervoso centrale nel trattamento del dolore pelvico cronico. Il modello di House è stato utilizzato per definire il profilo testuale del testo di partenza e quindi determinare l'eventuale equivalenza funzionale con quello d'arrivo. Per quel che riguarda il *translation brief*, la traduzione mi era stata commissionata da una parente stretta che doveva usare le informazioni sul caso per la compilazione di una tesi di dottorato sulla terapia del dolore, pertanto tale testo si può considerare "effimero". Al contrario di ciò che era stato discusso nella parte teorica in cui si diceva che nell'auto-revisione *familiarity* e *expectancy effects* riducono la possibilità di individuare gli errori, in questo esempio mi son sentita libera di apportare tutte le correzioni che a mio avviso erano necessarie per rendere il testo d'arrivo migliore, effettuando un totale di 621 cambi (inclusi, ovviamente, molti casi di errori ripetuti). A seguito del lavoro di revisione avvenuto seguendo tutti e quattro i parametri di Mossop (TCLP) applicati all'intera brutta copia, le

statistiche dimostrano che la percentuale maggiore di errori si è riscontrata nell'ambito di *Language* e, in particolare, nelle scelte terminologiche (tanto a livello dei termini specifici quanto di quelli collaterali) e nella preferenza, quando possibile, per la nominalizzazione. A seguire, incontriamo errori relativi al contenuto, all'accuratezza semantica e, infine, alla presentazione del testo. Fortunatamente gli errori semantici sono relativamente pochi e ciò va a favore della traduzione inziale poiché, data l'effimerità del testo, l'accuratezza semantica è molto più importante di quella lessicale. In generale, gli errori relativi a *Transfer* mettono in luce l'importanza della tecnica della parafrasi in traduzione medica. Un errore esemplificativo tanto a livello di *Language* che di *Transfer* è la traduzione dell'eponimo contenuto nel testo di partenza *the interruption of the Lee-Frankenhauser sensory plexus* che è stato erroneamente tradotto nella brutta copia con "l'interruzione del sensore Lee Frank del plesso nervoso": mentre l'evidente errore semantico sta nella traduzione dell'aggettivo *sensory* col sostantivo "sensore" quello relativo a *Language* consiste nel non avere trovato l'esatto corrispondente italiano di tale eponimo (oltre ad aver abbreviato il nome dello scienziato), di conseguenza la traduzione corretta diviene "il blocco del ganglio paracervicale di Lee-Frankenhauser". Altri esempi di correzioni d'interesse sono: la traduzione di *modulation* con l'anglicismo ibrido "inibizione del *re-uptake*" che non compariva nel testo di partenza e pertanto dimostra l'egemonia del mondo anglofono in contesto medico italiano; e la traduzione di *shall/should* deontico col futuro di obbligazione piuttosto che con un condizionale, esempio che esplicita l'intertestualità dei testi medici con quelli legali. È necessario specificare che i cambiamenti effettuati provengono dalla collaborazione del traduttore/revisore con un esperto nel campo il cui aiuto si è dimostrato indispensabile per la buona riuscita della traduzione sia a livello lessicale, dato che l'esperto si dimostrava molto più incline all'utilizzo di un registro propriamente medico, sia a livello semantico poiché, altrimenti, non sarei riuscita a capire alcuni argomenti prettamente scientifici a me totalmente ignoti. Quest'esempio di revisione dimostra come nel passaggio dalla brutta copia al testo d'arrivo, quest'ultimo possa essere migliorato enormemente: sebbene la funzione della brutta copia non corrispondesse a quella del testo d'origine trattandosi, quindi, di una *overt translation,* la *covert translation* della versione finale corrisponde sì a quella del testo di partenza ma, in tal modo, si allontana molto dallo scopo per cui la committente aveva richiesto la traduzione. Di conseguenza, potremmo dire che la *overt translation* della brutta copia sarebbe stata comunque esaustiva dal momento che la committente ne avrebbe tratto il proprio vantaggio, ovvero la comprensione del testo di partenza. In termini di Mossop, quindi, avremmo sprecato tempo prezioso a svolgere una traduzione tanto puntigliosa, ma, come già detto, e facendo tesoro dell'insegnamento di Chakhachiro, credo che ogni testo meriti di essere tradotto, o revisionato, nel migliore dei modi, specialmente se non si è limitati da tempi di consegna molto stretti o da stati psicologici particolari.

Come si vede, questa tesi magistrale è orientata tanto al processo quanto al prodotto della revisione in quanto studia nel dettaglio sia la teoria relativa a tale fase della traduzione sia il risultato ottenuto, ovvero il testo d'arrivo. Inoltre, avendo applicato la revisione alla traduzione medica, si è ritenuto indispensabile offrire una visione d'insieme sulle caratteristiche specifiche dei testi medici tanto in italiano che in inglese ed offrire dei suggerimenti preziosi per poter affrontare più serenamente la trasposizione di tali testi dall'italiano all'inglese. In conclusione, questa tesi ambisce ad offrire dei risultati d'interesse ottenuti, dove possibile, attraverso l'applicazione delle informazioni teoriche esposte nella prima parte ai dati pratici rinvenuti nella seconda.