# Table of Contents

## Education & Training

**ET-3:** Globalizing Functionalism the Functional Way

*Christiane Nord*

---

## German

**G-3:** Beyond Terminology and Phraseology: Cultural Differences in Technical Journalism and How Translators Can Bridge the Gap

*Barbara Sabel*

---

**G-7:** Insights into the Austrian Insurance Industry

*Trisha Kovacic-Young*

---

## Independent Contractors

**IC-14:** Expert Marketing: How to Position Yourself as a Specialist

*Marta Stelmaszak*

---

## Literary Translation

**L-5:** Ethics of Cultural Translation: Homi K. Bhabha, Third Space, and Fictional Representations of Mexico City

*Alice Whitmore*

---

## Legal T&I

**LAW-4:** Finding the One Best Term: Drafting Legal Translations with Precision and Vivid Language

*Jean Campbell*

---

## Language Technology

**LT-12:** Virtualization for Translators: Achieving a More Productive, Secure, and Efficient Work Environment

*Alfonso Romero*

---

## Medical T&I

**MED-1:** Newborn Screening and Inherited Metabolic Disorders

*Martha Exebio Blackwood*
Middle Eastern Languages
MEL-1: The Ten Most Common Reasons Candidates Don't Pass ATA's Arabic>English Certification Exam................................. 118
  Jeffrey Hayes

MEL-4: Critique of Arabic Translation Efforts in Support of Wartime Efforts in the Middle East.................................................. 123
  Robert Hoffman

Portuguese
P-2: The Most Important Things Interpreters Should Know Before Starting Their Professional Career.............................................. 136
  Angela Levy

Spanish
S-1: El origen y la formación de los términos médicos ............................................................................................................... 140
  Mercedes De la Rosa-Sherman

Science & Technology
ST-2: Gene Therapy: The New Frontier of Medicine .................................................................................................................. 145
  Tapani Ronni

ST-6: Agri-Food for Thought: How Agriculture Translates into Food............................................................................................. 154
  Leo van Zanten

Translation
T-6: Internationalization and Localization for Translators ............................................................................................................. 169
  Diana Dudgeon and Rick Dudgeon

T-8: Software Localization Quality Assurance from the Tester’s Perspective ............................................................................. 183
  Carola F. Berger
GLOBALIZING FUNCTIONALISM THE FUNCTIONAL WAY

Christiane Nord
Research Fellow in the Department of Hebrew and Linguistics and Language Practice
University of the Free State, Bloemfontein, South Africa

Abstract: This presentation aims at illustrating a “functional” translation process. It takes the seminal work on translational functionalism, *Grundlegung einer allgemeinen Translations-theorie*, published in German by Katharina Reiß and Hans J. Vermeer in 1984, and its translations into Spanish, *Fundamentos para una teoría funcional de la traducción* (1996), and English, *Towards a General Theory of Translational Action* (2013), and more specifically: the examples used in this book, as a case in point. Examples are meta-communicative devices. They refer to the communicative interaction in which they are used in order to illustrate or explain an argument or a point made by the speaker or writer. This function is best achieved if the example alludes to a phenomenon or experience that is part of the receiver’s previous knowledge. The main intention is to make the receiver say: “Oh, yes, I see what you mean!” In this respect, examples are appellative: they appeal to the readers or listeners to activate some knowledge stored in their memories. In the presentation we shall discuss the strategies applied by the translators. Both translations are addressing a "global" readership, which is not limited to native speakers of Spanish or English, but include anybody in the world interested in Translation Studies who does not read German and has a reasonable proficiency in Spanish or English, respectively. This makes it difficult to define the audience and adjust the examples to what can be assumed to be their culture-specific knowledge, which is an important requisite of functionalism in translation.

1. WHAT IS FUNCTIONALISM?

In 1978, the German scholar Hans J. Vermeer (1930-2010), trained as a translator and interpreter and training translators himself, proposed a general theory of translation which he called “skopos theory”. The Greek word *skopos* means “purpose”: translation is considered to be a “purposeful activity”, a communicative interaction governed by its purpose. An important aspect of this purpose is the addressed audience – for whom do we want the communication to achieve a particular purpose? In the 1980s and 1990s, this theory was applied to translator training by a number of German translator trainers and scholars based at the universities of Mainz-Germersheim and Heidelberg, and their publications, first in German but later also in English, Spanish and other languages, spread the word in the four corners of the globe. Because of its focus on the (intended) functions of texts in general and translations as a specific kind of text, the approach was soon called “functionalism”.

One of the fundamental texts of the skopos theory is the book *Grundlegung einer allgemeinen Translations-theorie* published by Hans J. Vermeer and his former teacher and later colleague Katharina Reiß in 1984. It seems obvious that a book on translational functionalism should be translated in accordance with the theory, and this is perhaps one of the reasons why it took almost thirty years for this book to be translated into English (*Towards a General Theory of Translational Action*, Manchester 2013). A Spanish translation was already published in 1996...
(Fundamentos para una teoría funcional de la traducción, Madrid 1996). In my presentation, I want to show how the translators of the two versions tried to make their translations “function” for their respective audiences.

If you are a teacher, you want your audience, i.e. your students or trainees, to learn. Especially with complex or difficult materials, examples are a good means to make the audience “see” what you want to tell them – this is something that was common knowledge already with the ancient Greek and Roman rhetoricians. Verba docent – exempla trahunt, they said: words instruct, examples move or appeal. Textbooks and manuals for teaching often follow this advice. In linguistics and translation, examples are a particular challenge for the translator because they often refer to language and culture – in the source text naturally to the source language and culture. Here, the demand for “faithfulness” in translation leads into a dilemma: should the translator be faithful to the wording of the source text or faithful to the pedagogical intentions of the author? A functional approach may offer a solution.

2. THE SETTING

The book was published in (West) Germany in 1984. Both Vermeer and Reiβ were teachers in university translator training programmes: Vermeer with a focus on Portuguese language and culture, Reiβ with a focus on Spanish language and culture, each in comparison with German language and culture. Both had ample knowledge of other languages and cultures as well: English, French, Italian, Latin, Greek and even Hebrew and a broad general education. Both had published on translation-related topics before. Apart from a number of articles in linguistic journals, Reiβ had published a book on translation criticism in 1971, in which she first presented her text-typological approach (Reiβ [1971]2000). Vermeer had published in general linguistics, a Hindi grammar and quite a few theoretical articles on translation, among them the first draft of what was to be skopos theory, in 1978. Vermeer was more of a theoretical mind, whereas Reiβ was interested in application, and she could draw on a huge corpus of examples from her own translation practice and her teaching (mainly Spanish-German) and her work on translation criticism.

With their book, they wanted to explain the new theory (Vermeer) and illustrate its application to the translation of all sorts of text types and language combinations (Reiβ). Therefore, the book is divided into two parts: a theoretical one by Vermeer, which also uses quite a few examples, and a more practice-oriented one, by Reiβ, with many examples, most of them text fragments with one or more translations. The authors addressed students and colleagues in translator training, setting the foundations for a scholarly debate on translation theory, methodology and practice in (West) Germany.

Translation Studies was still in its infancy at the time. In Germany, the 1971 book by Katharina Reiβ had been the starting point, Wolfram Wilss published his book on “the science of translation” in 1977, and in 1979, Werner Koller followed suit with his introduction to translation studies. That was about it in West Germany. In the East, there was a very active group around Otto Kade in Leipzig, the so-called Leipzig school, who started publishing in the 1960s, but the iron curtain was still so impenetrable that there was hardly any interchange between East
and West. In the English-speaking world, there was Eugene Nida, director of the American Bible Society and studying Bible translation, and a few linguists like Catford who, stimulated by the research on machine translation, were trying to design a linguistic theory of translation.

In this situation, Reiß/Vermeer’s *Grundlegung* came as a revelation, at least in Germany, where translation had so far been regarded as a purely linguistic operation, striving for equivalence relations between language systems. With its strong focus on the audience and the purpose of a translated text, the theory takes into consideration what practitioners intuitively had felt (and theory had ignored) all the time. The proverbial gap between theory and practice could now be bridged. Practitioners and teachers training future practitioners found a theoretical, and soon also methodological, guideline for translational decisions. This sounds great. But in real life, things are not as easy as that, and it took about thirty years for the theory to spread around the globe, mainly by hearsay or by second or third-hand information, which, more than once, has been distorting the arguments. Therefore, as a student of Katharina Reiß and a former colleague of Hans J. Vermeer, I felt that I owed it to the authors to make their work directly accessible to an English-speaking audience: I translated the book from my native German into English. For the end product, I had to rely, of course, on a native English speaker, Marina Dudenhöfer, who reviewed the text with regard to language and style. The translational decisions, however, were entirely mine. I wanted to put “functionalism” to a stress test, striving for both *intratextual* coherence from the target audience's point of view and *intertextual* coherence with the source text. *Intratextual* coherence means, in Vermeer’s terms, that the translated text “makes sense” to the intended receivers; *intertextual coherence* refers to the relationship between the source and the target text as defined by the translation brief, as we shall see below. Moreover, as a translator, I am responsible for the communicative interaction to “work” for all participants involved in the process (the authors, the target audience, the publisher and myself) without any one of them being damaged, and this responsibility is what I call “loyalty” (cf. Nord 1997, and elsewhere).

3. **INTERPRETING THE BRIEF: PRELIMINARY CONSIDERATIONS**

As you know, in a professional setting a translation process is initiated by the translation “brief” (no matter whether explicit, even fixed in a contract, or implicit or even intuitively determined by the translator). Ideally, the “brief” contains the description of the target situation: for whom, when, where, over which medium, for which purpose is the target text needed? The interpretation of the brief provides the translator with a kind of “profile” for the target text they have to produce, and this profile will guide them in each and every translational decision. Comparing the target-text profile with the “material” provided by the source text, we can identify the translation problems and find a consistent translation strategy for their solution.

Let us therefore analyze the “brief” for the English version of the book. Like the source text, the English version will be a university textbook in print, but in contrast to the source text, the time and place of reception will be different: the target text will be read and used in translator training thirty years later than the source text, and probably anywhere in the world (except perhaps in places where students and teachers can read the German original or the Finnish and the Spanish translation). This has serious consequences for the audience’s profile: they are not only native
speakers of English but also people who have studied English as a second or third language and whose knowledge of the English-speaking culture(s) may be relatively limited. The good news is: myself, as a translator, seem to be perhaps not a prototypical but at least a fairly close representative of this global audience. The huge temporal gap is not only a problem but perhaps also an advantage for the translation process. The knowledge about skopos theory that has been spread already by means of descriptions and commentaries in English provides a basis for the ideas presented in the book, although some misconceptions may have to be corrected.

What we have stated for the English translation also applies, to some extent, to the Spanish version, although the temporal gap between original and translation is much smaller, only twelve years. In 1996, skopos theory was not yet as well-known as it is now, and translator training was not as widespread in the Spanish-speaking world as it is now. Therefore, the “locale” for the reception of the Spanish translation was probably mainly limited to Spain, although, of course, readers in the Americas were not generally excluded from the intended audience. But we shall bear this aspect in mind when we analyze the Spanish translation. On the other hand, the translators of the Spanish version state in their translators’ note that they worked in close collaboration with the authors, who expressed their satisfaction in their foreword to the Spanish edition, whereas I did not have this support because Katharina Reiß, in her late eighties, did not want to be bothered, and Vermeer had passed away in 2010 before I embarked on the translation work.

An example “moves” best if it appeals to the readers to activate some experience or knowledge with which they are familiar. In the original German text, most examples therefore refer to the language and culture of the German-speaking world or to a knowledge that the authors presupposed (perhaps not always rightly so) in an educated German-speaking readership (in 1984!). Therefore, the translator faces the pragmatic problem of having to make these examples achieve their intended functions for a target audience whose main common feature is that they are not familiar with the German language and culture and whose general knowledge may differ greatly from the knowledge presupposed in the source-text audience.

To find a coherent strategy for the solution of this problem—which will have an impact on the functionality of the whole book—we have to take a closer look at the intended functions of texts in general and the examples provided in the German source text in particular.

4. A FOUR-FUNCTION MODEL FOR TEXT ANALYSIS IN TRANSLATION

To make things easier in translator training and even in translation practice, I suggested a model of four basic communicative functions, which will also serve for the analysis of our material in this contribution. Let me give you a very brief account of the four basic functions.

- The first and, as I see it, most important is the phatic or “contact” function. It is responsible for opening a communicative interaction (e.g. with a greeting), for keeping the channel open as long as the interaction is supposed to last (e.g. with pause fillers, discourse markers etc.) and closing the channel at the end (e.g. “thank you for your attention”), as well as for the definition and shaping of the interpersonal relationship between sender and recipients. The phatic function works on the basis of conventional
forms of behaviour used for this purpose. Examples: forms of address, small talk, meta-
communication, discourse markers and pause fillers in oral discourse, etc.

- The second function is the referential function. It refers to the objects and phenomena of
the world or of one particular (possibly fictional) world. Some subfunctions: informative
function (object: e.g. a traffic accident), metalinguistic function (object: e.g. a particular
use of language), instructive function (object: e.g. the correct way of handling a washing
machine), teaching function (object: e.g. Geography) etc. The referential function works
on the basis of shared knowledge and an appropriate distribution of information assumed
to be known by the recipient (topic) and information assumed to be new and interesting
for the recipient (comment). If the information provided in a text is not sufficient for the
recipient, the text will be difficult or impossible to understand; if there is more
information than necessary, the text will be redundant and boring, and recipients will not
want to read it.

- The third function is the expressive function. It refers to the expression of the sender's
attitude or feelings towards the objects and phenomena dealt with in the text. Some
subfunctions: emotive function (expression of feelings, e.g. in interjections), evaluative
function (expression of evaluation, e.g. in a political commentary). The expressive
function works on the basis of shared value systems, unless it is made explicit, as in “this
is a very good translation”.

- The fourth function is the appellative function. By means of this function, the sender
appeals to the recipients’ experience, feelings, knowledge, sensitivity etc. in order to
make them react or respond in a specific way. Some subfunctions: illustrative function
(intended reaction: recognition of something known), persuasive function (intended
reaction: adopt the sender's viewpoint), imperative function (intended reaction: do what
the sender is asking for), pedagogical function (intended reaction: learn certain forms of
behaviour), advertising function (intended reaction: buy the product).

Except for purely phatic expressions or utterances (as in small-talk about the weather), texts
are rarely monofunctional; as a rule, however, we find hierarchies of primary, secondary, etc.
functions. Moreover, functions are frequently aimed at by indirect means: e.g., by praising
the wonderful effects of a particular washing powder (= expressive function), the sender
usually wants achieve an appellative-persuasive function.

5. WHAT IS AN EXAMPLE?

In classical rhetoric, an example (exemplum, in Latin, παράδειγμα, in Greek) is a sub-type of the
simile, i.e. a comparison between two different things that resemble each other in at least one
way. An example usually compares an unfamiliar object (an event, a process, a character, a
hypothesis etc.) to another object with which the recipient can be assumed to be familiar (cf.
Harris 2010). In some examples, the “familiar object” is a case represented in the form of a scene
or narrative, e.g. “The fourth tone [of Mandarin] is like the shuttlecock in badminton, struck
midair and driven downward.” In others, a concept may be illustrated by enumerating various
items representing it, e.g. “a dialect is the variety of a language spoken in a particular region,
such as Broad Yorkshire, Chicano or Pittsburgh English, Hinglish or Spanglish.”
In line with this definition, we can distinguish between two general functions of examples: illustration, i.e. telling an anecdote, true or feigned, to illustrate a point, and explanation, i.e. enumerating one or more specimens or instances that are typical of the group or set of which they form part and demonstrate its character. Illustrative examples are meant to be appellative: they can only appeal to the readers if these have an experience or knowledge of the phenomenon alluded to. Somebody who has no idea of how badminton is played will not understand what (according to the author’s humorous intention) the fourth tone of Mandarin sounds like but would have to rely on an explanation in the context (in our example: “The fourth tone goes down or falls.”). An explanatory example can also be appellative if the recipient has some knowledge about the item mentioned. If I know Broad Yorkshire, I am reminded of somebody speaking it and may even hear the specific intonation and pronunciation of some vowels in my imagination. If the recipients don’t know the item, they receive some new information that amplifies their knowledge. In this case, they know now (from the definition) what a dialect is and that Broad Yorkshire and Chicano English are dialects of the English language but the information does not “ring a bell”. These examples are informative but not appellative. Therefore, authors often provide more than one item in order to make sure that the recipients can recognize at least one or two of them.

Apart from these two functions, all examples can be expected to support the interpersonal relationship between the sender (here: the authors) and the receivers (here: the readers of the book). Examples are “meta-communicative” in the sense that they comment on the ongoing communicative interaction, making sure that it works as intended. Instead of referring merely to the object, as the referential function of a definition would do, examples establish a social link between writer and reader, or, in a pedagogical situation, between teacher and student, asking for cooperation: Let us look at this example together, it will help you to understand what I mean.

According to my analysis, the expressive function seems to be rare or even non-existent in examples.

To sum up: Examples can be intended for three communicative functions: an “interpersonal”, phatic function, a referential-informative function and/or an appellative function. The authors of the original book intended to make these three functions work for their intended audience: students and teachers of translation in West Germany in the early 1980s (although there never is a guarantee that such intentions really get across to every reader). If they want to make the examples work for their addressees, the translators will have to think about the knowledge and experience they can presuppose in their audiences. In the badminton example, the knowledge may be fairly widespread, whereas in the example of the dialects, different readers may know different dialects according to their country of origin. In the following section, we shall therefore classify the examples of our source text according to their object(s) of reference.

6. OBJECTS OF REFERENCE

In the following discussion of examples, we will provide the German source text (R/V) together with the Spanish and the English translation (R/V-S, R/V-E) wherever possible.
**Example 1: The relativity of perception**

Beispiel: Wer kalte Füße in warmes Wasser steckt, dem kommt das Wasser „wärmer“ vor, als wenn er warme Füße in Wasser gleicher Temperatur steckt. (R/V, p. 28)

Ejemplo: cuando se meten los pies fríos en agua templada, ésta parece más caliente que cuando se meten en ella los pies calientes. (R/V-S, p. 22)

For example: when you put your cold feet into warm water, the water will seem warmer than when putting your warm feet into water of the same temperature. (R/V-E, p. 26)

This is a typical illustrative example. The “scene” represented will be appellative for any reader, independently of their socio-cultural or geographical background and of the temporal context, because it refers to general human experience. Therefore, both translations are functional by simply transferring the narrative. No problem with the appellative function. The referential function is taken for granted. But still: you will have noted a difference between the German and the Spanish, on the one hand, and the English, on the other. In the formulation of the English example, the readers are explicitly addressed: you put your feet, whereas the other two are impersonal. Apart from the fact that you avoids a sexist reference or a split form like he/she or his/her (time factor!), it takes the readers on board, thus reinforcing the interpersonal relationship (phatic function). In Spanish, the reflexive passive voice is also inclusive of men and women but does not mark the phatic function as clearly.

**Example 2: The origin of the solar system**

Wer fragt nach dem praktischen Wert einer Theorie der Entstehung des Sonnensystems? (Man verzeihe das Beispiel, wenn es als Analogie zu anspruchsvoll erscheint.) (R/V, p. VII-VIII)

To whom would it occur to ask about the practical uses of a theory regarding the origins of the solar system? (We apologize for the example if the analogy seems too pretentious.) (R/V-E, p.vii)

Since the authors’ preface to the original book was replaced by a new preface to the Spanish translation, this example is missing in R/V-S. But it would not have caused any translation problem because it refers to general world knowledge (“there is something we call the solar system, and this must have originated somehow”), with which any reader can be assumed to be familiar.

**Example 3: Different forms of address for people according to status and role**

Beispiele: einen Professor redet man anders an als einen Kommilitonen; einen Mann redet man in der Rolle des Professors anders an als in der Rolle des Familienvaters. (R/V, p. 101)

Ejemplos: uno se dirige a un profesor de distinto modo que a un compañero: se habla de un modo diferente a un señor en el papel de profesor que en el papel de padre de familia. (R/V-S, p. 85)
For example: different forms of address are used for a professor or a fellow student; the way a man is addressed in his role as professor will differ from the way he is addressed in his role as father. (R/V-E, p. 90)

Example 3 does not refer to facts but to behaviour, and behaviour is basically culture-specific. A culture-specific behaviour is called a *cultureme*. In this case, we can say that the cultureme the example refers to is at least supra-cultural in that it functions for the two target cultures in (more or less) the same way as for the source culture (but perhaps not for every culture in the world!). Although the forms of addressing a professor and a fellow student have changed considerably in Germany since 1984 (and this is also true for Spain), there are still some differences between the two opposed scenes. For an Asian audience, the example would probably have to be made even more specific.

**Example 4: Language comparison**

Farbwörter stehen interlingual nicht im 1:1-Verhältnis zueinander. Farbwörter lassen sich interlingual nicht in je gleichem Verhältnis von Nicht-Farbwörtern abgrenzen. (R/V, p. 28)

Ejemplo: los nombres de los colores no guardan una correspondencia biunívoca entre las distintas lenguas, y no se pueden delimitar con relación a las demás palabras del mismo modo en todas las lenguas. (R/V-S, p. 21-22)

For example: words denoting colour do not have exact matches in other languages; they cannot be distinguished from words that do not denote colour in the same way in different languages. (R/V-E, p. 26)

This example refers to language or languages in general and does not mention any specific language. Unless the readers can think of a specific case in their own language compared with another language, the example will be referential-informative. A reader who knows Italian may be reminded of the fact that there are two words for *blue* in Italian: *blu* and *azurro*, and that it is difficult to say when something blue is *azurro* and when it is *blu*. The second part must be an example from Vermeer’s doctoral dissertation on expressions denoting colour and their translatability in Indogermanic languages (Vermeer 1963). It cannot be expected to be familiar to anyone who is not an expert in Indogermanic languages. Therefore, it will definitely be referential-informative.

So far, the translation of the examples seems quite easy. By means of a simple transfer of contents, the translator can be sure to reproduce the desired functions for the target audience. For the phatic function, some adaptations of style may be useful, although the appellative function also accounts for a certain degree of interpersonality. But unfortunately, only very few of the examples of the book refer to general facts of the world, to general or at least supra-cultural culturemes or language in general. In fact, in order to ensure the appellativity of their examples, the authors preferred references to German language and culture, i.e. the language and culture most familiar to their addressed audience. And here is where the appellative function is at risk.

**Example 1: Bibles and epic poems**

Man kann von einem Kultur- und Sprachstadium in ein anderes übersetzen (selten
You may translate (but rarely interpret) from one linguacultural stage to another. For example: modernizing the *King James Authorized Version* of the Bible; translating a medieval epic poem into Modern English. (R/V-E, p. 27)

This is an explanatory example referring to facts of the German linguaculture. For readers who are familiar with Luther’s translation of the Bible and the way it has been carefully modernized over the centuries, the first part may even have an appellative function; the second part is too general to be appellative. The same applies to the English translation, whereas the Spanish translation refers to the “modernization” of the Lord’s Prayer, which seems questionable, to say the least. The closest parallel to Luther’s Bible would be the translation by Reina-Valera, which indeed has been modernized various times. The specification of the medieval poem as *Poema de Mío Cid* makes the reference more appellative (although the correct title is *Cantar de Mío Cid*). In English, a specification of the medieval poem could have been *Beowulf*, which might even have an appellative effect for younger readers because of the translation by J.R.R. Tolkien or various films based on the saga which came out between 1995 and 2008. I decided against the specification precisely for this reason: it would not be very coherent that Reiß and Vermeer in 1984 alluded to films produced ten or twenty years afterwards.

**Example 6: The language of flowers**

Jemand überreicht jemandem ein Bukett Rosen, um seiner Liebe Ausdruck zu verleihen (vgl. „laßt Blumen sprechen!“) Hierzu gehört also durchaus der metaphorische Gebrauch des Wortes „Sprache“: die Sprache der Blumen usw. (R/V, p. 20)

Alguien regala un ramo de rosas para expresar su amor (cf. “¡Díselo con flores!”) (R/V-S, p. 15)

A young man gives his girlfriend a bouquet of red roses to express his love for her (cf. the “language of flowers” of the Victorian era). The example shows that this feature includes the metaphorical use of the word *language*. (R/V-E, p. 19)

This example refers to a cultureme of German linguaculture. In R/V-E, the illustrative part of the example has been slightly expanded (*red roses* instead of *roses*) to make it clearer to any reader who may not be familiar with “the language of flowers” or associates roses with different meanings (yellow roses are a symbol of divorce!). In R/V, the explanatory part in the parenthesis includes an intertextual allusion to an advertising slogan popular in Germany in the 1980s, which will certainly not be familiar to the target audience (maybe not even to every reader of the German text in the 21st century) and was therefore replaced by a reference to British culture. *Díselo con flores* is the title of a popular song by the Mexican singer Féy published in 1999 – thus, the literal translation in the Spanish version from 1996 received its appellative function...
Example 7: Linguistic change

[...] weibliche Teenager heißen zu Jahrhundertbeginn *Backfische.* (R/V, p. 28)

[...] *la gripe*, a principios del siglo, se llamaba *trancazo.* (R/V-S, p. 22)

[...] translating *I am going to spend a penny* by *I am going to the loo* for young people from the 21st century. (R/V-E, p. 27)

This example illustrates language change. For German readers, the authors use a word which was still commonly used when I was a teenager (not precisely “at the beginning of the century”!), but would probably seem ridiculous, if not incomprehensible to young readers today. The Spanish translation does not work because *trancazo* is still in use, it is marked as “colloquial” in dictionaries of modern Spanish (DRAE, DEA).

The following example contains a reference to the New Testament. The authors criticize one of the German translations because it does not take Luther’s canonical Bible translation into account.

Example 8: Moving mountains

And this is the belief that moves mountains. (Webster: *Daddy-Long-Legs*, 1967)

(a) Und das ist der Glaube, der Berge *bewegt.* (Trans. Boveri 1979, emphasis added by Reiß/Vermeer)

(b) Und das ist der Glaube, der Berge *versetzt.* (R/V, p. 132)

And this is the belief that moves mountains. (Webster: *Daddy-Long-Legs*, 1967)

(a) Und das ist der Glaube, der Berge *bewegt.* (Trad. literal: *Y esta es la fe que mueve montañas.*)

(b) Und das ist der Glaube, der Berge *versetzt.* (Trad. literal: *Y esta es la fe que desplaza montañas.* (R/V-S, p. 118)

And this is the belief that moves mountains. (Webster: *Daddy-Long-Legs*, 1967)

(a) Und das ist der Glaube, der Berge *bewegt.* (Trans. Boveri 1979, emphasis added by Reiß/Vermeer)

(b) Und das ist der Glaube, der Berge *versetzt.* (In line with Martin Luther’s translation of 1 Corinthians 13.2, which has become an idiom in the German language.) (R/V, p. 122)

In their own suggested translation (b), Reiß and Vermeer do not explicitly refer to Luther or to the exact source of the passage. They obviously assume their audience to be familiar with the Bible in general and Luther’s translation in particular. This assumption may have been correct in the early eighties of the 20th century, but most probably this knowledge cannot be taken for granted in many young German readers today, let alone in readers from other cultures who even may have a different religious background. Therefore, R/V-E makes the reference explicit. R/V-S does not explain why *desplazar* would be a better translation than *mover.* In the Spanish
translation by Reina-Valera, the verb *traspasar* is used in the ancient version, and *trasladar* in the 1960 and the 1995 revisions.

In order to make references to German language or culture work for a Spanish or English-speaking audience, both translators use adaptations to the respective target linguacultures. If the references are short (like in Examples 6 and 7), this is usually not too difficult. The solution is a little more complicated where the example cites texts or text fragments and their translations in order to illustrate translation problems or errors. Here again, the authors prefer to use translations into German in order to make the audience see by themselves where the problem or the mistake is. Sometimes, the source text is not even provided, like in Example 9.

**Example 9: Pro-verbs and proverbs**

Auf dieser letzten Ebene der Organisation des Geistes könnten wir es ‚mit einer Art abstrakter Pro-Verben zu tun haben, die nur eine indirekte Repräsentation erfahren‘. (Ich verstehe „Pro-Verben“ nicht etwas als „Sprichwörter“, sondern als Bezeichnung für Bedeutungspotenzen, die noch „vor“ den elementarsten Verbaleinheiten liegen.) (Steiner 1981, 121) (R/V, p. 145)

For a German reader, this paragraph is incoherent. Why would anybody confound the linguistic term *Pro-Verb* with *Sprichwort* (German for *proverb*)? But for Spanish or English readers, the example is simply incomprehensible if they do not have the English source text of this German translation. The Spanish translators therefore skip the example altogether, although in a translation of the passage into Spanish, where *pro-verbo* might indeed be mistaken for *proverbio*, the explanation would have made sense. In the English translation, we included the English original, slightly expanding the commentary.

At this final level of mental organization we may be dealing with ‘abstract kinds of proverbs which receive only indirect phonological representation’ (I take pro-verbs to signify potentialities of meaning ‘anterior to’ even the most rudimentary verbal units). (Steiner 1998: 106, emphasis by the author) (R/V-E, p. 133, where, unfortunately, the German text was deleted during the type-setting process)

In cases where the authors use a text from a third language (i.e. neither the source nor the target language) and its German translation, comprehension would be even more difficult for the target audience. A comparison of two foreign languages – this really does not make much sense. Unless there is a published target-language translation that shows exactly the same mistake or incoherence the authors are criticizing. Example 9 is such a fortunate case:

**Example 10: A folded tunic hanging on a peg**

μέν τον πτύξασα καὶ σκήσασα χιτ να, πασσάλ γκρεμάσασα παρά τρο τήσι λέχεσι.

R/V-TT: Hampe (1977, 16) übersetzt:
Und sie faltete ihn und strich ihn zurecht, den Leibrock, Hing ihn neben dem gurtdurchzogenen Bett an den Pflock hin. (R/V, p. 112)
J.M. Pavón (1982, 111) traduce así:
Ésta luego
la alisó con cuidado y, plegando la prenda, en un clavo
junto al lecho de finos entalles dejóla colgada. (R/V-S, p. 96)

Murray (1919) translates this as:
And she folded and smoothed the tunic
and hung it on a peg beside the corded bedstead. (R/V-E, p. 100)

The authors argue that it does not make sense to fold a tunic first and then hang it on a peg because it will unfold immediately. The same incoherence is found in Murray’s prose version and in Pavón’s Spanish verses (here, the peg is a nail). In both translations, the point is made immediately clear to the target readers, and the example can achieve its appellative function. In the following example, however, there is no official English or Spanish translation available.

Example 11: Singular or plural
Je m'adresse aux peuples, aux peuples au pluriel. (Cited in Zellmer 1968 : 234) / Ich wende mich an das Volk, die Völker. / Ich wende mich an die Völker. (R/V, p. 146)

Je m'adresse aux peuples, aux peuples au pluriel. / Me dirijo al pueblo, a los pueblos. / Me dirijo a los pueblos. (R/V-S, p. 129)

Je m'adresse aux peuples, aux peuples au pluriel. (Cited in Zellmer 1968 : 214) [Literally: I am addressing the peoples, the peoples in the plural.] / Ich wende mich an das Volk, die Völker. / Ich wende mich an die Völker. (R/V-E, p. 134)

In Example 11, which is taken from a speech by the French president Charles de Gaulle. Since the listeners might understand *au peuple* instead of *aux peuples* because the two forms have the same pronunciation, the speaker clarifies that he means the *peoples* in general, not the (French) *people*. The authors argue that the first German translation would be acceptable in simultaneous interpreting, since the interpreter could not hear the plural morpheme and had to wait for the clarification. If, however, the speech were to be recorded and later translated, the first German version would convey false information, whereas the second would be correct. This also works with the Spanish translations. The English version gives a literal rendering of the French original and expands the commentary on the two German translations because the example was quoted from an essay in which the translation into German was discussed.

To compensate for these translation problems, the original book also includes examples referring to Spanish or English. These examples, which usually have only a referential-informative function for German readers with no or insufficient knowledge of these languages, can be appellative if the language is that of the target audience.

Example 12: Meanings
Wie stellt man z.B. fest, ob und daß englisch *table* auf deutsch „Tisch“ heißt? Wie stellt man fest, wann dies der Fall ist (unter welchen Bedingungen dies der Fall ist)? *Table* kann ja auch *Tafel, Tabelle, Schalbrett* [einer Orgel], *Schüttelherd* usw. heißen. (R/V, p. 34)
¿Cómo se determina, por ejemplo, si *table* en inglés significa *mesa* en castellano? Cómo se determina en qué casos (bajo qué condiciones) esto es así? *Table* puede significar también *tablero, meseta, tabla, cuadro* etc. (cf. Collins 1992: 687). (R/V-S, p. 27)

How can we ascertain whether *table* in English means “Tisch” in German? How can we find out under which circumstances *table* means “Tisch”? The English word *table* can refer to other objects as well: the food served at a meal, the people sitting at a table, a printed or written collection of figures, facts, or information arranged in orderly rows across and down a page (e.g. a timetable), a multiplication table, a diagram or chart (cf. Springer 1969: 1448-49). (R/V-E, p. 32)

In the English translation, we mention synonyms from a monolingual dictionary instead of equivalents from a bilingual one. This is just a small shift. In the next example, however, things are not as easy, neither for Spanish nor for English speakers without a good knowledge of German.

**Example 13:** The sun, male or female?

[... ] si yo digo que “el sol sale por Oriente” lo que mis palabras [... ] propiamente dicen es que un ente de sexo varonil y capaz de actos espontáneos – lo llamado “sol” – ejecuta la acción de “salir” (Ortega y Gasset 1957: 65)


[...] if I say that *el sol* [the sun, masculine] *sale* [comes out or rises] *por oriente* [in the East], what my words, and thus the language in which I express myself, are actually saying is that an entity of the masculine sex, capable of spontaneous actions – the so-called sun – executes the action of 'coming out'... (Trans. Elizabeth Gamble Miller, in Ortega y Gasset 1992: 105) (R/V-E, p. 148)

R/V-S (p. 142) simply reproduces the text und the two German translations because the problem of the different genders of *sol* and *Sonne* is explained in the context. The English version of the book adds the published English translation of Ortega’s essay to make the example comprehensible for readers who don’t know Spanish. Still, since the English translator uses a different strategy, the function of the example will also be more referential than appellative for English-speaking readers. Here, the appellative function of the original example is definitely lost.
On the other hand, some examples, which are referential in the original, can gain an appellative function in the target text. This is the case of examples referring to facts or culturemes of the target culture or language or to translations into the target language (Spanish or English, respectively).

**Example 14: Terrible angels**

Ein jeder Engel ist schrecklich. (Rilke, *Erste Duineser Elegie*)
(a) Each single angel is terrible. (Rilke, *First Duino Elegy*, trans. Leishman & Spender)
(b) Round every angel is terror. (Rilke, *First Duino Elegy*, trans. Wydenbruck 1948) ((R/V, p. 142-143)

The authors argue that the second English translation achieves textual equivalence because it takes the poetic aspect into account. R/V-S (p. 127) reproduces the German source text and the two English translations without any additional explanation or translation into Spanish. For Spanish readers without any knowledge of English, the example has no referential, let alone an appellative function. On the contrary, for English readers, the example (R/V-E, p. 131) is even more appellative than for Germans since speakers of English will be better able to grasp the differences in style explained in the context of the example. In Spanish, there are about ten versions of the First Elegy, one even by the Mexican poet Juan Rulfo. Most of them have *Todo ángel es terrible* for the verse in question, but there may be other versions – this would now probably be much easier to ascertain with the help of some internet searches than in 1996.

7. CONCLUSIONS

According to our functional analysis of the examples provided in R/V, we can state that all examples are intended to achieve a phatic function, which in the case of a textbook means creating a positive learning environment for the readers and stabilising the contact between authors and audience throughout the book. The historical situation in which the source text was produced (1984, probably with an electric typewriter) set narrow limits to formatting with regard to font types and page layout. A rather large number of examples are not marked at all. No specific format is used to indicate longer examples, except for some numbered text fragments, which are left-indented. R/V-S tries to mark the examples more clearly, but falls short in many cases. In R/V-E, all examples are clearly marked to make them more easily recognizable. Each example consisting of more than one line is introduced by *For example: ...,* indented to the left, aligned to the right, single-spaced and in a font reduced by 1 pt compared to the main text and set in a grey box. Short explanatory examples are introduced by *e.g.* or lexical indicators like *such as* or *like*. With regard to style conventions, it is a well-known fact that English academic writing is characterized by a higher frequency of phatic markers than German academic texts. To make the phatic function work better for an English-speaking audience, phatic markers have been added where the German style is too impersonal (e.g. direct forms of addressing the readers, as in examples 1, 12; inclusive first person plural as in example 5, personal verb forms rather than passive voice) in order to make the readers feel more involved.

The classification of the corpus examples according to the knowledge field to which they refer resulted in a typology which was used to identify the intended functions of the different types of
example and to design a consistent translation strategy for each function. In the examples referring to general experience, world knowledge and supra-cultural behaviour patterns, the appellative effect works equally for the target-culture audience as it works for the source-culture audience. Examples referring to German language and culture are best suited to achieve an appellative function for German readers, whereas examples referring to English language and culture are best suited to achieve an appellative function for English-speaking readers, and examples referring to Spanish language and culture work best for Spanish-speaking recipients. But not all references to German language and culture could be adapted or replaced by references to English or Spanish language and culture to make them achieve the appellative function. Some references to German language and culture or translations into German had to be reproduced and explained in the context: this led to a shift from the appellative to the referential function. To compensate for this at least in part, however, the references to English language and culture, which were explanatory in R/V, became appellative for the English-speaking audience of R/V-E although they were simply reproduced from R/V. The same applies to the examples referring to Spanish language and culture.

The referential function of explanatory examples referring to facts and culturemes of third cultures and to third languages, translations from English into German, from a third language into German or from English into a third language can be transferred if the context provides sufficient information, e.g. by contrasting the reference with the audience’s own language and culture or adding a commentary. The following types of examples can achieve their referential function if they are adapted or even replaced by references to the target culture: explanatory references to facts of the German-speaking world, culturemes of the German culture (which were replaced by culturemes of the English culture) or to translations from German into a third language complemented by an English translation (cf. the French translation of a German compass assembly instruction, where an English translation was added in R/V-E). Of course, there cannot be any guarantee that every addressee actually possesses the knowledge which is needed for the referential function, but this is also true for the German source text.

In R/V, a large number of references are intended to achieve an appellative function: all references to general human experience, references to general world knowledge, supra-cultural behaviour patterns or languages in general, as well as most references to facts and culturemes of the German-speaking world and the German language, translations from English or third languages into German. They amount to more than 50 per cent of the corpus and show that the authors chose their examples carefully to make the (German) audience immediately realize the critical aspects of communication, behaviour and translation drawing on their knowledge of their own language and culture. With the exception of the references to general experience or world knowledge, this does not work for English-speaking readers. A mere expansion or explicitation, which was suggested above, can only achieve a referential function by informing the target readers about something “new”. Therefore, different strategies had to be used to obtain an appellative function wherever possible.

- References to facts of the German-speaking world were replaced by references to English-speaking culture(s);
- references to German culturemes were replaced by references to similar English culturemes if possible;
references to a translation from a third language into German were complemented by, or
even replaced with, references to an English translation of the same text if this translation
involved the same critical aspect to which the authors referred in their commentary.

Using these procedures, the apppellative function of R/V could be transferred to R/V-E in many
illustrative examples. It was lost, i.e. reduced to a referential function, in those illustrative
examples where substitutions or adaptations were not possible. However, as we have seen, an
appellative function which was not achieved by R/V, was gained for the readers of R/V-E in the
explanatory examples referring to English language and culture.

In the German source text, 46.1 per cent of the examples are explanatory and can achieve a
referential function for German readers. 53.9 per cent of the examples are illustrative and
intended to achieve an appellative function at least for an ideal German-speaking audience. This
balance has to be questioned because thirty years after its publication, a number of examples
presuppose a knowledge young students may not be familiar with today (and perhaps this was
even the case in 1984). If all the examples had been reproduced in English exactly as they are in
the source text, only 15.3 percent would have been appropriate for an appellative function. Due
to a strict orientation towards a modern “global” audience in the English translation, 39.1 percent
of the examples are now illustrative and can thus be regarded as appropriate for an appellative
function. This is still less than the percentage of illustrative examples in the source text, but I
think it is not bad as a result of our functional approach. In any case, it will be the readers of the
translation who decide whether or not the examples “work” for them.

8. BIBLIOGRAPHY

rhetoric.htm (last accessed July 21, 2014.
Meyer.
Translationstheorie. Tübingen: Niemeyer.
Reiß, Katharina & Vermeer, Hans J. 1996. Fundamentos para una teoría funcional de la
traducción. Trans. Celia Martín de León and Sandra García Reina, coord. by Heidrun
Trans. Christiane Nord, English reviewed by M. Dudenhofer. London/New York:
Routledge.
BEYOND TERMINOLOGY AND PHRASEOLOGY: CULTURAL DIFFERENCES IN
TECHNICAL JOURNALISM AND HOW TRANSLATORS CAN BRIDGE THE GAP

Barbara Sabel

Abstract: This session will summarize the findings of a case study on cultural differences in
technical journalism (German>British English). The speaker will examine the concept of cultural
difference and its relevance for technical texts. She will discuss the elements that make up a
technical article, including headline, introduction, and text cohesion, providing hands-on
guidelines for accomplishing a reader-friendly translation for the German>British English
language pair. Participants will be encouraged to share their own experiences in
reading/translating technical articles in their respective languages and language pairs. The
speaker will also explore initial guidelines from language services providers for these language
pairs.

1. INTRODUCTION

Linguists agree that different cultures use different conventions of writing – particularly in non-
fictional texts – and that these conventions should be taken into account in the process of transla-
tion. However, for translators to observe such conventions and take them into account they need
to be knowledgeable about them. Such knowledge is extracted from empirical studies and the
findings form the basis for establishing guidelines on how to deal with source text conventions
relative to target text conventions. At the same time, such guidelines would serve as benchmarks
that prevent translators from distorting a source text at random on the one hand and protect them
from unjustified criticism from customers on the other.1

While plenty of empirical research is available on cultural differences in academic texts very
little empirical and contrastive information is available on cultural differences in technical texts
(or LSP texts = "Language for Special Purposes" which is referred to as "Fachsprache" in Ger-
man). This in turn translates into a lack of guidance for translators. Here are two quotes that
describe the present situation:

"Only very few empirically based studies on the structure of LSP-texts in different languages
have been published until now." (Gnutzmann/Oldenburg 1991, 133)

1 Wie kann man sicherstellen, dass sich ein Zieltext nicht beliebig vom Ausgangstext entfernt – und zwar selbst dann
nicht, wenn bearbeitende Verfahren zum Einsatz kommen? [...] Wie schützt man den Ausgangstext bzw. seinen
Autor vor translatorischer Willkür und wie schützt man andererseits die Übersetzer(innen) vor unberechtigter
Kritik? (Reinart, S./Frank & Timme 2009: 174)
This paper is one step towards providing such a database and pertinent conclusions. It discusses the preliminary results of an empirical case study on cultural differences in German and English technical magazine articles (Fachartikel). These are sourced from German and English trade magazines. The paper and workshop report on the initial findings and offer pertinent conclusions, thereby offering something like "Handlungsanweisungen" or instructions as postulated by Reinart (Reinart 2009, 218) for translating such journalistic LSP texts from German into English and from English into German.

2. THE CASE

2.1 The two magazines and the database
The case: profi, Magazin für professionelle Agrartechnik
published by Landwirtschaftsverlag Münster Hiltrup, Germany

and

profi, Tractors and Farm Machinery
published by Agri Publishing, London, UK

Both magazines cover identical fields and topics and address the same type of readership. Both also share articles after having them translated and after editing the translations in-house. As such, the two magazines can be regarded as "identical twins", one "speaking" technical English and the other technical German.


2.2 Classifying the database
Both magazines are trade magazines which are written by experts for experts. The authors of the articles are trained agricultural engineers, some of them holding graduate degrees. Their readers are farmers and manufacturers, many of them are college graduates as well. This means we have experts addressing other experts in a practical magazine. This in turn means that it is not easy to pigeonhole these articles within the classification systems as established by Gnutzmann, Göpferich and Stahlheber.

---

2 Translation: Technical communication without language is nearly inconceivable. However, no systematic research is yet available to answer the question whether technical communication also relies nearly as much on cultural parameters.

3 The smaller number of English copies results from a change in the publisher’s policy, which merged the July and August copies into one ‘bumper’ summer issue into in 2004.
2.2.1 Relating profi articles to the classification system by Stahlheber

Stahlheber classifies journal articles by primary, secondary and tertiary articles, with primary articles being written by researchers for researchers in the same field and secondary articles being written by researchers for researchers in a different field whereas tertiary articles are written by lay journalists for the general public (Stahlheber 1992, 162). If we wanted to pigeonhole profi articles within this system, we would have to create a new pigeon hole and hence expand the existing system as follows:

3) Tertiary magazine articles = Written by trade journalists for experts and interested lay readers of the same trade

In German:
3) Tertiäre Zeitschriftenartikel = Von Fach-Journalisten für Fachleute und fachlich interessierte Laien des gleichen Fachgebiets

As a result, what presently is defined as “Tertiary article” would be assigned a new and fourth level or category.

2.2.2 Relating profi articles to the classification system by Göpferich

Göpferich sets up three classes of LSP texts, two of which relate to articles: 1) factual trade magazine articles that aim at updating readers on the latest developments, 2) trade magazine articles that update on the latest development in a more journalistic style and 3) instructive texts such as manuals (Göpferich 1992, 165).

Here again, we would have to expand the existing system by the following category before we can pigeonhole our profi articles:

Text types in engineering and technology > updating and instructive > factual / journalistic style > trade magazine article

In German:
Schriftliche Textsorten der Technik > fortschrittsorientiert aktualisierend / instruktiv > faktenorientiert / publizistisch aufbereitet > Fachzeitschriftenartikel

4) 1) Primäre Zeitschriftenartikel = Von/für Forscher eines Fachgebiets; 2) Sekundäre Zeitschriftenartikel = Von Forschern für Forscher anderer Fachgebiete; 3) Tertiäre Zeitschriftenartikel = Von Reportern/Journalisten, d.h. von fachlichen Laien, für die breite interessierte Öffentlichkeit

5) Schriftliche Textsorten der Technik > fortschrittsorientiert aktualisierende Texte > faktenorientiert > Fachzeitschriftenartikel
   Schriftliche Textsorten der Technik > fortschrittsorientiert aktualisierende Texte > publizistisch aufbereitet > Fachzeitschriftenartikel
   (Göpferich 1992, 190)
2.2.3 Relating profi articles to the classification system by Gnutzmann

Applying the Gnutzmann concept (Gnutzmann 1988, 26), we would pigeonhole the profi articles in category D, which includes articles that show a low level of abstractness and cover the spheres of manufacturing and social services.6

3. DISCUSSION

Following the structure of a journalistic article, the workshop discusses the preliminary findings of the study by exploring the following elements of text:

1. Title / Überschrift
2. Standfirst/ Vorspann
3. Introduction / Einleitung
4. Copy text / Haupttextteil

3.1 Title / Überschrift

The case study shows that ellipsis is the preferred type of title in both trade magazines, with 84% of the English ellipses but only 59% of the German using figures of speech. In fact, the preferred German title is a factual, non-figurative ellipsis, which gives telegramme-style information. This contrasts with the figurative ellipsis that is preferred by the English magazine. Nonetheless, whole sentences also account for nearly 25% of the English titles but for only a neglectable 4.5% of the German. In addition, most of these whole sentences are figurative in English but never in German. In fact, about 80% of all English titles are figurative but only about 50% of all German titles.

In addition, about twice as many English than German titles require extra linguistic connotation. This means that the readers are required to tap into their knowledge of the macro or micro culture in order to make sense of the headline, because the meaning of the title cannot be extracted from the words themselves. This suggests that providing information is twice as important for the German titles than it is for the English – a fact that was confirmed by comments from the English editors who said that the single most important purpose of an English title was to be entertaining.

For the translation process the findings suggest that translators who translate from German to English may be “licensed” to tap into the British/American macro culture and make the target title more entertaining than the German source title is likely to be. Vice versa, translators from English into German may be “licensed” to simply summarize the content of the article in a 3-

---

6 A = theoretische Grundlagenwissenschaften: höchste Abstraktionsstufe
B = experimentelle Wissenschaften: sehr hohe Abstraktionsstufe
C = angewandte Wissenschaften und Technik: hohe Abstraktionsstufe
D = materielle Produktion/gesellschaftliche Tätigkeit: niedrige Abstraktionsstufe
3.2 Standfirst / Vorspann
The study finds that most of the German standfirsts are fast paced and use plain and factual language. Some of them even read as if the reader is listening into an on-going conversation. This however does not apply to any of the English standfirsts. These stand out for their figurative language which creates a certain atmosphere – an attribute that is totally neglectable for the German standfirsts. These tend to use simple SPO sentences, non-figurative language, preferably no cohesive elements and sub clauses.

Another point of observation is that the German standfirsts are always terminated by a full stop whereas the English standfirsts never take a full stop at the end of the last sentence, an observation that is also made when looking at other trade magazines, both English and German.

Hence, one guideline for German to English translators would be to use figurative language in English and add elements of text cohesion (e.g. "here, thus, hence, following, yet") to the target text. Vice versa, English to German translators can happily do without such elements of cohesion or figures of speech and strive for a fast pace of reading by forming short and simple SPO sentences.

3.3 Introduction / Einleitung
The study finds that most introductions in both the German and English samples are narrative in nature and outline the general background of a machine and its market. But despite these commonalities in structural style and content, we find that the English and German narrations differ in their use of language registers. For example, the English introductions often shift from factual LSP language to colloquial language and even to slang whereas the German introductions tend to use a consistent factual and LSP register. Also, the English introductions tend to be written in a more leisurely style, which contrasts with the rather fast pace of the German introductions. Like the standfirsts, these use short and simple sentences at times of identical structures and do without cohesive elements but sometimes use triple enumerations of keywords at the beginning to open the story as well as inverted sentences and “plunge into action”. German introductions, whether short or long, tend to concentrate on delivering nothing but essential information. No space seems to be wasted to non-essential information. Unlike the English, there are usually no images, no short story-type settings nor figurative language and certainly no epic narratives.

These observations suggest that one “Handlungsanweisung” (instruction) for German to English translators could be to make the English target introduction more narrative than the German source. Vice versa English to German translators should make a German target introduction read “faster” than its English source, which is achieved by using short sentences without sub clauses and preferably no or few cohesive elements.

3.4 Body text / Haupttextteil

3.4.1 Text coherence / Textkohärenz
Exploring the body text, we find differences in text coherence (Textkohärenz) between the German and the English articles. The study finds that these German LSP texts reflect the same convention of writing as German academic texts, which means it is up to the readers to make an effort in order to make sense of the context. Consequently they use no explicit elements of text cohesion such as back referencing since the supposition is that the reader’s knowledge of the (technical) micro culture acts as the cohesive means. Indeed, random conversations with German specialist readers suggest that they tend to feel bored or even offended if “taken by the hand” and guided through the article. Consequently, the focus of the German body texts is clearly on economy of speech and on presenting as much information as possible in the greatest possible detail in as little as possible space. This is very different in the English magazine. Like in English academic writing the readers are taken by the hand through back referencing and a more figurative style. The concept of theme-rheme, rather neglected in the German articles, is of major importance here and is also applied across paragraphs.

In conclusion, translators are recommended to add back references and elements of cohesions to their translation as they work from German to English. Vice versa, when translating an English LSP article into German it actually seems necessary to “strip” the English text of its elements of cohesion.

Such a strategy is clearly a challenging task – for a number of reasons. Incorporating such an editing pass in the translation process calls for a translator who is really knowledgeable of the specific subject field and will naturally also call for a different approach to billing since mere word counts will not reflect the level of expert work that goes into such a translation.

3.4.2 Humour
The study shows that the famous British sense of humour also plays a role in LSP texts and prosaic machine descriptions. The humorous effect is achieved by employing illustrative images or breaches in registers of speech. This observation contrasts with a generally more formal register which is applied consistently in the German articles.

3.4.3 Use of passive voice
At its current stage, the study retrieves a larger number of passive forms in the English articles than in the German reports—a rather surprising result that will be evaluated more extensively by the time the workshop is held.

3.4.4 Punctuation
As stated above, the German standfirsts are terminated by a full-stop whereas the last sentence in an English standfirst never takes any punctuation at all. Besides, the colon seems to be a favourite means of structuring a sentence in the German articles but not in the English. The exact statistics are presented at the workshop.

4. OUTLOOK

As this paper goes to press the study is far from being complete and comprehensive. More research needs to be done on sentence structure (use of modal verbs, on nominal and verbal styles
and use of pre- and post-modifications, sentence length, use of terminology and word formation) as well as on speech acts (assessment and recommendation) and on the use of hedge expressions (Abtönungspartikel). The far future will also see research into two other structural elements of a magazine article—captions (Bildunterschriften) and legends (Legenden). Watch this space.

5. BIBLIOGRAPHY


INSIGHTS INTO THE AUSTRIAN INSURANCE INDUSTRY

Trisha Kovacic-Young
Young Translations LLC, Vienna, Austria

Abstract: Insurance concepts can vary between countries and products differ between branches of the industry itself. In my presentation I will give an overview of the Austrian market, exploring some basic concepts of the Austrian insurance industry and discuss in detail the meaning of common German insurance terms and their translation into English. During the presentation I will also discuss some particularly tricky terms for German-English translators and we will look at a few notable differences between American and UK English.

1. General Market Information

As of July 2014 there were 122 insurance companies in Austria. They are all members of the Austrian Insurance Association (www.vvo.at) and supervised by the Financial Market Authority – the FMA. (www.fma.gv.at/en/companies.html). Ranked by net premiums earned, the largest Austrian insurance group by far is the Vienna Insurance Group (VIG) (€8,479 m), which includes Wiener Städtische, Donau Versicherung and S-Versicherung. The second largest is the Uniqa Group (€4,936 m), followed by Generali and Allianz (which is by far the largest insurance company in Germany). Ranked by Return on Equity, the Uniqa Group comes out on top at 10%, followed by Generali (6.5%) and VIG (5.3%).

In general, insurance products can be divided into personal and property (nonlife) insurance products. Personal insurance in Austria includes health insurance, accident insurance and life insurance. Under property insurance I will discuss renters’ and homeowners’ insurance. Asset insurance includes liability insurance (as part of homeowners’ insurance or on its own), motor vehicle insurance and legal expenses insurance. Businesses usually need liability coverage, transport insurance and all kinds of technical insurance (including insurance against losses from natural disasters), depending on what kind of company is taking out the policy.

2. Personal Insurance (Personenversicherung)

Social insurance (Sozialversicherung) should not be confused with US Social Security. In Austria, the social insurance is much broader, covering health, pension and accident insurance and it is mandatory. As soon as you are insured you receive an “e-card” which you use whenever you go to the doctor (this replaces the old “vouchers”). There are different kinds of mandatory social insurance. Employees are insured by their regional health insurance fund (e.g. Wiener Gebietskrankenkasse), public employees by the BVA, self-employed by the SVA. There is also private health insurance. Freelancers are permitted to “opt out” of the regular public insurance if they buy their own private insurance that covers at least as much. (In Germany there is also a Versicherungspflicht where you can choose your own health insurance company, as opposed to the Pflichtversicherung, where there is an automatic public insurance, i.e. in Austria.)
2.1 Health insurance (Krankenversicherung)

Private health insurance is voluntary and may need to be preceded by a physical check-up. The coverage begins after all the papers are signed, the first premium has been paid and any applicable waiting period is up. There are several supplementary packages (Zusatzversicherung) on the market. They cover outpatient treatment (ambulante Behandlung, which can include alternative medicine, glasses, dental etc.) and hospital stays. If you have hospital supplementary insurance you can stay in a “special class room” (Sonderklasse) and maybe pick your own doctors. Some say this can be risky because you get treated for stuff you don’t have and kept in the hospital longer than you want but people I know in medicine say that is not true and that everyone gets the same treatment. The supplementary insurance even pays you a certain amount of money for every day you spend in the hospital or that you cannot work (Taggeldversicherung)! Of course there is also a variety of long-term care insurance on the market (Pflegekrankenversicherung). Before the policy goes into effect the insured is obligated to disclose all information in advance that might affect his health. Then the premiums are calculated by the insurance company. For Austrians travelling or working abroad there is worldwide health insurance (Auslands-Krankenversicherung). This comes in different forms, depending on whether it is travel insurance or intended for expats and their families. These packages are often offered with a patient transport insurance (Rückholtransportversicherung) because it is cheaper for the insurance company to fly a patient back to Austria in a private plane then, for example, to leave them in a hospital in the US! Travel cancellation insurance (Reiserücktrittskosten-versicherung), and luggage insurance (Gepäckversicherung) can technically be considered non-life insurance but I am putting them here because they are usually sold together.

2.2 Accident insurance

Accident insurance (Unfallversicherung) pays the expenses of rescue, emergency treatment and follow-up treatment, etc. in the case of an accident such as drowning, burns, losing a leg etc. When it includes the case of death (im Todesfall) it can be translated as accidental death and dismemberment insurance. Accidental death (Unfalltod) insurance is almost like life insurance because it pays out a sum to the beneficiary if the insured dies by accident. The insured pays regular premiums and the insured amount (Versicherungssumme) is agreed in advance. The benefits (Versicherungsleistungen) are divided into categories:

1) Permanent invalidity. The degree of disability is set out in a table with the kinds of dismemberment or paralysis. This is usually given with a percentage number – e.g. if you are blinded and lose an arm you might be 90% disabled.

2) Death. The insured amount is paid to the beneficiary (Bezugsberechtigter)

3) Accident costs (Unfallkosten) include the costs of rescue, transporting the person back to Austria, or to the hospital nearest to their home and treating them.

4) Daily allowances (Taggeld) are paid for the duration of the disability while the insured cannot work – up to a year.

5) Hospital per diems are paid while he is in hospital.
2.3 Life insurance

2.3.1 Life insurance
Life insurance (Ablebensversicherung, Lebensversicherung) serves the purpose of protecting the family in case of the insured’s death, pay for burial, cover a loan, support the widow and make sure the kids are cared for and can afford to go to college.4

2.3.2 Old-age insurance

First Pillar: public pension system
A few years ago the Austrian government established a three-pillar system for old-age insurance, under the General Social Insurance Act (ASVG, Allgemeines Sozialversicherungsgesetz). The first pillar is the most widespread, the so-called “statutory (or public) pension system” (gesetzliche Pensionsversicherung) which provides old-age pensions, surviving dependents’ pensions and invalidity pensions based on a lifetime of earnings.5 This is quite like Social Security in the US. The second pillar is company pension and the third is private.

Second Pillar: Occupational pensions (betriebliche Altersvorsorge)
The second pillar, occupational retirement provision, is becoming increasingly important as companies vie for talented employees. This pillar comprises the Pensionskassen (which means pension fund but it is NOT TRANSLATED into English), group life insurance and direct pension commitments (= “company pensions”).6 Occupational pensions are now regulated by the “New Severance Pay Rules” (Abfertigung Neu) which ensure that employees can still have access to their pension money even if they change jobs.

The Pensionskassen7 are founded on a contract between the Pensionskasse and the employer stating that the employer will make regular contributions to the old-age provision of his employees.8 These assets are managed by the Pensionskassen in investment and risk sharing groups (IRGs, in German VRGen = Veranlagungs- und Risikogemeinschaften) to balance out the risks. There are two models: the defined benefit (DB, in German leistungsorientierte) and the defined contribution (DC, in German beitragsorientierte) Pensionskassen. With DBs, the amount of the pension benefit is defined and contributions by the employer vary depending on the investment result. In DC schemes, on the other hand, the employer always pays the same amount and proceeds are generated in good years and a loss in bad years (this is much easier for the company to calculate, of course).9

Third pillar: personal life insurance (Er- und Ablebensversicherung)
Life insurance10 is used in both the second and third pillars and in this case serves the main purpose of increasing wealth and saving for retirement. A mixed endowment policy (Er- und Ablebensversicherung) is considered the most important kind of life insurance in Austria.11 It pays out when the insured dies or after a certain number of years (usually 15 or 20) and in the latter case can be taken as an annuity, i.e. with a monthly payment, so it can be used to take care of family as above or for your own retirement. You agree on an assured amount as a minimum but it is also a “participation policy” so you get dividends if there are any. It can be unit-linked (fondsgebundene Lebensversicherung) or index-linked (“with-profits”) (indexgebundene Lebensversicherung).
Pensionsinvestmentfonds (PIF): These are subsidized by the government like the savings agreement with a building and loan association (Bausparvertrag). You pay in monthly, it is split between stocks and bonds, and you get a monthly annuity when you retire – it is tax-free now and taxed in retirement.

Endowment policy (Rentenversicherung, reine Erlebensversicherung): this kind is NOT to provide for the kids in case the insured dies; it is for the person’s own retirement. When the term is up he can have a lump sum paid out to him or receive a monthly annuity.

There are also supplementary policies – such as accidental death, disablement, occupational disability (BUZ Berufsunfähigkeitszusatzversicherung).

Important concepts in life insurance: The parties involved in life insurance are the insurance company, the policyholder (Versicherungsnehmer) – (this can be the employer as well), the assured person and the beneficiary (Begünstigter). The insurance coverage begins on a certain date, usually after everything is signed and the policyholder makes his first payment (Versicherungsbeginn). You also agree on the amount of the insurance, known as the Versicherungssumme. Hand in hand with this is the amount of the premiums that the insured will pay each month, year or as a single premium (Einmalprämie). This is calculated by the insurance company using complicated statistics (e.g. mortality tables, Sterbetafel) and depends on his age, health and many other factors, plus the administrative costs. The customer is obligated to tell the truth on all the questions the insurer asks (Obliegenheit). Once all this is set up the customer does still have the right to cancel (kündigen) or modify the amounts, or they can be exempted from paying the premiums under certain conditions (Prämienbefreiung, Freistellung).

3. Property and asset insurance (Sach- und Vermögensversicherung)

3.1 Property insurance

3.1.1 Renters’ and homeowners’ insurance
In Austria, renters’ and homeowners’ insurance (Haushaltssicherung (Ö) or Hausratsversicherung (D)) is a combination product covering material things (contents insurance) and personal liability. It is NOT just for homeowners, it is also for tenants and the client can also add various supplements.

The first part of this insurance, the property insurance (Sachversicherung, sometimes called non-life insurance) covers the contents of the home (excluding the car and any commercial merchandise, i.e. things intended for sale, so if you’re selling Tupperware you need two policies). The contents insurance does include the satellite antenna on the roof, also your coin collection, your diamond necklaces and your bars of gold. If something happens to these things the policyholder gets money from the insurance company – how much depends on what was covered. The insurable value (Versicherungswert) refers to the stipulated value of the insured things before they were damaged, replacement value (Neuwert) covers the cost of replacing them
less the amount of wear and tear from age and use. The market value (Verkehrswert) is the amount they would sell it for at the moment (not including the plot of land)

What is actually insured in all these cases? Usually the policies cover risks and damages (Gefahren und Schäden). Those would be things like fire, lightening, explosion or an airplane crash. Certain natural hazards (Elementargefahren) are also included: storm, hail, the pressure of snow on the roof, rockfall, earthslide. (Tap) water damage covers all kinds of things like the tub overflowing and ruining the wallpaper in the apartment below, and frost damage.

However, many “Acts of God” are NOT always covered in the regular homeowner’s insurance and need a separate rider or even a separate policy, called insurance against losses from natural disasters (Elementarschadenversicherung) (GB: natural disaster cover). This might include avalanches, flooding, and other more drastic environmental influences and the amount covered depends on the regional situation, for example whether a house is in a “red flood zone” or not.

The renters’ and homeowners’ insurance also covers burglary and housebreaking, i.e. when someone forces the door or window open, breaking through some kind of LOCK. If the thief doesn’t break through a lock we have ordinary theft and there are limits to the amount the insurance company has to pay. We talk of pilferage or robbery (Beraubung) when the victim is threatened.

The insurance also pays for cleaning up the mess and replacing or rebuilding things, including damages from putting a fire out and putting you up in a hotel while things are fixed. However, there are certain exclusions (e.g. damage from singeing, electrical surges are usually not covered) and the insured costs, i.e. the benefits paid by the insurance company, are always capped at a certain point. If you are translating these policies, you don’t want to omit any of these details! The insured location (örtliche Geltung) must also be stipulated. This is a specific address. In an apartment building it would also include the bike room downstairs. There is also an off-premises clause (Außenversicherung) which covers furniture that is stored elsewhere for up to 6 months, for example when you move.

The insured party has certain responsibilities (Obliegenheiten des Versicherungsnehmers) of course, both before and in the case of a claim. If they do not follow these rules the company may not have to pay. For example, the insured party must lock the door when they go away for a while. Then there is a duty to avert, minimize or mitigate loss (Schadensminderungspflicht), i.e. the insured must do his best to save the stuff and he really shouldn’t set it on fire. He must contact the insurance company immediately when something happens and is obligated to tell the company all the details about what happened (Schadensaufklärungspflicht).

Assuming the policyholder does all this, the insurance company then pays a compensation (Entschädigung). If the current value (fair value) is under 40% of the replacement value (Neuwert), then that is usually all the company has to pay, although the better insurance companies may compensate the replacement value in any case.
3.2 Asset insurance

3.2.1 Liability insurance
In Austria, renters’ and homeowners’ insurance also includes liability insurance. Liability insurance is an asset insurance because without it the insured might have to pay millions of euros and that just might use up all his savings. So it protects his assets by covering him in a case (Versicherungsfall) where he would be liable for damages that he or his family caused (Schadensersatzverpflichtung). The small print makes a big difference here. If he pokes someone’s eye out with an umbrella, or if his hamster chews up the wire of a guest’s laptop, it is covered. But if his dog bites someone it might not be covered. Sports are covered, but not hunting, etc. The coverage is capped at an agreed fixed amount. The policyholder has the same responsibilities here as with contents insurance.

3.2.2 General liability insurance
It is also possible to buy asset insurance that is separate from the renters’ and homeowners’ liability insurance. Here, too, the purpose of liability insurance is to cover damages that the policyholder would have to pay for because they did something wrong, or – if the claim is unfounded to fight the accusation (so this is also a “passive” legal insurance). In Austria you can buy basic liability insurance and then build on it in a modular manner depending on your needs. The insured event is a damage event (Versicherungsfall, Schadensfall) caused by an insured risk which (could) cause the policyholder to be liable for damages. The insurance covers these damages (Versicherungsschutz), which might be personal injuries (or death) or property damage (Personen- oder Sachschaden). The policy needs to clarify exactly when and where the coverage is in effect (and when not) – usually in Austria – and insurance companies usually do NOT cover anything that has anything to do with an American lawyer or court. And of course it must state how MUCH the insurance company will pay.

Liability insurance can also cover damages to the environment if they are agreed on. This could be impairment of the quality of the air, soil, or water caused by emissions. This applies to property, not to people’s health, because damage to people is covered in the basic liability insurance.

3.2.3 Motor vehicle insurance
Automobile insurance (Kfz-Versicherung), or motor vehicle liability insurance (GB: compulsory third party risks insurance) can be divided into three major groups: liability insurance (Kfz-Haftpflichtversicherung), hull insurance (Kasko-versicherung) and passenger accident insurance (Insassenversicherung). There is also motor vehicle legal insurance and driver legal insurance.

When you register a car you are legally required to also buy the basic liability insurance. The price depends on things like your age, the type of car and your driving history. Usually a system of points is used (Bonus-Malus System) where you get bonus points for good (no-fault insurance) and a penalty for bad loss experience.

Hull or comprehensive insurance (Kaskoversicherung) covers the costs when there is damage to the car (e.g. in an accident) or it is stolen. Comprehensive natural hazards insurance
Elementarkaskoversicherung covers damage from storms, fire, explosion etc. and crash insurance (Kollisionskasko) covers accidents and vandalism. As usual, war, terror etc. are not insured. When an insured event happens the policyholder has a few responsibilities – before the repairs begin the insurance company must be informed and agree to the repairs. There may be deductibles (Selbstbehalte), if so they are subtracted from the amount paid. The car is considered totaled (Totalschaden) when the price of repair is more than it would cost to buy a new car (Wiederbeschaffungswert). If there is a difference in opinion about the amount of the damage an independent appraiser or a committee of experts consisting of appraisers picked by both the insurance company and the insured (Sachverständigenausschuss) will decide.

Passenger insurance (Insassenversicherung) is a separate policy; it covers people the policyholder transports in his car (or bus). It can be a fixed sum for the insured and his vehicle, or for the insured person in any other vehicle or, for example, for anyone driving the insured person’s vehicle.

In all these cases, of course, the start of the insurance coverage (Versicherungsbeginn) and the amount (Versicherungssumme) are important and the wording makes a difference. Coverage could start on a specific date or when the money arrives, when the policy is signed etc. The policyholder also has a number of obligations, as with the other kinds of insurance policies discussed above.

In the case of a claim, there very well might be differences of opinion concerning injuries. In that case, the policyholder has the right to ask a medical commission (Ärztekommission) to make the decision.

### 3.2.4 Legal expenses insurance (Rechtsschutzversicherung)

The General Conditions for Legal Protection Insurance have just been republished by the Austrian Insurance Association and are now one of the longer sample policies. They consist of General Provisions and the Special Provisions (Gemeinsame und Besondere Bestimmungen), whereby the general provisions always apply and the special provisions must be agreed on separately.

In general, the insurer (Versicherung) guarantees that the legal interests of the insured are represented, and carries the costs thereof. One difference between legal insurance and liability insurance is that the legal insurance includes counseling and can also be active – e.g. when the insured sues somebody else. Damages refer to an incident or accident (Vorfall, Störfall) and not to damage that takes place over a longer period of time. Naturally there are exclusions: war, terror, crisis, nuclear events, etc. The general provisions also stipulate who is insured and when and where (not in the US, for example), mention when the insurance coverage begins and whether there is a waiting period; they also discuss the obligations of the policyholder.

The special provisions can apply to motor vehicle legal protection; labor court legal protection (Arbeitsgerichts-Rechtsschutz), including protection if the policyholder’s employer goes bankrupt, a module for legal protection vis-à-vis the social insurance companies (Sozialversicherungs-Rechtsschutz), consultancy legal protection (Beratungs-Rechtsschutz) which allows the policyholder to consult a lawyer up to once a month [1], and there is even
contract protection (*Vertrags-Rechtsschutz*), covering repair and maintenance contracts, for example. Legal protection is also available for landlords, inheritance and family law (this covers paternity cases, as the father is required to pay child support until the child is 18).

### 3.3 Insurance for companies

A company can buy any of the insurance types already discussed. But businesses also have other needs. For them, there is all-risk insurance with policies that cover strikes, malicious damage etc., also technical insurance and transport insurance.

#### 3.3.1 Business operations liability coverage (*Betriebshaftpflichtversicherung*)

Insurance for a business premises or product can cover the specific needs of the business: e.g. feeder lines and storage areas belonging to the railway (*Anschlussbahnen und gemietete bahneigene Lagerplätze*); construction companies will have their own specifics, as do farms, tourism operations, doctors, nursing homes, translators… Normally, this does not include transportation of the product because that is in a separate package.

#### 3.3.2 Transport insurance

This covers damages that happen during the transport of goods. It can be either a complete coverage (*Kaskoversicherung*) or partial coverage for specifically named risks, such as a shipwreck, a train or plane crash, fire, earthquake etc.

#### 3.3.3 Technical insurance

This refers to insurance coverage for machines, computers, frozen food etc. In each case it is necessary to list all the specific factors that are covered – and think about what is not covered (generally war, terror, situations that existed before the policy was signed, willful damage, explosions…). These days, it is important for companies to also have insurance against losses from natural disasters.

Compensation (*Entschädigung*) depends on the policy, but generally the insurance company will pay for the replacement of whatever was insured (in the case of computer data, the cost of recreating the data).

Business interruption insurance (*Betriebsunterbrechungs-Versicherung*) is a kind of asset insurance. Often the property insurance covers the damage to the equipment etc. but this may be only a fraction of the real damage a business can suffer through loss of business. To cover this, they need a separate business interruption insurance which will also specify what it includes (machinery? fire?, in the case of a sole proprietor maybe serious illness? – in any case, it does NOT cover the company closing down to take the staff to the Bahamas for a month).

Commercial credit insurance (*Kreditversicherung* or *Delkredereversicherung*) insures the business (creditor) against a loss of receivables. If a company makes hats their credit insurance will cover their losses if one of their customers (e.g. a department store) takes their hats to sell them but goes bankrupt before paying for the hats. It is as if the hat maker gave the department store a loan of hats. In today’s global world they might also want to take out export credit insurance to cover the case that one of their customers abroad goes bankrupt.
3.4 Reinsurance
There is another type of insurance that I will not discuss in detail here, but I want to mention it just to be complete. The concept of insurance is to manage the risk - and insurance companies also have risk to manage, of course. When the company sells a policy they count on receiving revenue from the premiums over the life of the contract. However, the possible damage may be greater than the “gross premiums written” (verrechnete Bruttoprämi en) so the company purchases reinsurance to protect them and deducts the cost of the reinsurance premiums (and agents’ commissions) from the gross premiums to arrive at net premiums written. This and net premiums earned (abgegrenzte Prämien) are also important concepts in their financial reports and a sign of how strong an insurance company is.

4. Bibliography
Bundeskanzleramt: www.ris.bka.gv.at


Finanzmarktaufsicht (FMA):
www.fma.gv.at/en/companies/the-austrian-pensionskassen-system.html,
www.fma.gv.at/en/legal-framework/legalfoundation/supervisory-laws.html,
FMA “Useful information about life assurance”:
www.fma.gv.at/typo3conf/ext/dam_download/secure.php?u=0&file=2526&t=1407866253&hash=bc786e09c57d1a2fddff732f7f947fdd
Sozialministerium: www.sozialministerium.at/siteEN/_Social_Affairs/Pensions_and_Retirement,

Trend Magazine ranking: www.trendtop500.at/versicherungen

Versicherungsverband Österreich (VVÖ):
Allgemeine Österreichische Transportversicherungs-Bedingungen (AÖTB 2011)
Allgemeine Bedingungen für die Rechtsschutz-Versicherung (ARB 2014)
Allgemeine Bedingungen für die Kraftfahrzeug-Haftpflichtversicherung (AKHB 2012/1)
Allgemeine Bedingungen für die Kraftfahrzeug-Kaskoversicherung (AKKB 2012)
Allgemeine Bedingungen für die Fahrzeuginsassen-Unfallversicherung (AFIUB 2012).
Allgemeine und Ergänzende Bedingungen für die Haftpflichtversicherung, AHVB und EHVB 2012, Musterbedingungen des Verbandes der Versicherungsunternehmen Österreichs
Allgemeinen Bedingungen für Haushaltversicherung (ABH 2001).
http://www.vvo.at/vertragsarten-lebensversicherung-3.html
References

2 The Austrian Insurance Association does not provide much information on health insurance, probably because there is a mandatory public insurance. I have based this section on the translations I have done for Unica.
3 This information is based on the Allgemeinen Bedingungen für die Unfallversicherung AUVB 2008 (Version 01/2013).
4 In the UK, life insurance is often also called life assurance. By some definitions there are also differences between the two! For some, “insurance” is any coverage that determines benefits based on actual losses (i.e. death). Life assurance, on the other hand, is the provision of coverage for an event that is certain to happen. Its coverage has predetermined benefits irrespective of the losses incurred (e.g. term insurance for €20,000 that runs over 10 years http://en.wikipedia.org/wiki/Life_insurance#Insurance_vs_assurance
9 FMA Austrian Financial Market Authority: “Information about pension companies system” downloaded.
10 FMA “Useful information about life assurance” accessed 8/23/2014 http://www.fma.gv.at/typo3conf/ext/dam_download/secure.php?u=0&file=2526&t=1407866253 &hash=bc786e09c57d1a2fddf732f7f947fd8
11 The following info is based on Ennsfellner, p. 54f and on a description on the website of the Austrian Insurance Association (VVO).
12 There are many ways to translate this into English. The Austrian Insurance Association also talks of “insurance against loss or damage” and “non-life insurance.”
13 This is the translation used by Wiener Städtische and Uniqa. The following insurance types are described in the Allgemeinen Bedingungen für Haushaltversicherung (ABH 2001), downloaded from the Austrian Insurance Association to give a general idea of what is usually in an average household insurance package.
14 Contents insurance usually covers the replacement value; motor vehicle insurance most frequently covers the market value. In the case of money, the nominal value (Nennwert) is replaced, i.e. the amount on the face of the bill, in the case of art or antiques the market value is usually covered.
15 This is the term used by Allianz.
16 This applies to Wiener Städtische for example.
17 Source: This discussion of liability insurance is based on the Allgemeine und Ergänzende Bedingungen für die Haftpflichtversicherung, AHVB und EHVB 2012, Musterbedingungen des Verbandes der Versicherungsunternehmen Österreichs.
There are a few exceptions to this rule such as public transport and the military.

This is one of those tricky words – it’s called an excess in British English, i.e. what is left over after the insurance company pays.

Ennsfellner, p 121.

Allgemeine Bedingungen für die Rechtsschutz-Versicherung (ARB 2014) published by the Österreichische Versicherungsverband.

ARB, pages 17-43.

Based on VVÖ Allgemeine Österreichische Transportversicherungs-Bedingungen (AÖTB 2011).
EXPERT MARKETING: HOW TO POSITION YOURSELF AS A SPECIALIST

Marta Stelmaszak
WantWords

Abstract: With increasing interest in business and marketing, more and more colleagues get to the point where their businesses are profitable, they don’t struggle with low rates or bothersome clients and they can comfortably call themselves “established”. In this talk, the presenter looks at what’s beyond being established and how to move to positioning a business at the expert level, with all rewards that come from it. A few high-profile expert careers in various domains will be reverse-engineered to examine what led to this status.

Apart from more theoretical concepts on expert marketing, this presentation will cover marketing tools that can be put in practice straight away, including improvements to brochures, websites or marketing strategies.

1. INTRODUCTION TO EXPERT POSITIONING

The current landscape of employment is undoubtedly changing. A report on future working published in late 2013, quoting professor Leo Witvliet, from Business University in the Netherlands, sums up the current situation of employment: “traditional hierarchical organisations are struggling, people are increasingly rejecting traditional employment (…), new ways of working are emerging” (Leighton, 2013). Since the beginning of the recession, Europe has seen a loss of seven million jobs across the EU, leading to higher than ever unemployment levels across member states, and figures are even more staggering in the US; yet, according to researchers, one part of the labour market has reversed the trend: freelancers (ibid.).

These changes lead both to opportunities and raise concerns. The fear of transformations in the workforce and structure of employment is not new: the concern has been raised with the industrial revolution a century ago (Brynjolfsson, McAfee, 2011). The machines and advancing automation were accused of taking up jobs and leading to unemployment (ibid.). Yet machines substituting manual labour actually enabled human capital to concentrate on knowledge work (ibid.).

The digital revolution is now raising similar concerns, being accused of creating a “near-workless world” (Rifkin, 1995), “a new division of labour” (Levy, Murnane, 2004) or a “jobless economy” (Brynjolfsson, McAfee, 2011). A number of researchers are studying the effects of the digital revolution on the labour market and, despite a range between utopian to dystopian prognosis, their predictions seem to converge in one point: the future of work will increasingly rely on specialised, knowledge-intensive itinerant work (e.g. Holltgewe, 2014, Leighton, 2013, Frey, Osborne, 2013, Malone, 2011, Gratton, 2010).

In other words, and to quote Gratton (2010) in particular: “I believe that in the future the means by which individual value is created will shift from having generalist ability to having specialist ability and achieving serial mastery. Why? Because if you remain a generalist, there are thousands, perhaps even millions, of people who can do the same work as you do – yet faster,
cheaper and perhaps even better. In the future, you will have to differentiate yourself from the crowd, build depth and (…) shift from the age of mechanisation to the age of mastery” (p. 18).

This is where expert positioning steps in and where the whole notion of how work is going to look like in the future relates to the translation industry. Perhaps even more than other professions, still deeply rooted in more traditional forms of employment, the translation industry is exposed to these trends. Due to the fact that as a profession, we have already seen the value of specialisation, we are naturally more inclined to follow this call for mastery.

Expert positioning is a very practical, market-oriented strategy to benefit from the trends shaping the future of work. First, let us look at the definition. An expert is someone who has a defined set of skills and experience, who is recognised as a leader in the industry, engages in problem-solving and devotes time to share experience and build trust. Positioning means that others instantly recognise a person as the expert and authority in their field.

According to another practitioner working in the practical field of expert positioning, EXPERT stands for Experience, Xpertise, Passion, Excellence, Recognition and Transferability (Storm, 2003). An experienced expert showcases real-world experience in the subject or field, shows personal involvement in the trends, nuances, successes, and failures within the field – a translator in here would be characterised not only by practical experience in translation, but also dedication to the profession and awareness of its strong and weak points. Xpertise relates to the knowledge of historical and current models and theories within the area of expertise (therefore a solid, theoretical background in translation and the area of specialisation is required), as well as to exhibiting original thought and contributions within the subject (some translators strive to achieve that through writing articles, blogging, or presenting at conferences).

Passion, on the other hand, stands for enthusiasm and love of the subject, as well as showing energy and attitude that intrigues and compels (quite the opposite of negative attitudes translators sometimes show when talking to potential clients, complaining about rates or payment terms). Excellence, of course, means dedication to expanding the body of knowledge in the field, as well as commitment to personal intellectual growth and lifelong learning (often met by translators through continuing development). Recognition is an important and often undervalued element of building an expert profile. Recognition means that clients, customers, and peers give public recognition to one’s skills and expertise, and it can often take the form of written or published work within the field.

Finally an expert, according to Storm, shows transferability of ideas, concepts and theories to others, and shares practical useful tools and techniques propelling further progress, education and growth.

Another perspective to look at experts underlines the importance of vocation, from Latin vocare, meaning a call, which implies practicing work that best fulfils dreams and uses unique talents, through which an individual realises himself/herself but also best serves clients.

The reasons why professionals in knowledge-intensive industries may want to consider expert positioning are many. Undoubtedly, being an expert results in standing out in a crowded market, becoming the go-to person, the obvious choice in the industry. It also leads to a situation in which an expert becomes the reward, so he/she does not have to chase clients, but it is the other
way round. Experts also receive considerably more media attention which can be used for example for marketing. In this situation, many experts find they can deliver better results because their expertise is respected, listened to and used. Of course, experts also can charge higher fees, and often suggest higher satisfaction and fulfilment from being one of the best professionals in their job.

2. **BECOMING THE EXPERT**

The first step in expert positioning is actually becoming the expert in a given language combination and area of specialisation. Mastering the topic, the subject matter, almost to the same extent as field-related practitioners do, is essential. Real mastery is achieved through constant learning, development and engaging with the subject.

1) **Market research**

However, equally important is researching the niche, in other words the particular segment of the market where expert’s unique skills meet client’s requirements. The main areas where we need to ask ourselves questions are as follows. Customers: who may be interested in your translation services? How many of these customers exist? What particular needs are you meeting? Competitors: who is providing similar services? What are their strengths and weaknesses? Service: how can you tailor your services to meet customer needs and have an edge? This also includes your areas of specialisation, but also qualifications and professional organisations. Price: what price represents value for money for your clients? What price would encourage loyalty and referrals? Advertising and promotion: where are you going to find your customers to advertise to them? What makes your customers buy? Channels of distribution: how are you going to reach to your customers to deliver your service? Location: how can you benefit the most from your location?

Doing market research will help you with:

- Identifying potential customers: Who may need your services? Where to find these people? How to convince them to buy translations from you?

- Understanding your existing customers: Why do they choose you over other translators? What do they value?

- Setting realistic targets: Based on the collected data, you’ll be able to set realistic targets for your freelance business.

- Developing business strategies: You’ll be better suited to price your services, to decide which channels to use to sell them, or whether you need to specialise or diversify.

- Examining and solving business problems: By researching your market, you’ll have a clearer view on why you’re always getting less assignments on a given month or why a certain customer stopped using your services.

- Identifying opportunities: In the course of researching your market, you may discover a lucrative niche or an under-saturated area that you did not know about before.
• Analysing competition: You’ll be able to see what other freelancers are engaging in.

**Step one: determine the scope of your research**

When we start conducting market research, it’s very easy to become overwhelmed with the wealth of resources and simply start feeling lost rather than in the know. The first step to market research is to define your own objectives, i.e. what do you want to find out? I suggest brainstorming some market research questions and writing them down on a piece of paper. This may include anything you’d like to know about your industry, areas of specialisation, clients, competition, etc. When all the questions are written down, group them under similar headlines.

**Step two: gather existing information**

Once you’ve determined what you want to find out, start by digging and discovering existing market information. When researching, you’ll surely come across paid-for secondary resources, either about our own industry (such as market reports or surveys) or about your fields of specialisation. Paid-for resources may be a good investment, but often are more expensive than a freelancer can afford. However, the majority of market reports start with executive summaries, often available for free.

**Step three: your own research**

The third step in conducting your market research is looking at primary market research resources, in other words market research that you gather yourself from people. Primary market research is usually associated with costly telephone or in-person interviews or even focus groups, but you don’t necessarily have to spend thousands on it.

One of the ways of conducting your own primary research is running surveys among your existing or potential clients. If you conduct a survey among your existing clients, you’ll surely gain eye-opening insights, while asking the right questions to your potential clients can help you understand their needs better. Mystery shopping is another way of doing your own research. The idea is to shop around for quotes for translation services to assess what others are charging, how they are selling their services, or how their customer service is like. While sometimes debatable or questionable, this exercise will surely help you benchmark your offer against others, especially agencies. This may be a real eye-opener. As a freelancer, you can also invest a bit of time and money into organising a focus group. It’s just a matter of getting people who could be your potential clients together and ask the right questions. In a focus group, you also get to listen to the language your potential clients use and the way they behave. There are many advantages to that!

Observing people and asking questions on LinkedIn groups related to your areas of expertise is a cost-effective half-measure when you can’t run a survey or set up a focus group.

**Step four: action!**

Insight without action doesn’t do much difference, so after you’ve gathered your business intelligence, it’s time to turn information into action. The best way to go about taking action is to go back to the questions you’ve asked in step one and answer them based on the data you found. These answers will help you determine your SMART objectives and goals. SMART stands for
goals which are Specific, Measurable, Attainable, Realistic and Time-bound. In other words, each market research question that you asked should be followed by a SMART goal that will change or improve the way you run your own business.

2) Strategy

You surely are familiar with the concept of business strategy, yet I would like to look at the plethora of definitions and analyse what strategy is, what it is supposed to do and what it consists of. In very broad terms, strategy is a method or plan to make the desired future happen. In business, it would mean a plan to use the resources available to realise goals and ambitions of a company. Some attempts at defining strategy include “a pattern in a stream of decisions” (H. Mintzberg), “shaping the future” (M. McKeown) or “a system of finding, formulating, and developing a doctrine that will ensure long-term success if followed faithfully“ (V. Kvint).

More comprehensive definitions, such as one by Johnson and Scholes in their Exploring Corporate Strategy, include a range of elements needed to formulate a strategy: “strategy is the direction and scope of an organisation over the long-term, which achieves advantage for the organisation through its configuration of resources within a challenging environment, to meet the needs of markets and to fulfil stakeholder expectations.” This definition of strategy points us to some important elements. Direction tells you where the business is trying to get to in the long run, scope helps to define which markets should a business compete in and what are the activities involved, advantage refers to the attempt to perform some elements better than other market players, resources help us to look at what is needed to be able to exist in the market, environment forces a business owner to analyse the external factors affecting the business, while a stakeholder analysis points us to understanding the values and expectations of those that have impact on our business.

Strategic thinking is important because it helps us understand our businesses and the industry in which we operate. Having a strategy allows you to create a direction for the development of your business and enables you to grow in a changing world. A strategic approach to your business also helps you create and refine your strategic advantage, i.e. a particular characteristic that makes you more successful in catering to your segment of clients.

We tend to think that only big businesses need strategies, but nothing further from the truth. Freelancers need to have a direction, know their scope, advantage, resources, environment and stakeholders to make sure that their businesses grow.

Formulation

The first step in creating a strategy for your business will involve formulating your own strategy. It always involves analysing your own company first, and then the environment in which you operate. Then you have to explore the opportunities arising from your key strengths and resources in comparison with the environment to formulate the direction of your business. Finally, you need to put together a vision of how you are going to explore these opportunities.

A good start to formulating your strategy is trying to answer the following questions.

<table>
<thead>
<tr>
<th>Direction: Where are you trying to get to in the long term with your business?</th>
</tr>
</thead>
</table>
Scope: Which part of the market should you concentrate on and which activities are involved?

Advantage: What skills or resources can you use to offer clients in this segment a better service?

Resources: What resources do you need to move into this direction?

Environment: What external factors affect your business?

Stakeholders: What are the values and expectations of groups that have impact on your business?

**Implementation**

Strategy implementation is the process of putting strategy into action through developing projects, plans and actions to achieve your aims. Some of the most straight-forward strategy implementation approaches suggest addressing the who, where, when and how when comes to reaching your objectives. To implement your strategy, you will need a plan. This is what you should be thinking about when developing one:

1. **Goals and objectives:** what are you trying to achieve? How are you going to benefit from it?
2. **Problem analysis:** how is your current situation different from the desired one?
3. **Identification of priority areas:** what requires your urgent attention?
4. **Deliverables:** what activities and tasks need to be done?
5. **Schedule:** when are you going to do that?

Your plan does not have to be a very formal one, but do write it down.

**Evaluation**

Finally, every strategy needs an element of evaluation to measure whether you managed to achieve your strategic goals. First, perform strategy evaluation, i.e. measure whether your objectives are appropriate and whether the tasks you devised to meet these objectives are effective; pay particular attention to whether the goals and tactics you are using are consistent, whether your strategy responds to changes in the environment, whether it brings you closer to achieve a competitive advantage and if its delivery is possible with the resources you have.

Second, you need to evaluate your performance. This can be measured through economic profitability (do you have higher returns? Do you make more money?), accounting measures (e.g. Return on Sales, meaning how much profit you gain per each pound brought into your company) or market measures (e.g. whether you are working more or whether your market share has increased).

There are a range of models that can help you formulate a strategy for your expert positioning.
Michael Porter, one of the biggest strategy scholars and professors, has been providing business people with generic strategies and main concepts for over 30 years now. In his thinking, Porter looked at businesses of various sizes and operating in a range of industries. Even if he probably never considered freelancers in the formulation of strategy frameworks, many of his ideas apply on this ground, too.

Porter’s *generic strategies framework* is a good introduction to strategy thinking because it’s broad and – nomen omen – generic (what the author is often criticised for). Through his research and the analysis of real-life companies, Porter concluded that companies have to pursue one of the following three strategies: cost leadership, differentiation or focus, or else they risk being “stuck in the middle” and struggle.

As the following two by two matrix shows, the choice of a generic competitive strategy depends on strategic advantage and strategic target. A company’s chosen strategic advantage can either be based on low prices and being cheap or on the fact that its clients perceive the company itself or its products as unique. Strategic target defines who the target customer group is for the company: is it the whole industry, or just a narrow segment.

Cost leadership as a competitive strategy by which a company concentrates on offering low prices to price-sensitive and cost-conscious customers through keeping its costs to a minimum. To have an advantage over competition, a cost leader must offer the lowest prices in a given segment. This strategy very often proves viable when companies are big enough to benefit from the economies of scale, produce a lot and have a big market share. Smaller companies can focus on lowering prices if they can drive costs down.

Keeping costs to minimum, an essential element of this strategy, can be achieved through a high asset turnover (think low-fare airlines turning flights around very quickly or a chocolate factory producing a lot of cheap chocolate), low operating costs (by increasing standardisation of products, no customisation or personalisation, paying low wages to staff and locating offices in low-cost economies) or taking control over the whole value chain (discussed in section 9, means bulk-buying, pushing prices down with suppliers, etc.).

Apart from cost consideration, companies pursuing cost leadership strategy often face no customer loyalty because they’re targeting clients who’ll easily turn away and go to a cheaper provider.

Differentiation is all about delivering products that are perceived as valuable and different to clients who are not price-sensitive, have specific needs and the way to satisfy these needs is difficult to copy by other companies. The goal of this strategy is to come up with a product or service that will be sought after for a premium price, increased revenue per unit or customer loyalty. Differentiation can be achieved through an offering that is genuinely different from competitors’, or through clever branding and marketing of a product very similar to what’s already on the market.

In this approach, high volume is not the objective, but companies strive to achieve as high a margin on their offering as possible.

Differentiation is a costly strategy, as it often involves Intellectual Property, patents, research and development and high up-front investments. Finding the right attributes to use in differentiation
can also pose problems, as different customer segments value different attributes which need to be identified and incorporated into the offering. And on top, differentiating companies have to face continuing efforts of competitors to duplicate differentiation.

Focus strategy is based on serving the needs of a narrow segment or niche of the market through thorough understanding of the unique needs of customers. Focus implies added value that customers receive through the application of industry-specific knowledge. It’s particularly effective in industries less open to substitute products.

This strategy is based on extensive knowledge of a niche market which apart from developing right products or services, helps in designing the most appropriate marketing mix, therefore leading to a bigger marketing success.

Products and services offered within the focus strategy tend to serve their customers very well, resulting in strong customer loyalty and keeping competition away.

Focus as a strategy is challenging because it requires intimate knowledge about a niche or segment. Quite often just focusing isn’t enough and companies have to decide whether to pursue cost focus or differentiation focus.

Stuck in the middle is a scenario in which by mixing all strategies or not actively pursuing any of them, a company finds itself losing with competitors and, ultimately, being forced out of the market.

With this short introduction to three broad strategy choices, we’re ready to take a look at how they apply to the industry we work in.

**Cost leadership**

For a freelancer, pursuing the cost leadership strategy is a bad idea. If you decided to offer translation services on a low-cost basis, you’ll have to have high production levels, in other words translating very, very many words for very little. It would still keep you afloat, but you’d be barely surviving. This is because as a sole trader (or even a small company), you can’t benefit from economies of scale: you can only work a limited number of hours and it’s all the work of your hands. It’s also virtually impossible to lower your costs even further, as you’re not having high costs (e.g. not renting an office or having high overheads). Within this strategy, you’d always have to offer the lowest rates, and whenever somebody else tried to offer less, you’d have to go even lower. Plus, it would be very difficult for you to take control of the whole value chain.

Moreover, your customers would be cost-conscious and not loyal to you at all, simply switching to a cheaper translator at a first opportunity.

Of course, you should steer away from cost leadership. It’s simply not a viable strategy for you to survive as a freelance translator, and chances of success for a small business with this strategy are still very slim.

For translation agencies, cost leadership seems to be a cheap and easy option. There are many agencies in the industry following the low-margin, high-volume approach, every now and then trying to push it onto translators, too through volume discounts. A typical cost leader in the
translation industry would advertise their services as “affordable translation services” or “lowest price guarantee” and go after end customers who want to spend as little as possible on their translation projects. Sadly for them, whenever any new competitor pursuing the same strategy pops up, their customers will simply walk away. Cost leaders really need high volumes to survive, therefore they often consolidate and merge, forming bigger and bigger LSPs. They also often try to cut their own costs down by opening offices in cheaper locations or outsourcing parts of operations. Taking control over the whole value chain is what some of them are really good at, for example through forcing low prices on suppliers (translators).

Some translation agencies are successful using this approach and do generate enough profit to keep their owners happy. This is how the market works and there’ll always be cost leaders in any industry, as there always be price-sensitive clients. It doesn’t mean that this bulk market will expand, dominate or overshadow other segments.

**Differentiation**

Freelancers often differentiate because they have the resources and capabilities to do so. Because translation is a matter of individual talent, style and taste, you’re by default providing a service that’s different from what another translator is putting out there. Your knowledge, experience and skill form a service that is (or could be presented as) unique. All that it takes is to work on your Unique Selling Proposition. The only problem is that freelance translators often disregard the specific needs of their potential premium clients, foregoing market research and the analysis of what customers actually value and desire. Differentiation will only be successful, if your services (or their branding) actually match the premium demand. This strategy allows you to work less but with a higher margin, so you have to charge more.

It is a time-consuming strategy because it requires you to research the market, segment customers and work out their needs and values. And you’ll also see many other translators trying to imitate what you’ve done. Nothing personal, that’s how the market works. Yet still, differentiation is a strategy that can take your business far.

Translation agencies pursuing the differentiation strategy are usually good to work with, as they’re not price-driven. They usually have good, professional websites and marketing and take pride in their work, playing the card of value. Most of the time they know what they’re doing and they get interesting clients on board. These clients are likely to find you through recommendations and value the work you’re providing.

The challenge lies in the fact that it’s difficult to offer translation services that are genuinely different from what other companies are doing. Because translation itself is delegated to freelance translators (who often may work for several differentiating translation companies), agencies could try to genuinely differentiate through their processes, for example by interviewing new translators or introducing a proprietary 5-step quality assurance process.

**Focus strategy**

Focusing freelancers are most often those who have highly-specialised knowledge and expertise in a specific topic, often obtained in previous careers or through extensive study. They’re also the ones who are most likely to command highest fees because their skills are so rare. While focusing, you’re setting out to target a narrow segment of clients, for example cloud-based
storage providers rather than IT companies in general. In this scenario, the added value you’re providing lies in deep understanding of how the technology works, but also your awareness of the issues of confidentiality and reliability of such systems which can’t be lost in translation. Focusing goes a step further than specialisation in translation.

The main challenge is of course possessing this highly-specialised knowledge which, unlike with differentiation, can’t be just perceived because your customers will quickly find out. But if you do have what it takes, you’re more likely to prepare marketing collateral for your translation services that would actually attract premium direct clients in your chosen niche.

Focusing translation agencies often specialise in just one area, for example medical or legal translation and know the value of specialist knowledge of their translators. To work for them, you’re often required to specialise much more than just medical translation, but actually show knowledge and expertise in a very narrow area of the medical domain. Focusing legal translation agencies are likely to work with lawyer-linguists and match their specific skills with high-profile legal cases.

They also know where and how to attract the best paying clients, which often involves extensive networking and involvement with the client industry.

**Stuck in the middle**

Sadly, many freelance translators are stuck in the middle, too concerned to move in one, specific direction, fearing the consequences of a potentially bad decision. This group includes somewhat specialised translators who are charging “average” rates and often drift through their careers, rather than steering them. Caught in relatively low paying segment of the market, they don’t have enough time to learn and further their specialisations, therefore they’re forced to stay where they are. It’s impossible to survive in the long term, not to mention growing, if you’re stuck in the middle.

This applies to translation agencies, too, and it’s perhaps worse news for them. Stuck in the middle agencies will be quickly forced out of business either by cost leaders or premium agencies.

The concept of **core competence** can be defined as a combination of resources and skills that distinguishes an entity in the marketplace and its formulation dates back to 1990. Through a specific set of skills and expertise, companies are able to deliver added value to customers, therefore enabling market growth. In line with this idea, businesses should concentrate on what they’re doing best and outsource everything else to other companies who, in turn, are doing these things best. This allows for the best use and allocation of resources.

To understand core competencies, we have to start by acknowledging that every business needs to offer something unique that customers want. Companies able to offer something good and unique attract clients. The challenge in this situation lies in finding uniqueness, which later forms a Unique Selling Proposition.

The idea behind competitive strategies, core competencies and strategy in general lies in the need to obtain a **competitive advantage**, i.e. the advantage gained over competitors through offering
greater value. There’s also a more quantitative approach to it by which a company possesses competitive advantage if its profits exceed the average for its industry.

Apart from core competencies, competitive advantage can result from product or service benefits, location, procedures, price, guarantees, brand recognition, goodwill, value-added services, customer experience, quality, etc.

It is generally recommended to evaluate competitive advantage of each firm through the evaluation or resources (what is already available or could be developed), clarification of goals (what the company seeks to accomplish), definition of customers (what the customers want and cannot get from competitors), and examination of competitors (who and how is already serving the market).

Another perspective on achieving competitive advantage comes from the resource-based view (RBV) which argues that advantage lies primarily in the application of valuable company resources. Resources in this context should be understood both as resources sensu stricte (tradable, non-specific to the firm) and capacities (specific to a company, non-transferable).

Tangible resources mean the physical things, such as land, buildings, machinery, equipment. They can be bought easily by other companies, therefore they do not provide a large scope for competitive advantage. Intangible resources include everything that does not have a physical presence but still represents value, such as brand, trademarks or intellectual property. These are built over time and are very company-specific, therefore in the long run they become sources of sustainable competitive advantage.

RBV argues that if resources or capabilities meet the VRIO requirements, a company can use them as a source of competitive advantage.

VRIO criteria stand for:

- **Valuable**: a resource must be valuable and allow a company to execute its value-creating strategy.
- **Rare**: a resource must be rare by definition, therefore difficult to obtain by competitors.
- **In-imitable**: a resource cannot be easy to imitate by other companies.
- **Organisation**: a company has to be well-suited to be able to explore the value of a given resource to the full.

For a freelance translator, RBV is yet another approach to help you identify your Unique Selling Proposition. It helps you look at what you have in terms of skills and assets and then by answering the VRIO questions, you can arrive at identifying what may be the source of your competitive advantage.

VRIO criteria for a translator stand for:

- **Valuable**: the skill you have must be valuable and indispensable in your value-creating strategy. Your clients must perceive it as of value.
- **Rare**: your skill has to be rare by definition, so you can’t base your VRIO on just translation skills.
- In-imitable: the skill must be difficult to imitate by others, so infused with your personal attributes.
- Organisation: the way your business is structured must be able to support the skill that you are planning to use as your competitive advantage.

VRIO is also important when comes to pointing out what is not a source of a sustained competitive advantage. For example, even the greatest website with the best logo won’t be a VRIO asset because while it may be rare in the translation industry, it is not in-imitable.

3. CUSTOMER SEGMENTATION

Though rooted in marketing approaches, customer segmentation is now perceived as one of the main elements of devising a strategy for every business. It involves dividing the whole target market into smaller sets of customers who share the same needs, values and priorities. This division enables developing products and services that match customers and further, segmentation leads to developing more effective marketing campaigns.

Some of the most basic segmentation methods include geographic (nations, states, languages, cities or postcodes), demographic (age, gender, income, family lifecycle), behavioural (how they behave towards a product or service) and psychographic (lifestyle, activities, interests, opinions) segmentation.

In a business-to-business (B2B) segment, clients could be divided by what they do: industry, sector, public or private, size, location; how they operate; their buying patterns: how they order, order size and frequency; how they behave, including loyalty and attitude to risk.

Business-to-consumer (B2C) market could be segmented according to customer location (towns, regions, countries), profiles (age, gender, income, occupation, education), attitudes and lifestyles, as well as buying patterns (usage, loyalty and benefits sought).

Market segments should be possible to measure and quantify, mostly to ensure they are large enough to bring profit. Segments also have to be within reach using a variety of promotion and distribution channels. To ensure consistency, segments have to be internally homogenous, i.e. customers within one segment should show preference towards the same product and service qualities. Conversely, customers from different segments should have different preferences. And of course, segments should help a company decide on the right marketing mix.

But how all this can help us in selling translation and marketing our services?

Increased effectiveness

We all have limited resources and budgets for marketing. With customer segmentation, you can make sure that the money and time you invest is well spent and reaches the right people. Knowing the distinct segments that your potential customers belong to helps you create a more targeted message corresponding with their needs and values.
**Increased profitability**

We often struggle with increasing our rates. Many of our colleagues fear that a flat increase may leave them out of work for some time, before they find better paying clients. Customer segmentation helps you separate clients with higher price inelasticity (meaning likely to pay more if you ask for more) from clients who won’t accept your increase.

**Business development**

Segmenting customers is very helpful when comes to prospecting and growing your customer base. It’s so much easier to concentrate on developing just one, well-defined segment, rather than just trying to “find more clients”. Clearly defined groups will also help you identify who’s also competing for their attention.

**Brand development**

By segmenting your clients and discovering their needs you’re much more likely to develop a brand that resonates with them.

But how should we actually segment our markets?

1) **Identifying real segments**

Customer segmentation is not about creating segments, but about finding the needs and values that certain customer share that make them different from each other. This is why customer segmentation starts with thorough market research to first identify these needs and values for all of your existing or potential customers. Then it’s much easier to say lawyers value reputation, while business owners value quick delivery, and put them into two distinct segments. However you decide to divide up your prospects, make sure that all segments are homogenous and different, measurable, accessible, substantial and viable. In other words, creating a segment for Polish poetry readers may be doable, but not necessarily measurable or viable for my business.

2) **Setting an objective**

Segmentation is just a tool to help you achieve your objectives, therefore it’s paramount to establish clear goals you want to achieve with each segment. For example, in my business segment, I may want to gain more high profit customers, while in the legal translation sector I may want to boost customer retention (so make sure they keep coming back for more).

3) **Analysing the situation**

Then, it’s important to identify your current position, capabilities, and constraints. I may have identified a great segment in astrophysics translation from German to Polish, but I neither speak the language nor understand much of astrophysics. This is just an extreme example, but you’re bound to find customer or prospect segments where you’re more likely to fit in well, and those where it would require you to overcome many obstacles and constraints. To maximise the benefits from segmentation, concentrate on aligning your situation with the segments you’ve identified. You should also compile a list of marketing tools available.
4) Segment profiling

If you’ve ever been to any of my talks or done my School course, you’ve heard me talk about Ideal Customer Avatars (and yes, there’s a month coming up on this topic, too). The main idea here is that each of your segments should have a profile of an ideal (representative) customer, outlining demographical and behavioural elements.

5) Selecting segments to target

As I said in point 2, you need to have clear objectives and match them with segments. The key part in here is to select segments to target in some sort of an order, so that you don’t just try to target everybody at the same time. Look at your objectives against feasibility and start with segments where all actions are more likely to bring the desired return.

6) Developing a marketing strategy

The beauty of segmentation is that it gives you a clear idea of how to target each segment most effectively. By the time you get to point 6, you’ve learned so much about your potential clients that you simply know what works with them, where to find them and how to market your services to them, in each segment separately, one at a time. Knowing who to target, you can select the right tools and fire away.

4. POSITIONING YOURSELF AS THE EXPERT

While the topic of niches, strategies and customer segmentation has already been covered, it is now time to discuss what the foundations of expert positioning are. Through extensive analysis of literature and practice in this topic, it can be concluded that the following elements make up an expert position: identity, authority and expert hub.

Expert identity is related to the professional story that explains how the expert managed to get where they are now. Potential customers want to know the background, want to know the struggle and the recipe for success. The second step for experts is to create a signature solution, in other words a service that is only attributable to them, an approach to solving problems, a scheme of work if you like. Creating a branded structure also helps experts clarify their way of thinking, strengthening systems and setting apart from the industry.

Authority means that an expert can raise trust in their potential clients within seconds, e.g. when browsing their website or during a meeting. While it is a lengthy process, building authority can be achieved through joining field-related organisations, referencing experts and their work, or preparing case studies.

Finally, an expert hub, in other words a focal point of all marketing efforts. Nowadays, online hubs dominate, but it is important to remember that a hub is much more than just a website. It must contain original content, give-aways underlining expertise and interactive content.
5. PROMOTING YOURSELF AS THE EXPERT

Expert promotion requires the use of specific tools. Let us concentrate on how this can be achieved with translation agencies first.

The preliminary step is to communicate expert value to translation agencies. It is essential to define specialisms and communicate them to agencies already among the clients, but also when contacting new, potential agencies. Obtaining certifications and qualifications in the area of expertise also brings significant benefits when working with translation agencies, similarly to engaging in professional development not only in translation, but also in the specialist area. Developing a specialist portfolio with selected samples reflecting and showcasing value is a must.

Relations with translation agencies should be characterised by an unprecedented level of professionalism, including communicating to clients that the expert is busy, as well as keeping them updated on development, progress and new services.

Authority with translation agencies stems from showing and sharing profile updates, as well as speaking at industry events and informing agencies about that. Moreover, a good cover letter concentrating on what makes the expert stand out is a powerful tool to build authority.

Experts also show passion and this is equally relevant when comes to working with translation agencies. Sharing passion and thoughts about texts, articles or events is a good medium to communicate enthusiasm, but also builds a tighter bond.

Trust can be developed through gathering testimonials and contacting agencies by telephone or in person to build up trust.

When comes to working with direct clients, the principles are similar, yet even more important.

Value can be showcased through defining the area of expertise and taking the plunge, as well as training in the specialist area and joining specialist organisations. Reading the same journals and magazines as direct clients also increases the value of expert work.

The biggest struggle for me has always been to transform the inherent features of me and the services I offer into a range of benefits to my clients. But I’ve learned that there’s a hack to that. It’s called the “so what” or “and that means” exercise.

It’s quite simple. Take any feature of you or your services, say “I’ve never missed a deadline in my whole career as a Polish English translator”. Then look at it from the client’s perspective and ask yourself: “so what?” or continue this sentence with “and that means…. My “so what” in this example could be “you can have peace of mind because your translation will be delivered on time”. This is a better benefit for my client, but if you ask another round of “so what” questions, you’ll come up with an even better line: “because your translation will be delivered on time, it won’t unnecessarily delay your business goals.”

Following this “so what” warm-up, let’s look at the stages of moving from features to benefits. The first step is to outline the features of our services. These are the fundamental aspects and
characteristics of us as freelance translators or interpreters and the services we provide. If you
don’t have a list of features yet, I’d recommend jotting them down.

The second level is to look at the advantages that these features give you, i.e. what features do.
To give you an example, if I say that I’ve never missed a deadline (a feature), the advantage to
my client will be that they’ll get the translation on time without the hassle. Hardly a benefit, is it?

Level three is all about creating benefits, where we related the feature and advantage to the
client’s own situation or concern. According to some marketers, it’s fine to get a bit emotional
here (and by that I don’t mean crying or shouting, but appealing to emotions). To do that, we
have to know which emotions motivate our client’s choices. I, for that matter, know that my
business clients are obsessed with their business goals and delivering them on time, that’s why a
translation that doesn’t delay these goals has a benefit that appeals to them. If I wanted to be
even more emotional, I could say that with my Polish English translation delivered on time,
you’ll avoid the risk of failing to meet your quarterly business goals and having to explain the
problem to the board.

An aspect of particular importance when comes to relations is accepting the expert status and
creating an expert hub to refer clients to. Perhaps an essential element for an expert is to
associate with success: all past clients who have managed to obtain successful outcomes through
the use of translation or interpreting services, if showcased in case studies, will be more likely to
attract new clients, also looking for successful solutions. To build strong relationships with direct
clients, it is essential to talk to them, visit their events, join their organisations, present at their
trade fairs and write for them.

Authority with direct clients can be built through creating an expert story and strong identity, as
well as communicating knowledge through an expert hub.

Passion is best communicated through becoming involved and sharing facts and issues from the
translation industry with the client’s side, while trust can be best demonstrated through
testimonials.
ETHICS OF CULTURAL TRANSLATION: HOMI K. BHABHA, THIRD SPACE, AND FICTIONAL REPRESENTATIONS OF MEXICO CITY

Alice Whitmore
Monash University

Abstract: This session will examine the politics of cultural translation in relation to the dirty realist fiction of Mexican author Guillermo Fadanelli. Fadanelli’s writing is inseparable from the urban space of Mexico City, a setting brimming with tension, cultural mutation, heteroglossia and multiplicity. Drawing upon the theories of Homi K. Bhabha and Gayatri Spivak, the speaker will propose a distinct translation ethics that situates translation within an uneasy space across and between cultures, where anxiety gives way to production. Like Fadanelli’s fictional Mexico City, the hybrid site of translation not only represents otherness but itself engenders difference, innovation and newness.

1. INTRODUCTION

This session examines the work and potential translation of Mexican author Guillermo Fadanelli through the lens of ‘cultural translation.’ Born and bred in Mexico City, Guillermo Fadanelli studied briefly at the UNAM (National Autonomous University of Mexico) before co-founding the underground journal Moho in 1988. His first collection of short stories was published in 1992, and in 1995 he established his own publishing house, Editorial Moho, whose mission statement tellingly declares: “We are only interested in publishing books that don’t have a future” (Fadanelli 2012). To date, Fadanelli has published ten novels –the most recent of which was released in July of this year– as well as seven collections of short stories and a significant number of essays, crónicas and book reviews. While he began as a truly underground writer, exhibiting his work in small counter-cultural publications such as La Pus Moderna and La Regla Rota, he is now recognized as a popular proponent of ‘underground’ literature, publishing in national forums such as the Mexico City based newspaper El Universal and the prominent literary magazine Letras Libres.

Fadanelli’s fiction, widely celebrated among Mexican critics and readerships, is inseparable from the urban space of Mexico City: a setting brimming with tension, cultural mutation and heteroglossic dialogue. At once beguiling and repugnant, this ambivalent space is the site of a great unease; caught between traditions, it occasions the Frankensteinian genesis of new and ‘other’ cultures. Drawing upon the theories of Homi K. Bhabha, Néstor García Canclini and Gayatri Spivak, I propose to situate the act and concept of translation –both ‘cultural’ and literary– within a similar dynamic of multilayered and constantly re-articulated Otherness. Interlingual translation, itself a play of tensions and differences, takes place in an equally uneasy ‘third’ space across and between cultures, an interstice where anxiety gives way to production. I argue that, like Fadanelli’s Mexico City, the hybrid site of translation not only represents Otherness but itself engenders difference, multiplicity and newness.
Since its conception, the notion of cultural translation has been inextricable from the political and ethical realms of postmodern scholarship. As Harish Trivedi (2007) notes, the concept of cultural translation as it exists within the domain of postcolonial and postmodernist discourse has little to do with the conventional preoccupations of translation scholars; to borrow Trivedi’s words, this is “a beast of similar name but very different fur and fibre” (2007: 282). That said, discussions of interlingual literary translation can, and do, take place within the discursive framework of cultural translation. Just as translation scholarship has come to embrace a distinct postcolonial discourse of migration, displacement and hegemony, so the term ‘translation’ itself has experienced a conceptual shift towards a different field of meaning, bringing the term closer to the spatial metaphor of its etymological origins as a ‘carrying across’ while simultaneously extending it beyond the narrow realm of interlingual translation, or as Roman Jakobson put it, “translation proper” (1992: 145). After mapping some of these shifts across the discursive terrains of translation and cultural studies, I would like to examine the ways in which the broadened framework of cultural translation illuminates both our readings of Guillermo Fadanelli’s work and the practice of its interlingual translation into English. The urban, cultural and literary space of Mexico City will be analyzed as an inherently translated site of tension, “permanent unease” and production that finds its reflection in the ethical act of interlingual translation. Drawing predominantly upon the conceptual schemata of Homi K. Bhabha and Néstor García Canclini and their respective notions of hybridity, translation and third space, as well as upon my own experience as the first translator of Fadanelli’s 1999 novel ¿Te veré en el desayuno?, I will attempt to elucidate the political and poetical possibilities of a ‘cultural’ approach to literary translation.

2. CULTURAL TRANSLATION: SHIFTING DISCURSIVE SPACES

While the political foci of translation theorists are far from uniform, many are concerned with exposing and defying the dominant cultural traditions which, overtly or covertly, manifest themselves in literature. With the convergence of translation and cultural studies in the 1990s, there came an acknowledgment of the contextual, cultural and socio-historical aspects that define and delimit translation activity. Constituting what Mary Snell-Hornby (1990) terms the ‘cultural turn’ in translation scholarship, this acknowledgment signaled a shift from translation as text to translation as culture and politics. The objectives of polemic theorists working within the new fields of feminist and postcolonial translation were overtly political: in the case of feminist scholars, the vindication and recovery of the voices of women writers “lost in the patriarchy”; for postcolonialists, “the carnivalesque inversion of power” epitomized within “the cannibalistic metaphor of antropofagia” (Wallace 2002: 66). Both the ‘cultural turn’ and the rise of

1 The notion of antropofagia (cannibalism) as a literary concept was first proposed in Oswald de Andrade’s Manifiesto Antropófago (1928) and later revived by the pioneers of Brazilian poesia concreta and tropicalismo. Applied to translation scholarship by prolific scholar (and practising translator) Haroldo de Campos, the antropofagia metaphor found its origins in sixteenth-century Brazil when a Tupinamba tribe – probably out of homage – devoured a Catholic priest, terrifying Spanish and Portuguese colonizers. Appropriated by de Andrade, de Campos and others as an allegorical representation of the way in which the colonized could shake off their colonial restraints, “[devouring] techniques of composition in order to produce something new” (Schwartz 2000: 77), antropofagia evolved into a poetics of translation which resonated in postcolonial literature, history, culture and politics (Wallace 2002: 72).
postcolonial studies formed part of a multifaceted paradigm shift involving multiple branches of (predominantly Western) scholarship, constituting, in Amaryll’s words, “una celebración generalizada de la diferencia, bajo las etiquetas de la hibridez, la transcultura, la multicultura, la traducción [...] y el mestizaje cultural [a generalized celebration of difference, under the labels of hybridity, transculture, multiculture, translation [...] and cultural mestizaje]” (Chanady 1997)2.

Framed by postcolonial discourse, and subsequently reincorporated into translation studies theory within what Pym (2010) has called the cultural translation paradigm, the term ‘translation’ itself experienced a similar transformation. Theorists such as Tejaswini Niranjana and Gayatri Spivak perceived interlingual translation as a domain of cultural activity in which ideological tensions and power relations were played out, weaving poststructuralist, postcolonial and feminist discourse into discussions of the translation of social and literary ‘texts.’ Their radical reconceptualizations of terms like ‘colonialism’ and ‘hegemony’ recast the very concept of translation as inherently postcolonial. As a result, the term ‘translation’ was (re)loaded with connotations of migrancy, exile and diaspora, in a sense returning to its etymological roots. To quote Bassnett and Trivedi, “the word ‘translation’ seems to have come full circle and reverted from its figurative literary meaning of interlingual transaction to its physical meaning of locational disruption; translation seems to have been translated back to its origins” (1999: 13).

At once reinventing and expanding upon the notions of exile and spatial dislocation, Homi K. Bhabha’s theory of cultural translation provoked another significant shift in translation scholarship. In Bhabha’s work, the term ‘translation’ is further translated towards a metaphorized discourse of migration and the ‘transnation’ (cf. Ashcroft 2009), diverging considerably from its traditional meanings. In The Location of Culture (1994), Bhabha offers several characteristically enigmatic interpretations of the concept of translation, one of which states that:

Translation is the performative nature of cultural communication. It is language in actu (enunciation, positionality) rather than language in situ (énoncé, propositionality). And the sign of translation continually tells, or ‘tolls’ the different times and spaces between cultural authority and its performative practices. The ‘time’ of translation consists in that movement of meaning, the principle and practice of a communication that, in the words of de Man, ‘puts the original in motion to decanonize it, giving it the movement of fragmentation, a wandering of errance, a kind of permanent exile.’

Translation construed as a process of destabilization and negotiation, as an implicitly subversive process of movement and potentiality, has proven to be an abiding and influential theme in contemporary translation scholarship. This new and ambivalent understanding of ‘translation’ (which, after Bhabha, I will call cultural translation) itself enacts the fundamental theories of postcolonial thought. Cultural translation is a performative process of spatial and temporal ‘negotiation’ within the interstitial postcolonial space. As an act of rewriting and rupture, as well as an act of appropriation, the process of interlingual translation can also be seen as a ‘re-articulation’ of the Other’s arbitrary subject position. The site of oscillating hybridity opened up by cultural translation enables us to perceive the space of the Other (which, in the context of

2 Unless otherwise indicated, all translations and back translations are my own.
translation proper, is also the space of the origin or source text) as a vast “multiplicity of incommensurable cultural locations” (Rao 2006: 89).

3. MUTANTS, HYBRIDS AND CONTRADICTIONS: READINGS OF MEXICO CITY

This shifted (and shifting) understanding of translation is particularly useful when we begin to dissect works of literature that are at once products and producers of a postmodern reality; works of literature whose temporal, spatial and cultural locations are increasingly difficult to pin down. The fiction of Guillermo Fadanelli, with its chaotic urban settings, polyphonic narratives, and layers of contradiction, is representative of such work. Viewed through the optic of cultural translation, Fadanelli’s writing opens itself to new and provocative readings that, in turn, offer hybridized readings of Mexico City as both a literary entity and a living cultural location.

Fadanelli’s writing is firmly rooted in the inexhaustible metropolis of Mexico City, “esa cárcel imposible que parece haber salido de la mente de Piranesi [that impossible prison, like something out of the mind of Piranesi]” (Frías 2008: 67). The city –Fadanelli’s birthplace and home– is at once the framework and true protagonist of his novels, and the strange or tragic predicaments of his characters enact the uneasy relationship that persists between the writer and his milieu. Fadanelli is quick to criticize the intrinsic violence, corruption and derangement of the Mexican capital. In his numerous interviews and non-fiction pieces, Fadanelli paints a relentlessly grim portrait of “el caos inabarcable de la Ciudad de México [the vast chaos of Mexico City]”: the city is a “territorio de guerra [war zone]”; a “metastasis” (Herrera-Pahl 2010); “una enfermedad que mata al espíritu, pero no al cuerpo [a sickness that destroys the spirit, but not the body]” (Ramos Martín 2004). His tone verges on the derisory, at times: “Me gusta referirme al Distrito Federal como una mala broma de Dios,” he writes. “Es una ciudad que desde un punto de vista razonable no debería estar en pie [I like to refer to Mexico City as a bad joke played by God. It’s a city that, from any reasonable point of view, ought not to be standing]” (Ricárdez 2008). This cynicism tinges Fadanelli’s fictional descriptions of Mexico City and the abhorrent (or abject) characters that populate it. As a writer whose underground prestige has brought him to the verge of the mainstream, Fadanelli is recognized as somewhat of a dirty prophet of the vile and vulgar. He is also, in some sense, a ‘translator’ between two subcultures: that of ‘lo culto’ (art, literature and so-called ‘high culture’) and the literal subculture of the base, the underground, that which lies beneath the plebeian façade of what García Canclini terms “la cultura masiva” (cf. García Canclini 1990: 237). Indeed, Fadanelli’s translation of the visual, guttural Mexico City idiom into the culturally ‘valuable’ discourse of fiction is an art form with which he has come to be strongly associated. As Valeria Luiselli notes, Fadanelli’s writing, despite meeting with general acclaim in the urbane realm of literary criticism, has become synonymous with the underbelly of Mexico City:

[L]a obra entera de Fadanelli es indisociable del DF, de sus personajes – reales o arquetipos – de sus ergástulos, puteros, cantinas y alcantarillas; y también es verdad que hay un DF que es ahora indisociable de este escritor – hay lugares y personas reales que parece una mala broma de Fadanelli.
Fadanelli’s body of work is inseparable from Mexico City, from its characters (real or archetypal), from its ergastuli, whore mongers, cantinas and gutters; it is also true, she continues, that there exists a Mexico City that is now inseparable from the author – there are people and places that seem like a bad joke played by Fadanelli] (2011: 88).

Fadanelli’s bleak urban narratives offer manifold representations of a complex Mexican “via crucis” characterized by “extortion, corruption and impunity.” This rather predictable conjunction of ardent Catholicism, political ineptitude and deeply entrenched violence is nevertheless a deliberately misleading one; upon closer analysis, Fadanelli’s writing reveals a much more nuanced representation of Mexico City and its inhabitants, and despite his disparagement of the capital there is more than a hint of self-contradiction in Fadanelli’s discourse. In a (perhaps deliberately) hyperbolic interview with Rosana Ricárdez, for example, he states: “México no es un lugar habitable, ni remotamente [Mexico is not a liveable place, not even remotely].” The motivation to write –he affirms– to fictionalize the space around him, is the product of an “indispensable” desire to construct “un espacio o [...] un universo alternativo a esa ciudad [an alternate space, or alternate universe removed from that city].” Here, Fadanelli echoes the notion of the supermetropolis as “an unfit place for human existence” (Carlson 2000: 142), a place where relentless ecocide has reared something like a “cultura del post-apocalipsis [post-apocalyptic culture]” (Villoro 2009: 10). In light of this, one might expect the creative act to become something like a form of escapism. And yet, Fadanelli’s writing is far from escapist; on the contrary, it is at once fearless and deeply compassionate in its portrayals of the complex realities of Mexican society. Indeed, Fadanelli has been lauded as an important proponent of Mexican realismo sucio [dirty realism] (González Boixo 2009: 12), a (sub)genre characterized in both its North and Latin American guises by “seedy settings [...] uncompromising descriptions of violence, sordid sex, and the dreary hopelessness of its downbeat characters” (Stringer 1996: 171-2). Granta editor Bill Buford’s initial appraisal of the genre, which arose around the work of North American writers such as Raymond Carver, Tobias Wolff and Richard Ford, characterized the dirty realist aesthetic as urbane, minimalist and tragic, defined by its “understated, ironic, sometimes savage, but insistently compassionate” depictions of the “belly-side of contemporary life” (Hemmingson 2008: 11). The numerous comparisons between Fadanelli’s writing and that of Raymond Carver and Charles Bukowski (comparisons also spurred, one imagines, by Fadanelli’s professed love of these writers) point to a common, unflinching approach to the ‘unliveable’ reality of postindustrial urban society. With its scathing irony, debauched urban landscapes and latent pessimism, Fadanelli’s writing certainly conforms to the dirty realist aesthetic. This aesthetic, as grim as it appears, actively resists facile reductionism in favor of a certain behavioral and moral complexity. Dirty realist narratives, as Tamas Dobozy argues, tend towards contradiction and hypocrisy as a kind of passive-aggressive reflection of capitalist culture, simultaneously confusing and subverting traditional representations or imaginings of society. The dirty realist system, in other words, is in fact an anti-system, “a logic of continual and consistent contradiction” (Dobozy 2001: 51).

The urban space framing Fadanelli’s narratives is continually signaled as an irrational and incongruous construction: “Who invented cities?” ponders one character in ¿Te veré en el desayuno? “Whose idea was it to put houses one after the other?” (Fadanelli 2009: 13). The postmodern metropolis is construed as a complex “mosaico humano [human mosaic]” (Fadanelli
composed of heterogeneous fragments, sitting uneasily between the third and first worlds. It is a space where the structures of capitalism are by turns absorbed and othered by a series of fractured and plural voices; a place where the tortillería and the cantina coexist with “el Seven Eleven” and “el Blockbuster” down on Avenida Taxqueña (Fadanelli 2009: 39). In a short story dating back to 1992, entitled “La posmodernidad explicada a las putas,” Fadanelli constructs a revealing dialogue between two prostitutes, a literature professor and a middle-class yuppy gathered at a hot dog stand. Through this unlikely convergence of personalities, the story neatly summarizes the hybrid identities of Mexico City. Fadanelli superimposes capitalist iconography and snippets of English terminology upon a thoroughly Mexican setting and vernacular, resulting in a dynamic that falls somewhere among the interstices of what García Canclini might call “[p]osmexica, prechicano, panlatino” culture (García Canclini 1990: 302). The story’s final sentence, scrawled in “salsa catsup” upon an anonymous city wall, echoes the postmodern maxim underlying much of Fadanelli’s work: “Todos somos mutantes, no habrá ya juicio final [We are all mutants, there will be no judgment day]” (Fadanelli 1992: 118).

Comparisons between literature and visual art are, in this instance, rather illuminating. Indeed, Fadanelli’s literary mosaics (be they in the form of fragmentary short story collections or polyphonic novels) have much in common with the iconic murals that, somewhat like ‘high culture’ graffiti, adorn the public spaces of Mexico City. As García Canclini notes:

Rivera, Siqueiros and Orozco proposed the iconographic synthesis of national identity, at once inspired by Mayan and Aztec works, religious altarpieces, the images adorning pulquerías, the colors and designs of the artisanal pottery, the lacquer art of Michoacán, and the experimental work of the European avant-garde] (1990: 78-9).

Just as the “synthesis” proposed by Mexico’s celebrated muralists drew from Mexico’s hybrid culture a thread of unprecedented creativity and innovation, so does Fadanelli’s writing suggest new readings of Mexico City as an inherently translated crossroads of histories, cultures and tongues. In a 1990 work entitled Culturas Híbridas: Estrategias para entrar y salir de la modernidad, García Canclini foregrounds the notion of hybridity as an intrinsic characteristic of Mexican (and, more broadly, Latin American) society. “La perspectiva pluralista,” he writes, “que acepta la fragmentación y las combinaciones múltiples entre tradición, modernidad y posmodernidad, es indispensable para considerar la coyuntura latinoamericana de fin de siglo [The pluralist perspective, which accepts fragmentation and multiple combinations among tradition, modernity and postmodernity, is indispensable for considering the Latin American conjuncture at the turn of the century]” (García Canclini 1990: 329-330). Mexico City in particular, which is central to García Canclini’s anthropological and cultural theses, is construed as a site of deeply entrenched historical and social hybridity. Indeed, the city’s irremediably chaotic and remarkably fertile commingling of cultures, voices and creative styles epitomizes
postmodernity itself: “El posmodernismo no es un estilo sino la copresencia tumultuosa de todos, el lugar donde los capítulos de la historia del arte y del folclor se cruzan entre sí y con las nuevas tecnologías culturales [Postmodernism is not a style but the tumultuous co-presence of all styles, the place where the chapters in the history of art and folklore are crossed with each other and with the new cultural technologies]” (García Canclini 1990: 307).

4. **MEXICO CITY AS THIRD SPACE**

Fadanelli’s fragmented city of “mutants” and García Canclini’s hybrid sites of Latin American difference are both translated spaces; both, for this reason, occupy what many theorists (after Bhabha) have come to call a ‘third space.’ This terminology, however, should give us pause. The abstract notions behind words like ‘hybrid,’ ‘translation’ and ‘space’ diverge significantly, in Bhabha, from conventional scholarly use. In order to approach Bhabha correctly, then, some elucidation is required. James Clifford’s notion of ‘re-articulation’ proves helpful in this respect. Clifford (2000) defines social and cultural formations as collective yet contingent constructions, or “articulated ensembles.” These formations do not come about organically, as terms such as ‘hybrid’ and ‘mutant’ might suggest, but rather are artificially configured and constructed: “An articulated ensemble is more like a political coalition or, in its ability to conjoin disparate elements, a cyborg,” Clifford writes (2000: 478). If the elements of interstitial space are understood as both contingent and constructed, then its inhabitants are agents who navigate and ‘negotiate’ that space at will, hooking and unhooking parts onto their respective structures and (re)constructing themselves intermittently. When we think of the in-between state as ‘articulation,’ we avoid misleading connotations of passivity, absence and indecision. As Robert Young reminds us, “the third space is above all a site of production, the production of anxiety, an untimely place of loss, of fading, of appearance and disappearance […] of contestation and of negotiation” (2009: 82-3).

The space of cultural translation, then, can be described as an arbitrary, unstable, hybrid (cyborgian) space situated somewhere *in between* the Self and the Other. For Bhabha, this in-between site is inextricably related to his concept of ‘third space,’ which is likewise inseparable from the concept of cultural translation. Bhabha’s descriptions of the third space as a “split-space of enunciation” are notoriously slippery, but it is clear that he intends translation to be a “motif or trope” through which to grasp and discuss the concept. In a 2009 essay entitled “In the Cave of Making: Thoughts on Third Space,” Bhabha illuminates this connection through a choral metaphor, describing the moment when, amidst the movement and multiplicity of voices, a “momentary stillness” emerges as “several voices hold the same note.” He continues:

> The precarious tension involved in holding the thought—or the note— in common, vibrating beyond the control of any one voice, is the timbre of translation working its way into our thinking. To hold, in common, a concept like third space is to begin to see that thinking and writing are acts of translation. Third space, for me, is unthinkable outside the locality of cultural translation. (Bhabha 2009: ix)

Both the megalopolis and the postmodern work of fiction, with their respective cacophonies of voices and images, are apt and well-worn symbols of this “precarious tension.” Viewed through
the lens of cultural translation, then, a place like Mexico City (and particularly its fictionalized manifestation in the work of Fadanelli) can be analysed not only as an interstitial space of oscillation and anxiety but as a site of great productivity and creative potential. In her illuminating work *Cities in Translation* (2012), Sherry Simon examines the postmodern metropolis as a site of friction and transformation, a place composed of incoherent parts (and languages) threaded together by “simultaneous, parallel conversations taking place across urban terrain” (Simon 2012: 2). Drawing upon the theoretical work of Catalan architect Manuel de Solà-Morales, Simon cites the notion of the “esquina urbana,” or street corner, as the “single most salient feature of the urban landscape” (Simon 2012: 2). For de Solà-Morales, indeed, the city is “el lugar de mezcla e intercambio, lugar plural y contradictorio por excelencia [a place of mixing and exchange, plural and contradictory par excellence].” a place defined by “la diferencia y la fricción, del acuerdo forzado o fortuito, de tensión y conflicto permanente [difference and friction, forced or fortuitous agreement, tension and permanent conflict]” (de Solà-Morales 2004: 131). This is the dynamic that palpitates in Fadanelli’s Mexico City: an inherently contradictory space fraught with underlying (and often all too visible) tensions. The city’s fictional incarnation reflects Fadanelli’s own uneasy relationship with his place of birth. As he admits to Ricárdez, the “caos constante [constant chaos]” of the capital at once seduces and repels him, producing a kind of “vértigo necrológico [morbid vertigo],” “una tensión que transgrede las fronteras de lo estético [a tension that transgresses the limits of aesthetics].” This ambivalence echoes the distinctly self-contradictory logic to which Fadanelli is given; as noted earlier, his portrayals of Mexico City tend to veer between that of an “unliveable” post-apocalyptic wasteland and that of a complex and poignant human reality. There is no doubt something unpleasant—“irrational,” even—about living in a city of such disorienting dimensions. And yet, Fadanelli comments: “Me atrae la idea de habitar una locura, y vivir en permanente desasosiego [I am attracted to the idea of inhabiting madness, of living in permanent unease].” This “permanent unease” is a condition of tension and anxiety, a constant wavering and motion that belongs most fully to sites of transition, cultural contact and, indeed “translation” (Pratt 1991: 6). The merciless compassion of Fadanelli’s writing and the dirty realist “aesthetic of contradiction” that it epitomizes is again a form of cultural liminality. Tension, unease, translation, anxiety, hybridity: these states define Fadanelli’s Mexico City as a postmodern interstice, “una metrópolis sin límites ni centro precisos [a metropolis with no precise limits and no precise center]” (Luiselli 2011: 88). This is a space that does not lie between borders, in any essentializing or spatial sense, but dissolves the binary suppositions that impose such borders.

This notion is central if we are to comprehend the potential of translation (both ‘cultural’ and interlingual) as it applies to the work of Fadanelli. Sherry Simon notes that “accents, code-switching and translation are to be valued for the ways in which they draw attention to the complexities of difference, for the ways in which they interrupt the self-sufficiencies of ‘mono’ cultures” (2012: 1). For her, the multiplicity of voices and the movement between them implies an unease or “friction” that has positive, diversifying repercussions for culture. This concept of disruptive, translatorial friction applies to Fadanelli’s writing on several levels: both internally, through the heteroglossic nature of his fiction, and externally, through the proposed translation of that fiction into other languages. The notions of ‘heteroglossia’ (different tongues) and ‘polyphony’ (many sounds) are useful here. According to Mikhail Bakhtin, the variation and stratification within literary language, and especially within the novel, means that words are set or “scattered” on different planes, implying the existence of “internal contradictions” as well as a
kind of social heteroglossia: in Bakhtin’s own words, a “Tower of Babel confusion of languages” (Bakhtin 1981: 91-92). Fadanelli’s writing is undoubtedly heteroglossic, giving place to a multiplicity of social voices. If the polyphony of his novels houses the internal ‘friction’ of his writing, then the external friction is a result of its contact with the Other: in this case, with non-Mexican (and, in particular, Anglophone) readers of Fadanelli. If Simon is correct in her assertion that “the friction between languages […] is a good thing” (Simon 2012:1), then the notoriously ‘mono’-lithic Anglophone culture has everything to gain from embracing Fadanelli’s abrasive, unsettling, translated literature.

5. TRANSLATION AND OTHER SPACES

De Solà-Morales points out that, if cultural diversity is to be comprehended, then the city must be imagined not as a “mosaico de exoticismos [mosaic of exoticisms]” but rather as a place that breaks away from the usual “reducciones demasiado simplistas o sistemáticas [overly simplistic or systematic reductions]” (de Solà-Morales 2004: 131). As a writer who openly declares his antiestablishment leanings, Fadanelli might well agree. His fictionalized representations of Mexico City as the hybrid and heteroglossic site of a clash of traditions oppugn the separation of Self and Other into binaries and archetypes. On the contrary, urban space in Fadanelli is a breeding site for innovation, creation, and defiance. “La idea de las fronteras físicas suele ser demasiado primitiva,” he states. “Las ideas, el arte o la literatura cruzan las paredes a su antojo [The idea of physical frontiers is usually too primitive. Ideas, art and literature cross borders as they please]” (cited in Ricárdez 2008). Such notions lie at the center of contemporary translation ethics. There is little doubt that the contemporary institutions housing translation shun the unconventional, the complex and the foreign (but not, one notes, the exotic). Theorists like Andrew Chesterman (1997) have claimed that, at least within the modern Western context, translation theory and practice tend to favor target-oriented norms that facilitate communication and understanding, rather than innovation and complexity. Descriptive translation theories thus reveal an unmistakable normative trend towards conformity and conservatism (cf. Toury 1995), particularly in Anglophone literary systems (cf. Venuti 1995/2008). Antoine Berman, one of the first to critique the deforming, homogenizing tendencies of what he termed ‘naturalizing’ translation strategies, argued that translators too often allow their work to diverge from its “properly ethical aim”: that of allowing readers to receive the foreign as foreign, the Other as Other. “The essence of translation,” Berman insisted, “is to be an opening, a dialogue, a cross-breeding, a decentering” (Berman 1984/1992: 4).

The notion of cross-breeding and dialogue as ethical guides is essential when we consider the interlingual translation of a postmodern writer like Fadanelli. In my own efforts to translate the already manifoldly translated space of Fadanelli’s fiction, I have attempted to engage in the same subversive process that Fadanelli himself epitomizes: intermingling traditions, multiplying voices, strewing the text with contradiction and irony. Rather than cloning Frankensteinerian Fadanelli’s monstrous, mutant fiction, I aim to dismember it and create a new monster in its place. Gayatri Spivak is one of the most influential theorists to propose an ethics of translation along these lines. In her 1994 essay “The Politics of Translation,” Spivak foregrounds the “specificity of language” as a condition of tension and interplay—in her terms, a “jagged relationship”– that pertains between logic and rhetoric in every language. Working “in the
silence between and around words” (that is, in an interstitial space), she argues that rhetoric disrupts the “logical systematicity” of language; the translator’s responsibility, then, is not to take the “safe” path of the logical but rather to take risks, to brave the possibility of “violence to the translating medium” (Spivak 1994: 180). Drawing upon Derrida’s notion of dissemination, she writes:

Language is not everything. It is only a vital clue to where the self loses its boundaries. The ways in which rhetoric or figuration disrupt logic themselves point at the possibility of random contingency, beside language, around language. Such a dissemination cannot be under our control. Yet in translation, where meaning hops into the spacy emptiness between two named historical languages, we get perilously close to it. By juggling the disruptive rhetoricity that breaks the surface in not necessarily connected ways, we feel the selvedges of the language-textile give way, fray into frayages or facilitations (Spivak 1994: 180).

Translation, in other words, is a special act of reading capable of “fraying” the contained (logical) edges of language and meaning. Spivak’s “frayages” and “facilitations” are French and English translations, respectively, of the Freudian term Bachnung—also discussed by Derrida—which is perhaps better translated as ‘breaching’ or ‘path-breaking.’ For Freud, the term related to the forging of new neurological pathways in the brain when neurone resistance was finally overcome; for Derrida, “breaching, the tracing of a trail, opens up a conducting path, which presupposes a certain violence and a certain resistance to effraction. The path is broken, cracked, fracta, breached” (Derrida 1978: 200). These images help us visualize what Spivak means when she refers to the “fraying” of the language-textile: translation strategies that engage with the rhetoricity of a text, that are willing to explore the “spacy emptiness” of its silences and alterity, are capable of disturbing the smooth, established patterns of target-language poetics and thus engender new ways of perceiving and reading the world. To paraphrase Salman Rushdie, they bring “newness” into the world.

Representing the “Other as Other,” then, is a matter of exposing the tensions involved in the (translatory) interplay with the foreign; tensions that are brimming with productivity, creativity, potentiality. In order to take part in this violent and innovatory process, which mirrors the transgressive yet compassionately productive aesthetic of the dirty realist, the translator facilitates dialogue and cross-contamination between texts—the “opening” that Antoine Berman mentions—and descends into the hybrid site of the interstice, “a space that is ruptured and imaginatively transformed” by its subjects (Gopinath 2005: 79).

6. CONCLUSIONS

The remarkable translatability of the term ‘translation,’ and the interesting ways in which its various incarnations connect across multiple fields of inquiry, reinforces just why translation studies belongs at the forefront of probing, interdisciplinary thought. The framework of cultural translation, itself a ‘translated’ concept that crosses the borders of cultural studies, literary studies and anthropology, provides a useful vantage point from which to observe and analyze both the context and potentiality of Fadanelli’s fictional worlds. Fadanelli is at once a product
and producer of that most postmodern of spaces: the infinitely translatable City, the city as fiction and dialogue, the multiplicity of places and voices that exemplifies and occupies the ungraspable space of cultural translation. Examined from this perspective, Fadanelli’s writing invites novel readings of Mexico City and of urban space in general; it allows us to imagine the city as a fractured third space of great potential, where creativity is born of chaos. When this already translated space is translated across languages, the underlying concepts are the same: from cultural translation to interlingual translation, the process is one of cross-breeding and constant, incalculable transformation, one that occurs among the interstices and suspended points of language and culture. Entwined in this process, the “permanent unease” of the translator is itself translated: into innovation, transgression, production. By harnessing the creative potential of her task, the interlingual translator also becomes a cultural translator, sowing seeds of ‘newness’ in the cracks of the mosaic.

7. BIOGRAPHY


Fadanelli, Guillermo (2012) Para ella todo suena a Franck Pourcel, Mexico City: Ediciones B.


FINDING THE ONE BEST TERM: DRAFTING LEGAL TRANSLATIONS WITH PRECISION AND VIVID LANGUAGE

Jean A. Campbell
New York University/Shearman & Sterling LLP

Abstract: This paper has 4 major divisions. First, sources of ambiguity are identified in many languages, followed by consideration of the solution and strategies for mitigating and indeed eliminating the need for making a choice amongst possible meanings, or put another way, eliminating the need for interpretation of the text by the reader. In the third division examples displaying the replacement of ambiguous terms with preferred clear ones are presented and last, selected passages are posed for translation, whereby the coping strategies are actively employed.

1. INTRODUCTION

Most users of even just one language encounter the occurrence of ambiguities. Special cases of this feature of language often give rise to humor, such as with double entendres and puns. There is a simple delight experienced in acknowledging that the same term can actually mean or refer to not just one but perhaps multiple things and the potential for play that this spawns. However, in legal narrative, which is used for particular functions such as official record-keeping, to set out terms of agreements, to bring charges and claims to court, to resolve disputes, to safeguard resources and the public, to advocate on behalf of clients and to draft and enact legislation, it is important to use language that will be clear so that the narrative will be successful in what it needs to accomplish as a communication.

In the context of the one world with many legal systems and the need for interactions of parties, governments and entities across these various systems, effective translation of legal narrative is imperative. Not only is it imperative, it should be in language that is possible for non-native or acquired language speakers and readers to understand. This factual situation has many implications for the task of effective language restatement or translation. It is the objective of this consideration to present not a comprehensive, exhaustive or even scientific treatment of these implications, but in an illustrative way to point out typical sources of ambiguity and general strategies for dealing with these to develop a practical method that self-consciously addresses this natural aspect of languages.

Lastly by way of preliminary background, ambiguity is being understood here as defined in the Encarta World English Dictionary published by St. Martin’s Press to be: “1. Doubt about meaning a situation in which something can be understood in more than one way and it is not clear which meaning is intended 2. Statement with more than one meaning an expression or statement that has more than one meaning.”

2. SOURCES OF AMBIGUITY

One source of ambiguity across Latin based languages is the use of alphabets containing the same letters. This gives rise to the “faux amis”, the words in French that resemble words of other
languages with similar spelling but different meanings. Just one example of this is “assister a” meaning to be present, but resembling the English term to “assist” in the sense of to help someone. Because both by development and by borrowing, there is a component of Latin in English, care must be taken to choose words in English that avoid these similarities. An example of this as a strategy would be to use “free of charge” instead of “gratuitous”. This also avoids the further confusion that results from the other meaning of “gratuitous” indicating something as unnecessary and unjustifiable such as gratuitous remarks. I know of no systematic way to identify and categorize such terms. Rather, with exposure and awareness, one can develop the practice of striving for terms with fewer references. Of course, “free of charge” could actually be improved upon by the use of “without cost,” which would sidestep the possible meaning of “charge” as “electricity”. In a context where electricity would not suggest itself, however, that may not be necessary.

At any rate, any languages that have some common letters within their alphabets present the hazard of mistaking the meaning of words that resemble each other. This is a particular pitfall for the translator/interpreter who is by definition working with pairs of languages. This is a potential issue with any pairs among Italian, French, Spanish, Portuguese, Romanian as well as English, German, Yiddish, Dutch, Flemish, Afrikaans and even Polish, Swedish, Danish, Norwegian and Icelandic.¹ Specific examples involving restatement of German, French, Portuguese and Spanish into English will be provided in the 3rd division of this paper.

Languages with smaller vocabularies such as German or open grammatical structures such as Arabic are highly context dependent to convey meaning. Many interesting analyses focused on the occurrence of ambiguity in natural languages have been motivated to resolve it so that the meaning intended can be detected reliably with the use of machine translation [MT]. While this is a seemingly hopeless ambition, it certainly promotes the understanding of how ambiguities are formed.

An excellent review of sources of ambiguity generally is found in a technical report prepared by a team working on an example-based technique for MT from English to Hindi.²

“The translation task is not so simple as it appears; it has many challenges like – Polysemy, Homonymy, Synonyms, Metaphors and Symbols, new vocabulary developments, Lexical and Structural mismatch between the languages, Idioms and Collocations, complicated structures, referential ambiguity and ambiguities in the source and target languages.

“Polysemy is the ambiguity of an individual word or phrase that can be used in different contexts to express two or more different meanings, such as play, table, bank, etc. the proper translation is difficult even for a human translator. Homonyms, on the other hand, are two or more words that share the same pronunciation and often the same spelling but differ in meanings such as noun quail and verb quail. Metaphors and Symbols depend on the underlying culture and history.

¹This listing is based on the language families classification published in Languages of the World by Kenneth Katzner.

²Example-Based Technique for Disambiguating Phrasal Verbs in English to Hindi Translation by Indranil Saha, Ananthakrishnan R and Sasikumar M, April 2004.
which often cannot be translated. A Metaphor is a figure of speech in which a word or phrase that normally designates one thing is used to designate something else, such as *Sea of troubles*.

… “The multi-word constructs like Idioms and Collocations add more challenge in translation, as their meaning can’t be derived from their constituents. In addition, multi-word constructs like phrasal verbs in English language exhibit different meanings in different contexts. …

“The ambiguity in a language can occur at various levels, Morphological, Syntactic, Semantic or Pragmatic.

“Lexical ambiguity occurs when a word possesses more than one meaning. For example, the word *bank* has two meanings: *bank of a river* and *financial institution*. Consequently the sentence ‘John went to the bank’ has two interpretations, due to the ambiguity of the word *bank*.

“Structural ambiguity is concerned with the syntactic representation of sentences. It occurs when more than one valid syntactic structure can be associated with a given sentence. The ambiguity in prepositional phrase attachment is one source of structural ambiguity. For example, the sentence ‘*The detective found the man with a torch*’ can be interpreted as follows--”

*The detective found a man who was carrying a torch* or *With a torch, the detective found a man.*

“Another kind of ambiguity is referential ambiguity, in which pronouns refer to certain words, but it is often difficult to find out, to which words they are referring. …

“The multi-word constructs – like Idioms and Phrasal verbs – are yet another cause of ambiguity. For example, the idiomatic phrase ‘*tip of the iceberg*’ literally means some portion of the iceberg, whereas in the sentence ‘*The information you see on your computer screen after you do a web or database search is just the tip of the iceberg*’, says that the information we see on the screen is just a small portion of the relevant knowledge. The actual meaning of the idiom can’t be identified from its constituent words.

“Phrasal verbs are highly context dependent in English language and are composed of a verb followed by particle, like – bring up, put on, bring down, etc. Phrasal verbs have different meanings in different contexts.

“Let us consider the phrasal verb: *bring up*, which can be used in many ways as follows—

1. John *brought up* an orphan child.
2. Child *brought up* the toy from the floor.
3. The labour minister *brought up* an issue for discussion in the parliament.
4. The students *brought up* the matter before the principal.”

These sentences display the four meanings in turn of rearing, elevating, introducing and calling attention to.

---

3 Excerpts taken from Ibid. pages 7-10.
It is interesting to note that one of the reasons these authors chose an example-based technique is because “linguistic data are more reliable than linguistic theories.”

With Russian language, there are no articles and no distinction of indefinite or demonstrative qualifiers. Word order is largely free because the part of speech performed by the term is expressed by its ending. Foreign and corporate names are often not declined, so whether those nouns are acting as subject or object in a sentence has to be determined either through knowledge apart from the text or from the larger context of the term’s use. Interpretation is necessary to fix the meaning of constructions where they appear.

In Chinese, multiple possibilities of representation occur through use of different tonality, as in the characters for rat and old tree. Different words can also have the same pronunciation, requiring a second word to make them specific, as in the characters for winter and east that must be supplemented to express winter season and easterly direction. Thirdly, words can be used as both a noun and a verb, as in the “xing” of “ren xing”, commonly translated as “human nature.”

Kathryn Flack in a study of ambiguity avoidance in Japanese commented that generally “many sorts of ambiguity are tolerated in language. Pronouns may be ambiguous as to their referents, quantifiers may have ambiguous scopes and structural ambiguity may arise” as in what elements in a construction using “and” are subject to conjoining. In other situations, however, word order freezing seems to be a syntactic process that occurs to prevent ambiguity, which process has also been noted to take place in Hindi, German, Korean and other languages.

Last in this review is the 2008 doctoral thesis by Mohammed A. Attia seeking resolution of ambiguities displayed by Arabic for the purpose of more accurate MT. Constructions such as coordination and prepositional phrases are “ambiguity-prone”. Being a highly inflected language, diacritics that help indicate pronunciation of Arabic words are generally omitted in modern writing. Clitics which are morphemes with the syntactic features of a word but are morphologically bound to other words provide “many coordinating conjunctions, the definite article, many prepositions and particles of a class of pronouns” by being attached either to the start or end of words. Further, only recently introduced, punctuation is inconsistent and irregular. Shifts between ideas can be made using resumptive particles and subordinating conjunctions.

---


5 Gerard Mrygot, Russian/English translator based in New York, New York.

6 Based on research conducted by S&S LLP colleague Alice Choi and by Kequian Xu, author of “Ren Xing”: Mencian Understanding of Human Being and Human Becoming, presented at the 10th Congress in Craiova, Romanian of the International Society for Universal Dialogue.

7 Kathryn Flack, Ambiguity avoidance as contrast preservation: Case and word order freezing in Japanese, page 1.

8 Mohammed A. Attia, Handling Arabic Morphological and Syntactic Ambiguity within the LFG Framework with a View to Machine Translation, page 18.
instead. Another complication is the traditional underdetermination of the parts of speech of Arabic words as only nouns, verbs and particles. To produce an effective morphological analyzer, Dr. Attia identified nine parts of speech categories to support the grammatical description of their syntactic parser, namely “verbs, nouns, adjectives, adverbs, prepositions, determiners, conjunctions, pronouns and particles.”9 Lastly, many words are homographic, having the same orthographic form but different pronunciation.

This brief survey of how ambiguity occurs in several languages provides a fairly broad sampling of examples. Of course, specific languages and situations will present characteristic ambiguities. While this paper focuses on solutions for the ambiguities occurring in translation from German, French and Spanish to English, general awareness of the issue will sensitize the translator dealing with any language pairs, and this will lead to development of a general method by which target language drafting is made more precise. One can expect to encounter ambiguities working with all languages. The examples surveyed have focused on grammatical, morphological and syntactic features of the sentences expressing ideas. However, natural languages being systems employing symbolism and symbolization on many levels in order to transform generally shared conceptions to more specific content and messages must by this very nature make use of “fuzzy” referents, subject to multiple interpretations in order to provide a commonly shared medium via which more specific statements can be formulated. If natural language would cease to have this basic mode to its symbolization, it could no longer function as a means of communication. In other words, ambiguity is an essential fact of intersubjective use and formation of language.

3. SOLUTIONS

Given this general awareness of types and points of potential ambiguity, what are the specific challenges posed by legal narrative? Once the sources of ambiguity are identified, the legal translator must examine the word choices and drafting techniques available to mitigate them.

First, with specialized language such as that used in the law the translator is generally an “informed outsider”. This means the translator may develop familiarity and knowledge of the issues but does not fully participate in the direct dialogue among its practitioners as actors within the legal system.

Legal systems everywhere are complex.

The legal translator usually deals with legal systems expressed in an acquired language, using their greater command of the target language to restate something that would not normally be expressed in it.

If the legal translator has legal training, it will most likely align with the language of restatement or target language and contrast with the legal system of any source text taken up for translation. This creates a natural conflict as it is the legal intention of the source text that must be restated accurately.

9 Ibid., page 30.
General concepts are often present in all legal systems such as legal status, commercial organization and regulation, human rights, property, civil status, criminal conduct or taxes but their definition, legal provisions concerning them, applications and enforcement all differ by legal system. Attorneys specialize within their own systems and typically rely on other “local” counsel for the following situations: 1) in different regions within the same national system as in New York, versus Texas or California, 2) in areas of specialized law or practice other than their own such as bankruptcy versus tax treatment, 3) transactions involving parties from different legal systems such as for handling a dispute among joint venture partners located respectively in German and Brazil or others.

Therefore, how do these considerations guide judicious word choices and clear sentence composition? The following are a few general guidelines which are exemplified by the examples presented.

- Replace unclear punctuation with words and clearer narrative.
- For English and other languages having words with multiple grammatical functions such as noun, verb and qualifier, replace these with words that can be used in only one function.
- Replace indefinite prepositions that can express multiple relationships with the qualifier that expresses the one relationship intended.
- Do not rely on colloquial metaphors.
- Make sure the word choice fits the context/stage of any legal process involved. For example, “detention” would generally be for short-term, less than a year until a trial and sentencing could take place and would be located in a “jail”, whereas after sentencing, incarceration or confinement would be located in a “prison”.
- Make sure the scope/range of the terms used in the target language does not fall short or exceed the corresponding scope/range in the source text.
- To express prescription/obligation, use “must” not “should”.
- To express permission or capacity, use “may” or “is authorized to” and not “can”.
- Documents or instruments are “drawn up” or “issued”.
- Authorizations are “granted”.
- Provisions of law “set forth” conditions, etc.
- Do not insert commas around prepositional phrases. The prepositions establish the syntactic connection with the rest of the sentence.
- Do not change the directionality of an action, as in shifting what is “petitioned” or “pled” from the perspective of an attorney presenting a case into something “heard” by a judge.
4. **EXAMPLES**

The following chart provides some illustrative examples in application of the above general guidelines.

<table>
<thead>
<tr>
<th>Source Text</th>
<th>Ambiguous or Incorrect Drafting</th>
<th>Preferred Drafting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thanks for noticing the error in time</td>
<td>Thanks… the error regarding the time</td>
<td>Thanks…the error before it was too late</td>
</tr>
<tr>
<td>mantenimiento mensual</td>
<td>monthly maintenance overpaid</td>
<td>monthly maintenance</td>
</tr>
<tr>
<td>meses pagados de más</td>
<td>monthly maintenance overpaid, months paid in excess</td>
<td>months paid in excess</td>
</tr>
<tr>
<td>This time highlighted concern</td>
<td>Time spent highlighted…</td>
<td>Time spent highlighted…</td>
</tr>
<tr>
<td>derechos políticos</td>
<td>political rights [context of right to vote going with ownership of capital]</td>
<td>decision-making rights</td>
</tr>
<tr>
<td>raison sociale</td>
<td>social name</td>
<td>company name</td>
</tr>
<tr>
<td>capital sociale</td>
<td>company or social capital</td>
<td>registered capital</td>
</tr>
<tr>
<td>siège social</td>
<td>social headquarters</td>
<td>registered office</td>
</tr>
<tr>
<td>relatif à</td>
<td>relative to</td>
<td>pertaining to</td>
</tr>
<tr>
<td>relacionado con</td>
<td>related to</td>
<td>concerning connected with relating to</td>
</tr>
<tr>
<td>aktiv</td>
<td>active</td>
<td>dynamic</td>
</tr>
<tr>
<td>aktiv</td>
<td>active</td>
<td>popular</td>
</tr>
<tr>
<td>die Aktiven</td>
<td></td>
<td>assets</td>
</tr>
<tr>
<td>die Aktiva</td>
<td></td>
<td>assets</td>
</tr>
<tr>
<td>die Aktivierung</td>
<td></td>
<td>capitalization</td>
</tr>
<tr>
<td>aktivierte Anlage</td>
<td>activated investment</td>
<td>capitalized asset</td>
</tr>
<tr>
<td>French</td>
<td>English</td>
<td>Annotated English</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>due</td>
<td>due</td>
<td>owed</td>
</tr>
<tr>
<td>liberation</td>
<td>vacation</td>
<td>release</td>
</tr>
<tr>
<td>condamner</td>
<td>order</td>
<td>sentence</td>
</tr>
<tr>
<td>plaider</td>
<td>heard</td>
<td>plead</td>
</tr>
<tr>
<td>a compter de</td>
<td>after</td>
<td>starting from</td>
</tr>
<tr>
<td>somme</td>
<td>sum</td>
<td>amount</td>
</tr>
<tr>
<td>suivant [ordonnance]</td>
<td>following</td>
<td>pursuant to</td>
</tr>
<tr>
<td>concomitamment aux</td>
<td>simultaneously</td>
<td>concurrently with this</td>
</tr>
<tr>
<td>présentes</td>
<td></td>
<td>argument</td>
</tr>
<tr>
<td>conclusion</td>
<td>conclusion</td>
<td>entering into</td>
</tr>
<tr>
<td>à</td>
<td>on</td>
<td>upon</td>
</tr>
<tr>
<td>capitulação penal</td>
<td>criminal capitation</td>
<td>criminal classification</td>
</tr>
<tr>
<td>condenação</td>
<td>sentencing</td>
<td>conviction</td>
</tr>
<tr>
<td>gratuitement</td>
<td>gratuitous</td>
<td>free of charge</td>
</tr>
<tr>
<td>participer à</td>
<td>participates to</td>
<td>participates in</td>
</tr>
<tr>
<td>concedido</td>
<td>asignado</td>
<td>allowed</td>
</tr>
<tr>
<td>detallado</td>
<td>detailed</td>
<td>listed</td>
</tr>
<tr>
<td>se reconozca</td>
<td>is recognized</td>
<td>is acknowledged</td>
</tr>
<tr>
<td></td>
<td></td>
<td>is accepted</td>
</tr>
<tr>
<td>necesitariamos</td>
<td>ought to have</td>
<td>would need</td>
</tr>
<tr>
<td>deberíamos tener</td>
<td>ought to have</td>
<td>would have to have</td>
</tr>
<tr>
<td></td>
<td>quote</td>
<td>estimate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>excerpt</td>
</tr>
<tr>
<td>von 8 Oktober 2011</td>
<td>of October 8, 2011</td>
<td>dated 8 October 2011</td>
</tr>
<tr>
<td>de 8 novembre 2012</td>
<td>of November 8, 2012</td>
<td>dated 8 November 2012</td>
</tr>
</tbody>
</table>
These examples are illustrative and by no means completely describe all types of scenarios exhibiting ambiguity that could be addressed. However, the word choices are suggestive and indicative of the more general strategy that results in clear and vivid restatement. Seeing how the choices improve the communication of meaning results in a sensitivity and awareness that the translator can henceforward apply to their drafting.

5. PASSAGES FOR VIVID RESTATEMENT INTO ENGLISH

From French:
AVENANT AU REGLEMENT DU PLAN INTERNATIONAL D’ACTIONNARIAT DU GROUPE DES SOCIETE D’IX HORS DE FRANCE


ADDENDUM TO THE REGULATIONS OF THE PLAN INTERNATIONAL D’ACTIONNARIAT DE GROUPE APPLICABLE TO IX COMPANIES LOCATED OUTSIDE OF FRANCE

Pursuant to Article 12 of Plan International d’Actionnariat de Groupe (the International Group Employee Stock Purchase Plan, or “PIAG”, applicable to the IX Group entities located outside of France, and established by IX on 19 October 2001 pursuant to Articles L.3332-1 et seq. of the French Labor code, subject to the enforcement of imperative public policy rules by local legal networks and to their addenda to the regulations, issued in accordance with the same rules dated 18 October 2002, 2 October 2003, 29 September 2004, 15 September 2005 and 30 August 2006, respectively, this addendum is implemented by the IX Management, represented by Mr. Horace Laverne, Deputy Chief Executive Officer, and will become effective and legally binding on the date upon which it is signed.

From German:
Sollte der Geschäftsführervertrag von der Company oder DACO nicht über die Laufzeit (31. März 2011) verlängert werden, aus Gründen, die Sie nicht zu vertreten haben, wird die Byssen AG auf Ihren schriftlichen Antrag, der spätestens einen Monat nach Ablauf der Laufzeit bei uns eingehen muss, prüfen, ob es eine nach unserer Auffassung geeignete offene Stelle für Sie innerhalb des Byssen Konzerns gibt, die dann verfügbart ist, wobei jedoch weder die Byssen AG noch die Company oder DACO hierdurch verpflichtet werden, den Geschäftsführervertrag zu verlängern oder Ihnen eine Stelle anzubieten oder bereitzustellen.

If the Executive Employment Agreement of the Company or DACO is not extended beyond its end date (31 March 2011) due to reasons for which you are not responsible and upon your
request in writing which must reach us no later than one month after its expiration, Byssen AG will check whether in our view there is a suitable position open for you within the Byssen Group which is available then. In this case, however, neither Byssen AG or the Company or DACO are hereby obligated to extend the Executive Employment Agreement or to offer or prepare a position for you.

From Spanish:
La Concesionaria tendrá un capital mínimo de treinta mil millones de pesos chilenos (en adelante dicha moneda “$” o “Pesos” ($30.000.000.000), dividido en 10.000 acciones nominativas, son valor nominal (las “Acciones”). Las participaciones accionarias de las Partes en la Concesionaria, que constan en la Promesa, son las siguientes: (a) BMI, 100 Acciones, representativas de un 1% del capital social de la Concesionaria; (b) CORETE, 5.000 Acciones, representativas de un 50% del capital social de la Concesionaria; y (c) NOTELE, 4.900 Acciones, representativas de un 49% del capital social de la concesionaria.

The Concessionaire shall have a minimum capital of thirty billion Chilean pesos (hereinafter such currency “$” or “Pesos”) ($30,000,000,000), divided into 10,000 registered shares, which are par value (the “Shares”). The shareholding participations of the parties to the Concessionaire, officially recorded in the Promise, are the following: (a) BMI, 100 Shares, representing 1% of the registered capital of the Concessionaire; (b) CORETE, 5,000 Shares, representing 50% of the registered capital of the Concessionaire; and (c) NOTELE, 4,900 Shares, representing 49% of the registered capital of the Concessionaire.

6. REFERENCES


Choi, Alice. Colleague at Shearman & Sterling LLP, New York, NY.

Flack, Kathryn. Ambiguity avoidance as contrast preservation : Case and word order freezing in Japanese. roa.rutgers.edu.


Mryglot, Gerard. Russian, French, Spanish to English translator based in New York, New York.


VIRTUALIZATION FOR TRANSLATORS: ACHIEVING A MORE PRODUCTIVE, SECURE, AND EFFICIENT WORK ENVIRONMENT

Alfonso Romero
Word Trade Online Translation Services

Abstract: Virtualization is a powerful tool that can help translators get the most from their computer environment. This session intends to give an overview of virtualization and virtual machines. Then, the speaker will show the participants how they can apply this powerful technology to achieve a more productive, secure and efficient translation environment. By using virtual machines, translators can avoid losing precious time due to hardware/software failure. Virtual machines are extremely portable: the user can save a virtual machine in an external hard drive to be able to open it in any computer with the virtualization software installed. Virtual machines include a feature called “snapshots” that let the user revert changes in case something goes wrong. A virtual machine can also help to protect valuable data against potential online threats like malware, by effectively isolating the translation environment from the Internet. In addition, it is possible to test computer-aided-translation (CAT) tools like SDL Trados, Déjà Vu, memoQ, Wordfast and other useful software applications for translators on a separate virtual machine, without disrupting the main working environment. Finally, there is a feature that allows a translator to work with virtual machines on mobile devices, like tablets and iPads.

1. INTRODUCTION

Before starting this presentation, I want to tell you a short story of how I ended up using virtualization software and virtual machines. Back in 2000 I landed a very important contract with a major book publisher in Mexico as a computer and IT books translator, and my very first job was to translate the “Peter Norton’s Complete Guide to Microsoft Windows 2000 Professional” book from English into Spanish.

Now, back then I was using a Windows 98 computer as my working environment for translation projects. Since I couldn’t risk losing sensitive data from my other clients, I decided to get another computer where I could install the Windows 2000 operating system to follow the book’s examples and take screenshots of the Spanish localized version, so I could include them in the translated book.

Figure 1 shows the basic setup I used in this translation project. Whenever I captured a screenshot of the Windows 2000 desktop, I needed to send it over to the Windows 98 computer, so I could paste it into the Word file where I was writing the translated version of the book.
Although this approach worked fine, it was a bit clumsy because I had to spend a lot of time in the process of sharing information between both computers. For instance, I used a floppy disk or USB drive to transfer each screenshot image to my Windows 98 computer, so I could then paste it into the Word file and continue translating the rest of the book. I even tried emailing files from the Windows 2000 PC to the Windows 98 machine, but it was much slower than the other two methods, since the image file had to go first from the Windows 2000 PC to the email server, and then travel back to the Windows 98 computer. So overall, this way of working was rather complicated, not to mention the space I needed for both computers in my desk!

As time went by, I started looking for a better alternative until I found virtualization and, thanks to this wonderful technology, now I only need to use one physical machine to do all my translation work, no matter how complicated it gets. Several years ago, I switched my Windows PC for a Mac computer, because I started to work for a client that needed me to translate and localize applications designed specifically for the Mac OS X operating system. Nevertheless, whenever I need to translate something related to the Windows environment, I can start my Windows 8 virtual machine right from my Mac and work with both operating systems at the same time, as if they were running on two separate physical machines. The advantage of this setup is that I can share information directly between both machines, by just copying and pasting information or sharing folders to copy files from one computer to another.

For example, let’s say that I need to take a screenshot of the Windows 8 desktop to include that image in a Word file located in my Mac. All I need to do is open the virtualization software installed in my Mac computer, and start a previously created Windows 8 virtual machine that will run as any other application inside my Mac. Then I log into the Windows 8 system, take a screenshot of the desktop with a screen capture program, copy the image to the clipboard, and go back to the translated document in my Mac to paste the screenshot in the Word file. It’s that simple! We can represent this as a four-step process:

**Figure 1.** My typical translation environment before virtualization
**Figure 2a.** The first step in the image file transferring process with virtualization.

**Step 1:**
Open Virtualization Software

**Figure 2b.** The second step in the image file transferring process with virtualization.

**Step 2:**
Run Windows 8 Virtual Machine

**Figure 2c.** The third step in the image file transferring process with virtualization.

**Step 3:**
Take screenshot of Windows desktop & copy image to common clipboard
Figure 2d. The fourth step in the image file transferring process with virtualization.

This is how I ended up using virtualization in my translation environment. This powerful technology has been very useful, and I am sure that it can be a useful addition to your translation environment, too. Now let us proceed with the presentation.

Today I want to talk about virtualization software and virtual machines, and how you can make use of this powerful technology.

And why would you want to do that? Well, by using virtual machines you’ll be able to make better use of your computer resources and apply this productivity to your translation environment, improving your overall performance.

As we saw previously, I’ve been using virtualization for several years now in my translation environment, and it has really helped me in my daily tasks, by greatly reducing the risk of sensitive data loss due to software or hardware failures. A virtual machine can also help me isolate my translation environment from potential online threats like malware (malicious software like computer viruses, worms, spyware, adware, etc.). And I’ve also been able to test CAT (Computer Aided Translation) software like SDL Trados and Wordfast, without having to disrupt my actual working environment, by installing and running the software I want to test in a separate virtual machine.

At the end of this presentation, here’s what I want you to take away:

**You can use virtual machines in your computer to have a more productive, secure and efficient translation environment.**
2. VIRTUALIZATION AND VIRTUAL MACHINES OVERVIEW

2.1 Virtualization technology lets you run multiple “virtual” computers, or machines, on your physical computer at the same time.

As its name implies, a virtual machine is a “virtual” version of a fully functional physical computer. It runs an operating system and executes applications like a “real” machine. A typical computer has four core resources: CPU, memory, storage and network. It needs these resources to do all the tasks that we assign it to do, like opening a Word file, browsing the Internet or reading e-mail.

In a sense, the CPU resource is the “brain” of the computer, because it coordinates the rest of the team members. Some computers have slower brains than other computers. The faster the CPU, the less time you’ll need to start your computer and to open applications or documents.

![Diagram of computer resources]

**Figure 3.** The CPU resource takes care of coordinating the Storage, Memory and Network resources

The memory resource is the space where you work when translating documents. Let’s say you’re working on a PDF file translation. This means there will be two open documents in memory: the original PDF document and the Word document where you will put the translated content of the PDF file. Memory size determines how many open documents or applications you can work with at the same time.
Figure 4. The Memory resource is the computer’s workspace where you can translate documents.

The storage resource is the place where you save the documents you do not need to work with in a given moment. For instance, suppose you have finished translating the PDF document. When you close the original PDF document and the translated Word file, the CPU grabs both documents from memory and takes them to the storage space, represented by the computer’s hard disk. That way, you can have free space in the Memory resource to work with other documents or open applications, like the Internet Explorer web browser.

Figure 5. The CPU grabs the PDF and Word files, and puts them in the Storage resource.
Finally, the **network resource** takes care of connecting the computer to the outside world, like the Internet and the World Wide Web. The network resource can also connect the computer to other computers in a local area network (LAN).

**Figure 6.** The Network resource takes care of sending files to other computers through the Internet or a LAN.

We use the computer’s core resources during our daily work. The following picture describes the resource sharing process between the “real” computer and the “virtual” machines:

**Figure 7.** The resource sharing process between virtual machines and the host computer

The operating system running in the physical machine is called the **host operating system**. The operating systems running in the virtual machines are called the **guest operating systems**. We also commonly refer to the main physical machine as the **host computer**, and to each virtual machine as a **guest computer**.
Virtualization technology lets a physical machine split its core resources with virtual machines, as if each virtual machine was a real computer with its own independent core resources. You can run one, two or more virtual machines in your physical computer, depending on its capacity (CPU, memory, storage, network). Most of today’s computers are capable of running at least two virtual machines without any problems. In the above picture, there are two virtual machines inside one physical computer (the host). In this case, the host shares its four core resources (CPU, memory, storage, network) between itself and the two guest virtual machines.

It is possible to manually assign resources to each virtual machine. For instance, you can assign more memory to Guest A and more disk space to Guest B. It all depends on the amount of resources available in the host computer. The virtualization software tool takes care of all the administrative tasks for you.

Each virtual machine is completely isolated from other virtual machines and from the physical computer, as if they were standalone computers. For instance, a Windows 8 guest can’t do anything to affect other virtual machines or your main physical computer.

The following picture shows this concept in a clearer way:

![Figure 8. A host computer running two virtual machines.](image)

In this scenario, we have a Mac OS X host computer as our main physical computer. Then we have two virtual machines inside the Mac computer:

- **Windows OS Guest # 1**: This is a fully functional Windows system that runs independently from Windows OS Guest # 2 and from the Mac OS X Host. Anything that you do inside this virtual computer won’t affect the rest of the machines, because this virtual machine doesn’t even know that the other virtual machine and the host exist.
• **Windows OS Guest # 2**: This is also a fully functional Windows system that runs independently from Windows OS Guest # 1 and from the Mac OS X Host. This machine behaves exactly as Windows OS Guest # 1.

The beauty of this setup is that you don’t have to stick with this guest-host configuration: you could be running a Windows OS host computer, a Windows and a Mac OS X guest, or any other imaginable combination, depending on your needs.

Currently, the three most popular operating systems for personal computers are Windows, Mac OS X and Linux. All the popular virtualization tools offer support for them, both as host and guest operating systems. There are, however, some restrictions regarding the use of proprietary operating systems like Windows and Mac OS X. In the case of Windows, you need to buy a license **for each virtual machine**, since technically it is a **standalone computer**. In the case of Mac OS X guests, the restriction is that you can use them in Apple Mac systems only.

### 3. USING VIRTUALIZATION SOFTWARE IN YOUR COMPUTER

#### 3.1 Virtualization software is a special kind of application that lets you create, run and manage virtual machines

Inside this virtualization software, you can create multiple virtual machines. Usually, a window on your desktop screen represents each virtual machine when it’s running. You can maximize, minimize or restore a virtual machine window, like any other window inside your physical computer. The best way to run a virtual machine is with its window maximized, so you can use it as if it were your real computer.

There are many virtualization software products in the market, but the following three are the most popular for personal computers:

- VirtualBox ([www.virtualbox.org](http://www.virtualbox.org))
- VMWare ([www.vmware.com/products](http://www.vmware.com/products))
- Parallels ([www.parallels.com](http://www.parallels.com))

Although the three products mentioned above have different user interfaces to interact with, the essence is the same: you create and name your new virtual machine, select the operating system you are going to install, assign the amount of CPU, memory and storage you need, and select the type of network you want your virtual machine to work with.

I’ve personally used VirtualBox for several years and it has proven to be a very stable and powerful product that fits my needs as a translator. Since it’s a free product, you can download a copy and test it to see if it fits your needs, too. I used VirtualBox in all the practical examples shown in this presentation.

Figure 9 shows a Mac OS X screen, where you can see a virtual machine running the Windows 8 operating system alongside the Mac OS X operating system.
4. HAVING A MORE EFFECTIVE, SECURE AND PRODUCTIVE TRANSLATION ENVIRONMENT

4.1 A virtual machine can help you recover fast from a hardware failure in your host computer to avoid losing precious data

One morning I arrived into my office, ready to start my daily working routine. I had to finish the last pages of a technical manual for one of my clients, to deliver later on that same day. But, to my surprise, the computer didn’t turn on! Since I also happen to be a computer technician, I tried to solve the issue as quick as possible, but it was a hardware failure, so there was nothing much I could do at that moment that could help me finish my translation job. The good thing was that I always backed up my work at the end of the day in an external hard drive, so my work was safe.

I needed another computer urgently, so I went and borrowed my wife’s laptop to continue working, but there was another problem: I was working with a CAT translation software tool, Trados 2011, and did not have it installed in my wife’s laptop. Fortunately, I was using the Trados application right from a virtual machine, so I just had to install the virtualization software (VirtualBox) in my wife’s laptop. The setup process took just several minutes, then I hooked up the external hard drive, opened my virtual machine through the virtualization software interface, and… voila! I was able to continue my work!

This is one of the most useful advantages of virtual machines: you can take them from one host computer to another completely different host computer, and it will work seamlessly! A virtual machine gives you a strong degree of protection in case your main physical computer hardware/software crashes, because it is entirely contained in one or several files, so you can back it up and save it in external hard disks or USB drives, and then use it in any physical machine running Windows, Mac or Linux. In the above example, I was using a computer with
the Linux operating system, and my wife’s laptop was running the Windows 7 operating system, but since both can run the same virtualization software (VirtualBox), the virtual machine can run seamlessly. The guest operating system in the virtual machine runs independently of the host operating system.

You can save a virtual machine with your entire translation environment to an external hard drive.

**Figure 10a.** You can save a virtual machine in a USB external disk drive.

Then, you can work on any host computer, no matter which operating system runs on it, as long as it has the same virtualization software installed.

**Figure 10b.** Then, you can access that virtual machine from another host computer.
4.2 You can use the snapshots feature of a virtual machine to recover from software failures

Most of the time, it is more common to use your host computer as your translation environment, but it is also possible to create a virtual machine for that specific purpose. This way you can use the snapshots feature as a security measure, so you are able to recover from a software failure without losing any sensitive data. Snapshots give you the ability to travel back and forth in time with your virtual machine. Let’s see a practical example of this.

Suppose you are using a Windows 8 virtual machine to translate documents and technical manuals, and you are considering upgrading your Microsoft Office version, to try it out and see if you can work better with the most recent version. Before the upgrade, you take a snapshot of your virtual machine's state, so in case the new Microsoft Office version doesn't work or messes things up, you can revert the state of your virtual machine to the moment before upgrading Office. That way you will be able to continue working on your translation tasks and you will not lose any vital information, as if nothing had happened.

In a technical sense, a snapshot is a feature that saves the state of a virtual machine in a specific moment in time. Think of it as an advanced backup system. You can take a snapshot of your virtual machine at the end of the day so, if during the next day a problem arises and your virtual machine fails, you'll be able to recover and keep working as if nothing had happened. You can also make the habit of always taking a snapshot before making a major change to your virtual machine, for instance, when installing a newer version of a software application, or you can even take a snapshot before upgrading from Windows 7 to Windows 8 and see if you can work with all your previous files and applications.

Another great application for snapshots is to protect your virtual machines from malware (i.e., viruses, spyware, and adware). You can take a snapshot just after creating your virtual machine and then, if suddenly a virus infects it, you can use the previously taken snapshot to return the virtual machine to its original state, before the virus infiltration.

4.3 You can use a virtual machine for safe Internet browsing and for protecting your client’s data against online threats like malware

Several years ago I was working on a very big, important project for one of my main clients in Mexico, a book publisher. It was a book translation about Java programming. We were in the middle of the project when my main contact from the publisher called me to complain that the last batch of files I sent him had a virus, and their enterprise firewall didn’t let them through. I was completely shocked! This had never happened before, because I was very careful and always ran files through an antivirus program before delivering them to my clients. After several hours of pain, I found out the root cause: my oldest daughter was in college, and she needed to print some files for her homework, so she plugged her USB stick into my computer, opened the files in Word and printed them. The problem was that her USB stick had caught several viruses from some computers at a cybercafé near her school that she used to visit frequently. Fortunately, I managed to clean all the files using a non-infected machine I borrowed from my
sister, because it turned out that one of the viruses in my computer was blocking the antivirus software so it couldn’t do its job well.

At that time, I was using a Windows 7 computer without virtualization. What I learned from this experience was that, with virtualization, you could isolate your working environment from Internet applications like browsers and email readers that can get malware or other potential threats into your sensitive data.

A virtual machine shares a lot in common with a sandbox. We could define a sandbox as a low box that contains sand for children to play in:

![Figure 11. A sandbox is a safe place where children can play.](image)

In terms of security, we can consider a sandbox as a restricted environment. Since it’s designed to keep the sand in a confined area so it doesn’t spread across its surroundings, children can play with the sand along with a wide variety of toys that let them develop their imagination and creativity as they build their own interactive 3D world, all inside an isolated box.

In this respect, a virtual machine is like a sandbox, because it simulates a computer that is completely isolated from its surroundings. This means that you can use an Internet browser inside a virtual machine to visit websites, access your email accounts, and all the things you normally do online, and in case some malware infects your virtual machine or corrupts some of its data, your host computer or other virtual machines won’t be affected.

Let me show you an example. Figure 12 shows a virtual machine named Windows Guest A inside a sandbox. Although Windows Guest A is inside the host computer, the sandbox prevents Guest A from accessing the documents and files contained in the host computer, and vice versa. We can therefore say that Guest A is completely isolated from the host computer, thanks to the “sandbox” created by the virtualization software. We can also see that Guest A has access to the Internet through a web browser, in this case Internet Explorer.
Figure 12. The “sandbox” concept applied to virtual machines. Windows Guest A can browse the web through Internet Explorer, but is completely isolated from the host computer.

Now, suppose Windows Guest A downloads some files from the Internet, and one of them has a computer virus. Once inside Windows Guest A, the virus will try to replicate itself so it can infect the virtual machine and take control of all its resources (figure 13).

Figure 13. Windows Guest A downloads files from the Internet. Unfortunately, a virus sneaks in and infects Windows Guest A in the process.

After infecting Windows Guest A, the virus will also try to infect the host computer, but will not be able to spread out of the sandbox created by the virtualization software, so you can rest assured that the host computer is completely safe. As you can see in Figure 13, the virus cannot get outside Windows Guest A and infect the files located in the host computer. This is one of the great advantages of virtualization.

Wait a minute! What happens then to Windows Guest A? It seems that we have lost that virtual machine forever, right? Well, in this case, that may be true, and the most common solution would be to remove the virtual machine from the virtualization software, which means deleting
all of its files without leaving any trace, and then create another clean virtual machine with the same configuration, so we can continue browsing the Internet in a safe and secure way. Figure 14 shows the new virtual machine, called Windows Guest B, inside the “sandbox” that isolates it from the host computer. Everything is now back to normal.

Figure 14. After the virus attack, you just need to delete the infected virtual machine, create a fresh one, and everything goes back to normal.

Now that we have resolved the safe Internet browsing issue, how can we use this configuration in our translation environment? Let us assume that one of your clients sends you a PDF brochure for translation. First, you open the PDF you received via email in Windows Guest B. Then you open a new Word document in your host computer and start working on the PDF brochure translation. During this process, if you need to access the Internet to search for some information, or maybe consult an online dictionary, you can use Windows Guest B to keep your host computer safe from the potential incoming threats from the Internet. Figure 15 shows this scenario.
Figure 15. You can use the shared clipboard to copy & paste text or images from a virtual machine to the host computer, and viruses will not be able to get through.

Suppose, for example, that a virus sneaks into Windows Guest B. In a real situation, you should have antivirus software installed in Windows Guest B, so it can detect the virus and prevent any harm. However, in case the virus tries to spread to your host computer before the antivirus software detects it, it won’t be able to, thanks to the sandbox created by the virtualization software. This adds an extra level of security to your system.

Whenever you need to copy information from the Internet browser in Windows Guest B to your Word file in the host computer, you can do so thanks to the shared clipboard provided by the virtualization software. This will not represent a security problem, because the only information shared between Guest A and the host computer will be text or images, not files that could lead to a virus infection.

Ok, now what happens when you finish the translation in your host computer? How are you going to send the finished file to your client, if your host computer has no Internet access and it is completely isolated from Windows Guest B? Fortunately, virtual machines let you use a feature called “shared folders”.

With shared folders, you can assign a folder in your host computer to share files with a virtual machine, in this case Windows Guest B. You have to be careful though, because a virus could sneak through if you shared an infected file from Windows Guest B to the host computer. To solve this problem, we can create a shared folder in Windows Guest B with read-only access, so it can read the files but not make any changes on them. This way, a virus will not be able to infect the shared folder. Figure 16 shows this situation.

Figure 16. The read-only shared folder will allow Windows Guest B to read the Word document with the translation, and there is no risk of a virus spreading to the host computer.
Before sending the finished translation document to the client, you have to run the antivirus program in Windows Guest B to be sure you do not have any viruses or some other kind of malware wandering around. If you suspect the antivirus software could not get rid of all the viruses and malware, you can do as before: remove and delete Windows Guest B, create a fresh Windows virtual machine, access the read-only shared folder to grab the finished Word document with the translation and send it back to your client.

There is an easier way to recover from an infected computer, though. Do you remember snapshots? Well, you can take a snapshot of Windows Guest B just right after you finish creating it, so in case a virus infects it, you can revert the state of the virtual machine back to the moment in time where it was not infected. This way you will not need delete the virtual machine, create a new one and go through all the process of installing Windows and all the required software whenever a virus or any other type of malware infects the virtual machine. Believe me, you’ll save a lot of time using this second approach.

**4.4 You can test CAT software without disrupting your working environment by creating a separate virtual machine for testing purposes**

Let us say, for example, that the folks from a new translation agency want you to work with them, but you need to install Wordfast, a computer-aided translation (CAT) tool, so you can use their translation memories. The only problem is that you’re already using SDL Trados for some of your other clients. Since it would be a bit risky to install the new CAT tool in the same computer that’s running Trados, you could create a Windows virtual machine to install the new CAT tool and test its performance without the risk of losing important data from your other clients. This is a very common situation I’ve faced for several years, and virtual machines have helped me a lot in this cases.

Figure 17 shows a Windows 7 virtual machine with the Wordfast Setup Wizard running. The virtual machine is inside a Mac OS X host computer.

![Figure 17. Installing the Wordfast CAT tool in a Windows 7 virtual machine inside a Mac OS X host computer](image)
Figure 18 shows the Wordfast Pro CAT tool fully installed and running in the Windows 7 virtual machine. There’s also a Windows 8 virtual machine running Trados 2007. Both virtual machines are running inside a Mac OS X host computer.

Figure 19 shows an iPad that seems to be “running” a Windows 8 operating system. Although in a certain way this is correct, the truth is that the iPad is using the Remote Desktop Protocol (RDP) to connect to a virtual machine over the Internet. All you need is an RDP client in your mobile device and then adjust some settings in your virtual machine, so it can accept incoming connections from your mobile device.

4.5 You can run virtual machines right from a mobile device, tablet or iPad

If you use a tablet or iPad device, virtualization technology allows you to access virtual machines right from your mobile device. This gives you a lot of flexibility, because you can have a host computer in your office with several virtual machines, and you will be able to access all of them right through your tablet or iPad, from virtually anywhere in the world!
**Figure 19.** An Apple iPad showing the Windows 8 Start screen.

Figure 20 shows the same iPad, now connected to a Windows 7 virtual machine. The only catch is that you have to leave your host computer turned on with the virtual machines running. In fact, virtualization software has some advanced features that allow a company to have a dedicated server with many virtual machines available, so users can access their desktop remotely from a laptop or a tablet. The possibilities are endless! The only requirement is a Wi-Fi or cellular connection.

**Figure 20.** The same iPad showing a Windows 7 Welcome screen.
5. SUMMARY

Virtualization technology lets you run multiple “virtual” computers, or machines, on your physical computer at the same time. You can use virtual machines in your computer to have a more productive, secure and efficient translation environment.

A virtual machine is a “virtual” version of a fully functional physical computer. It runs an operating system and executes applications like a “real” machine.

A typical computer has four core resources: CPU, memory, storage and network. It needs these resources to do all of the tasks we assign it to do. The CPU resource is the “brain” of the computer, because it coordinates the rest of the resources. The memory resource is the space where you work when translating documents. The storage resource is the place where you save the documents you do not need to work with in a given moment. The network resource takes care of connecting the computer to the outside world.

The operating system running in the physical machine is the host operating system, and the operating systems running in the virtual machines are the guest operating systems. Virtualization technology lets a physical machine split its core resources with virtual machines, as if each virtual machine was a real computer with its own independent core resources.

Each virtual machine is completely isolated from other virtual machines and from the physical computer, as if they were standalone computers.

The three most popular operating systems for personal computers are Windows, Mac OS X and Linux. All the popular virtualization tools support them, both as host and guest operating systems.

Virtualization software is a special kind of application that lets you create, run and manage virtual machines.

A virtual machine can help you recover fast from a hardware failure in your host computer to avoid losing precious data. You can save a virtual machine with your entire translation environment to an external hard drive. Then, you can work on any host computer, no matter which operating system runs on it, as long as it has the same virtualization software installed.

You can use the snapshots feature of a virtual machine to recover from software failures. Snapshots give you the ability to travel back and forth in time with your virtual machine. A snapshot is a feature that saves the state of a virtual machine in a specific moment in time.

You can use a virtual machine for safe Internet browsing and for protecting your client’s data against online threats like malware. A virtual machine is like a sandbox, because it simulates a computer that is completely isolated from its surroundings.

With shared folders, you can assign a folder in your host computer to share files with a virtual machine. If a shared folder is read-only, a virus will not be able to infect the host computer.
You can test CAT software without disrupting your working environment by creating a separate virtual machine for testing purposes.

You can run virtual machines right from a mobile device, tablet or iPad, using the Remote Desktop Protocol (RDP) to connect to a virtual machine over the Internet.

6. ADDITIONAL INFORMATION

You can reach me at
virtualization@wordtradeonline.com

For more information, tutorials and updates about virtualization technology, visit www.wordtradeonline.com/virtualization
NEWBORN SCREENING AND INHERITED METABOLIC DISORDERS

Martha Exebio Blackwood
Certified Medical Interpreter
Memorial Hermann Hospital - Texas Medical Center

Abstract: Each American state and many foreign countries mandate some form of newborn screening with the goal of identifying infants who are affected by certain conditions. Early identification of these conditions is important, since timely intervention can lead to reduction in morbidity, mortality, and associated disabilities in affected infants. Medical translators and interpreters may improve the quality of the services they render by understanding the newborn screening process and its terminology, as well as the metabolic disorders listed on the screening panels of most states. This session will discuss the basic concepts of newborn screening, focusing on the speaker’s Texas experience.

In the day-to-day settings of medical translation and interpretation it is not enough to be bilingual or to know basic medical terminology, the translator or interpreter needs to understand the different processes involved in a diagnostic, procedure or specialization in order to understand the concept. To be a good medical translator or interpreter, one must not only have the ability to accurately convey the meaning of the words used by the healthcare provider, one must also have a knowledge and understanding of medical terminology and the contexts in which it is used. The medical translator or interpreter has to undergo a constant learning process within the different specialties.

1. INTRODUCTION

In the early 1960s researchers, pediatricians, nurses and parents greeted with excitement and hope the news that a new test had just been developed to detect an “invisible” condition. It can screen for phenylketonuria or PKU which had caused countless deaths and cases of severe intellectual disability. And the test had promise in finding even more conditions.

2. HISTORY AND DEVELOPMENT

The newborn screening in USA began in the early 1960s with Dr. Robert Guthrie.

1961 Dr. Robert Guthrie developed an assay that could detect elevated levels of phenylalanine from a single drop of an infant’s blood.

1965 Over half of U.S. states had mandated PKU testing.

1995 Most states screened for five disorders on average.

March 2005 The American College of Medical genetics (ACMG) issued a report advocating for a mandated uniform panel of 29 disorders.
3. **THE TEXAS EXPERIENCE**

In 2005, the Texas Legislature passed House Bill 790, which required an expansion of the newborn screening program using the American College of Medical Genetics recommendation, as funds allowed. This resulted in an increase in the number of tested conditions from five to twenty-seven. In Texas, the Department of State Health Services (DSHS) operates the newborn screening case management program.

*Some statistics:*
Each year 4.1 million newborns are screened for congenital disorders in the United States. Of these, 4,000 infants are diagnosed as having a condition. It is estimated another 1,000 infants that have conditions go undetected.

In Texas approximately we have 400,000 births a year, so approximately 800,000 specimens are collected and tested. There is a follow up on approximately 15,000 abnormal screens a year and approximately 600 diagnosed cases per year.

The incidence of these new diagnosis are as follows:
- Congenital Adrenal Hyperplasia 1 in 12,000
- Congenital Hypothyroidism 1 in 3,500
- Cystic Fibrosis 1 in 4,000
- Galactosemia 1 in 60,000 - 80,000
- Phenylketonuria 1 in 10,000 - 25,000

4. **INFORMATION**

Newborn screening is a state public health program that tests for serious and treatable conditions. Babies who test positive for treatable conditions are able to start treatment before harmful effects occur.

Screening is very important because babies who appear healthy and come from healthy families can still have serious medical conditions. Newborn screening helps health professionals identify and treat conditions before they make a baby sick. Most babies identified at birth are treated early and grow up healthy.

Babies undergo a set of three tests between 24-48 hours after birth:
**Blood test:** A small blood sample is taken from the baby’s heel, placed on a newborn screening card, and sent to the state laboratory for analysis.
**Hearing Screens:** determined if the ear and auditory brain stem respond to sound. No response can indicate hearing loss.
**Pulse Oximetry Test**: A sensor measures oxygen in the blood and can detect Critical Congenital heart Disease (CCHD)

Newborn screening tests for a panel of conditions. However when a child has an out-of-range screening result, it does not mean that the child has tested positive for the entire panel. Usually the child will only be out-of-range for a single condition.

Then at the follow up appointment the doctor will have a copy of the baby’s newborn screening results so that confirmatory testing can be targeted towards a specific condition.

The follow up test will depend on the condition for which the child tested positive. The evaluation may include: a blood test, urine test, skin biopsy, specialized testing, physical evaluation and molecular genetic testing.

Depending on which type of confirmatory test was performed it can take one to three weeks to get the results. Possible results include:

- **False Positive.** When a child with an out-of-range newborn screening result has a follow-up test result within the normal range. The child does not have the condition that the original screen indicated was a possibility.

- **True positive.** A small percentage of babies with out-of-range results do have the condition. When these babies undergo confirmatory testing, the result will be out-of-range, as well. In these cases, the newborn screening result is considered a “true positive” since follow-up testing confirms that the child does have the condition. The next step is to get the baby treatment.

- **Carrier identification.** A person who has a change in only one gene of a pair and the other gene of the pair is working normally. Carriers typically do not display the symptoms of the condition, but can pass on the change to their children.

The pediatrician may be the provider of first contact for infants with an out-of-range screening result, thus, he or she must be familiar with initial management including referral management and subsequent diagnostic testing of such infants.

Infants affected with disorders detected by newborn screening usually require lifelong management.

5. **RESOURCES**

The American Academy of Pediatrics created the **FACT SHEETS** to provide information to assist pediatricians and other professionals who care for children in performing their essential role within the newborn screening public health system.

The American College of Medical Genetics created the **ACT SHEETS** to provide physicians with an action plan. These plans describe the short-term actions a health professional should do.
following an abnormal newborn screen. This includes ordering confirmatory testing and communicating with the family about appropriate steps in the follow-up of the infant that has screened positive.

The newborn screening consists of five parts:
1. Newborn testing
2. Follow up of abnormal screening results to facilitate timely diagnostic testing and management.
3. Diagnostic testing
4. Disease management which requires coordination with the medical home and genetic counseling and
5. Continuous evaluation and improvement of the newborn screening system

6. **INSIDE THE PANEL OF THE NEWBORN SCREENING IN TEXAS**

The different conditions tested are within 6 different groups of disorders:
- **Amino Acid Disorders**
- **Fatty Acid Oxidation**
- **Organic Acidemias**
- **Endocrine Disorders**
- **Hemoglobin Disorders**
- **Others**
<table>
<thead>
<tr>
<th>Amino Acid Disorders</th>
<th>Fatty Acid Oxidation Disorders (FAO)</th>
<th>Organic Acidemias Disorders (OA)</th>
<th>Hemoglobinopathies</th>
<th>Endocrine Disorders</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenylketonuria PKU</td>
<td>Medium chain acyl-coenzyme A dehydrogenase deficiency MCAD</td>
<td>3 methylcrotonyl coenzyme A carboxylase deficiency 3-MCC</td>
<td>Sickle cell anemia HB S/S</td>
<td>Congenital adrenal hyperplasia CAH</td>
<td>Biotinidase Deficiency</td>
</tr>
<tr>
<td>Maple syrup urine disease MSUD</td>
<td>Carnitine uptake defect CUD</td>
<td>Beta ketothiolase deficiency BKT</td>
<td>Sickle beta thalassemia HB S/A</td>
<td>Congenital hypertiroidism CH</td>
<td>Galactosemia GALT</td>
</tr>
<tr>
<td>Citrullinemia CIT</td>
<td>Long chain L3 hydroxyacil coenzyme A dehydrogenase deficiency LCHAD</td>
<td>Glutaric acidemia type I GA-I</td>
<td>Sickle hemoglobin C disease HB S/C</td>
<td>Endocrine Disorders</td>
<td>Cystic Fibrosis CF</td>
</tr>
<tr>
<td>Argininosuccinic acidemia ASA</td>
<td>Trifunctional protein deficiency TFP</td>
<td>3 hydroxy 3 methylglutaric aciduria HMG</td>
<td>Calcium-sensing receptor mutations</td>
<td>Other</td>
<td>Severe combined immunodeficiency SCID</td>
</tr>
<tr>
<td>Homocystinuria HCY</td>
<td>Very long chain acylcoenzyme A dehydrogenase deficiency VLCAD</td>
<td>Isovaleric academia IVA</td>
<td>Methylmalonic acidemia, Vitamin B12 CBL A,B FORM</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
7. UNDERSTANDING METABOLIC DISORDERS

Metabolism is an organized but chaotic chemical assembly line. Raw materials, half-finished products, and waste materials are constantly being used, produced, transported, and excreted. The “workers” on the assembly line are enzymes and other proteins that make chemical reactions happen.

In the understanding of this complex subject, the translator or interpreter must keep in mind the processes involved and the definitions of the terms involved, such as:

- Metabolism
- Metabolic Disorder
- Enzyme
- Protein
- Amino acid

**METABOLISM (PROCESS)**

Metabolism is a chemical process that occurs within an organism that helps it to maintain and sustain life. The word **metabolism** comes from the Greek: μεταβολή metabolē, which means “change” or Greek: μεταβολισμός metabolismos, “out-throw.” Metabolism is usually divided into two categories:

1. **Catabolism** breaks down organic matter and collects energy using cellular respiration
2. **Anabolism** utilizes energy to create components of cells such as proteins and nucleic acids.

A few major examples of metabolism include:
- Breaking down the carbohydrates, proteins, and fats in food to release energy.
- Transforming excess nitrogen into waste products excreted in urine.
- Breaking down or converting chemicals into other substances and transporting them inside cells.

**METABOLIC DISORDER (ABNORMAL CHEMICAL REACTION)**

A **metabolic disorder** occurs when abnormal chemical reactions in the body disrupt this process. When this happens, one might have too much of some substances or too little of other ones that one needs to stay healthy. To better understand the basics in this topic we have to define and understand what are proteins, enzymes and amino acids.

**Inherited metabolic Disorder**, are genetic conditions that result in metabolism problems. Most people with inherited metabolic disorders have a defective gene that results in an enzyme deficiency.

**ENZYMES (PROTEIN MADE OF AMINOACIDS)**

Enzymes are made from amino acids, and they are proteins. When an enzyme is formed, it is made by stringing together between 100 and 1,000 amino acids in a very specific and unique order. The chain of amino acids then folds into a unique shape. That shape allows the enzyme to
carry out specific chemical reactions. An enzyme is a biological catalyst. Enzymes catalyze nearly all the chemicals reactions that take place in the body. They are almost always a protein. They speed up the rate of a specific chemical reaction in the cell.

The name of an enzyme ends in ASE and identifies a reacting substance such as:
Sucrase (reacts to sucrose)
Lipase (reacts to lipid)

**PROTEIN (ANY CHAIN OF AMINOACID)**
Proteins are the basis of body structures such as skin and hair and of substance such as enzymes, cytokines, and antibodies.

In the typical diet, protein comes from both animal and vegetable sources. Most animal sources (meat, milk, eggs) provide what is called “complete protein,” meaning that they contain all of the essential amino acids. Vegetable sources usually are low in or missing certain essential amino acids. So by combining different foods one can get all of the essential amino acids throughout the course of the day. Nuts, beans and soy beans are all high in protein. By combining them, one can get complete coverage of all essential amino acid.

The digestive system breaks all proteins down into their amino acids so that they can enter the bloodstream. Cells then use the amino acids as building blocks to build enzymes and structural proteins.

**AMINO ACID (SMALL MOLECULE /BUILDING BLOCK OF ANY PROTEIN)**
Amino acids are a set of 20 different molecules used to build proteins. Proteins consist of one or more chains of amino acids called polypeptides. The sequence of the amino acid chain causes the polypeptide to fold into a shape that is biologically active. The amino acid sequences of proteins are encoded in the genes.

They are called “amino acids” because they contain an amino group (NH2) and a carboxyl group (COOH) that is acidic.

**Facts about amino acids:**
- The human body is compound of 20 different aminoacids.
- The amino acids are synthesized into: enzymes (the chemical action), hormones (the function stimulating messengers) and neurotransmitters.
- The human body can synthetize all of the amino acids necessary to build proteins except for the essential amino acids.

**The amino acids are necessary for:**
- Proper digestion
- Duplicating the genetic code
- Glandular regulation of the body’s function from sexual characteristics to carbohydrate metabolism.
- For our very mood and perception of reality.
The amino acids are classified in three different groups:

- Essential amino acids (cannot be produced by our body — we get them from food)
- Non-essential amino acids (produced by the body)
- Conditional amino acids (essential in moments of sickness and stress)

<table>
<thead>
<tr>
<th>Essentials</th>
<th>Non essentials</th>
<th>Conditionals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Histidine</td>
<td>Alanine</td>
<td>Arginine</td>
</tr>
<tr>
<td>Isoleucine</td>
<td>Asparagine</td>
<td>Cysteine</td>
</tr>
<tr>
<td>Leucine</td>
<td>Aspartic acid</td>
<td>Glutamine</td>
</tr>
<tr>
<td>Lysine</td>
<td>Glutamic acid</td>
<td>Tyrosine</td>
</tr>
<tr>
<td>Methionine</td>
<td>Glycine</td>
<td></td>
</tr>
<tr>
<td>Phenylalanine</td>
<td>Ornithine</td>
<td></td>
</tr>
<tr>
<td>Threonine</td>
<td>Proline</td>
<td></td>
</tr>
<tr>
<td>Tryptophan</td>
<td>Serine</td>
<td></td>
</tr>
<tr>
<td>Valine</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

After reading and studying the above we can now approach this subject a little more prepared. Having all these in mind if the interpreter or translator is working on a new diagnosis of **MAPLE SYRUP URINE DISEASE** we will understand that we are talking about an inborn error in isoleucine, leucine and valine metabolism which can result in the build up of metabolites in the urine.

An inherited disorder that increases the levels of a substance called phenylalanine in the blood is called **PHENYLKETONURIA**.

8. **THE 29 DISORDERS ON THE NEWBORN SCREENING (TEXAS)**

**PHENYLKETONURIA**

Phenylketonuria (commonly known as PKU) is an inherited disorder that increases the levels of a substance called phenylalanine in the blood. Phenylalanine is a building block of proteins (an amino acid) that is obtained through the diet. It is found in all proteins and in some artificial sweeteners. If PKU is not treated, phenylalanine can build up to harmful levels in the body, causing intellectual disability and other serious health problems.

The signs and symptoms of PKU vary from mild to severe. The most severe form of this disorder is known as classic PKU. Infants with classic PKU appear normal until they are a few months old. Without treatment, these children develop permanent intellectual disability. Seizures, delayed development, behavioral problems, and psychiatric disorders are also common. Untreated individuals may have a musty or mouse-like odor as a side effect of excess phenylalanine in the body. Children with classic PKU tend to have lighter skin and hair than unaffected family members and are also likely to have skin disorders such as eczema.

The occurrence of PKU varies among ethnic groups and geographic regions worldwide. In the United States, PKU occurs in 1 in 10,000 to 15,000 newborns. Most cases of PKU are detected...
shortly after birth by newborn screening, and treatment is started promptly. As a result, the severe signs and symptoms of classic PKU are rarely seen.

MAPLE SYRUP URINE DISEASE
Maple syrup urine disease is an inherited disorder in which the body is unable to process certain protein building blocks (amino acids) properly. The condition gets its name from the distinctive sweet odor of affected infants’ urine. Beginning in early infancy, this condition is characterized by poor feeding, vomiting, lack of energy (lethargy), and developmental delay. If untreated, maple syrup urine disease can lead to seizures, coma, and death.

Maple syrup urine disease is often classified by its pattern of signs and symptoms. The most common and severe form of the disease is the classic type, which becomes apparent soon after birth. Variant forms of the disorder become apparent later in infancy or childhood and are typically milder, but they still involve developmental delay and other medical problems if not treated.

Maple syrup urine disease affects an estimated 1 in 185,000 infants worldwide. The disorder occurs much more frequently in the Old Order Mennonite population, with an estimated incidence of about 1 in 380 newborns.

CITRULLINEMIA
Citrullinemia is an inherited disorder that causes ammonia and other toxic substances to accumulate in the blood. Two forms of citrullinemia have been described; they have different signs and symptoms and are caused by mutations in different genes.

Type I citrullinemia (also known as classic citrullinemia) usually becomes evident in the first few days of life. Affected infants typically appear normal at birth, but as ammonia builds up in the body they experience a progressive lack of energy (lethargy), poor feeding, vomiting, seizures, and loss of consciousness. These medical problems are life-threatening in many cases. Less commonly, a milder form of type I citrullinemia can develop later in childhood or adulthood. This later-onset form is associated with intense headaches, partial loss of vision, problems with balance and muscle coordination (ataxia), and lethargy. Some people with gene mutations that cause type I citrullinemia never experience signs and symptoms of the disorder.

Type II citrullinemia chiefly affects the nervous system, causing confusion, restlessness, memory loss, abnormal behaviors (such as aggression, irritability, and hyperactivity), seizures, and coma. In some cases, the signs and symptoms of this disorder appear during adulthood (adult-onset). These signs and symptoms can be life-threatening, and are known to be triggered by certain medications, infections, surgery, and alcohol intake in people with adult-onset type II citrullinemia.

Type I citrullinemia is the most common form of the disorder, affecting about 1 in 57,000 people worldwide. Type II citrullinemia is found primarily in the Japanese population, where it occurs in an estimated 1 in 100,000 to 230,000 individuals. Type II also has been reported in other populations, including people from East Asia and the Middle East.
**ARGINOSUCCINIC ACIDEMIA**

Argininosuccinic aciduria is an inherited disorder that causes ammonia to accumulate in the blood. Ammonia, which is formed when proteins are broken down in the body, is toxic if the levels become too high. The nervous system is especially sensitive to the effects of excess ammonia.

Argininosuccinic aciduria usually becomes evident in the first few days of life. An infant with argininosuccinic aciduria may be lacking in energy (lethargic) or unwilling to eat, and have poorly controlled breathing rate or body temperature. Some babies with this disorder experience seizures or unusual body movements, or go into a coma. Complications from argininosuccinic aciduria may include developmental delay and intellectual disability. Progressive liver damage, skin lesions, and brittle hair may also be seen.

Occasionally, an individual may inherit a mild form of the disorder in which ammonia accumulates in the bloodstream only during periods of illness or other stress. Argininosuccinic aciduria occurs in approximately 1 in 70,000 newborns.

**HOMOCYSTINURIA**

Homocystinuria is an inherited disorder in which the body is unable to process certain building blocks of proteins (amino acids) properly. There are multiple forms of homocystinuria, which are distinguished by their signs and symptoms and genetic cause. The most common form of homocystinuria is characterized by nearsightedness (myopia), dislocation of the lens at the front of the eye, an increased risk of abnormal blood clotting, and brittle bones that are prone to fracture (osteoporosis) or other skeletal abnormalities. Some affected individuals also have developmental delay and learning problems.

Less common forms of homocystinuria can cause intellectual disability, failure to grow and gain weight at the expected rate (failure to thrive), seizures, problems with movement, and a blood disorder called megaloblastic anemia. Megaloblastic anemia occurs when a person has a low number of red blood cells (anemia), and the remaining red blood cells are larger than normal (megaloblastic).

The signs and symptoms of homocystinuria typically develop within the first year of life, although some people with a mild form of the disease may not develop features until later in childhood or adulthood.

The most common form of homocystinuria affects at least 1 in 200,000 to 335,000 people worldwide. The disorder appears to be more common in some countries, such as Ireland (1 in 65,000), Germany (1 in 17,800), Norway (1 in 6,400), and Qatar (1 in 1,800). The rarer forms of homocystinuria each have a small number of cases reported in the scientific literature.

**TYROSINEMIA TYPE 1**

Tyrosinemia is a genetic disorder characterized by elevated blood levels of the amino acid tyrosine, a building block of most proteins. Tyrosinemia is caused by the shortage (deficiency) of one of the enzymes required for the multistep process that breaks down tyrosine. If untreated,
tyrosine and its byproducts build up in tissues and organs, which leads to serious medical problems.

There are three types of tyrosinemia. Each has distinctive symptoms and is caused by the deficiency of a different enzyme. Type I tyrosinemia, the most severe form of this disorder, is caused by a shortage of the enzyme fumarylacetoacetate hydrolase. Symptoms usually appear in the first few months of life and include failure to gain weight and grow at the expected rate (failure to thrive), diarrhea, vomiting, yellowing of the skin and whites of the eyes (jaundice), cabbage-like odor, and increased tendency to bleed (particularly nosebleeds). Type I tyrosinemia can lead to liver and kidney failure, problems affecting the nervous system, and an increased risk of liver cancer.

Type II tyrosinemia is caused by a deficiency of the enzyme tyrosine aminotransferase. This form of the disorder can affect the eyes, skin, and mental development. Symptoms often begin in early childhood and include excessive tearing, abnormal sensitivity to light (photophobia), eye pain and redness, and painful skin lesions on the palms and soles. About 50 percent of individuals with type II tyrosinemia have some degree of intellectual disability.

Type III tyrosinemia is a rare disorder caused by a deficiency of the enzyme 4-hydroxyphenylpyruvate dioxygenase. Characteristic features include intellectual disability, seizures, and periodic loss of balance and coordination (intermittent ataxia).

About 10 percent of newborns have temporarily elevated levels of tyrosine. In these cases, the cause is not genetic. The most likely causes are vitamin C deficiency or immature liver enzymes due to premature birth.

Worldwide, type I tyrosinemia affects about 1 person in 100,000. This type of tyrosinemia is much more common in Quebec, Canada. The overall incidence in Quebec is about 1 in 16,000 individuals. In the Saguenay-Lac St. Jean region of Quebec, type I tyrosinemia affects 1 person in 1,846.

Type II tyrosinemia occurs in fewer than 1 in 250,000 individuals. Type III tyrosinemia is very rare; only a few cases have been reported.

**MEDIUM CHAIN ACYL COENZYME A DEHYDROGENASE DEFICIENCY**

MCAD is a rare hereditary disease that results from the lack of an enzyme required to convert fat to energy. Complications typically arise when the affected infants have long periods between meals, requiring the body to use its own fat reserves to produce energy. When this action is blocked by the lack of the necessary enzyme, serious life threatening symptoms and even death can occur. MCAD causes no apparent symptoms at birth, but low blood sugar, seizures, brain damage, cardiac arrest and serious illness can occur very quickly in infants who are not feeding well. Treatment for the disorder requires close monitoring of the infant to determine "safe" time periods between meals, and adhering to a strict feeding schedule. With early detection and monitoring, and avoidance of fasts, children diagnosed with MCAD can lead normal lives particularly as the "safe" time between meals expands as they mature.
CARNITINE UPTAKE DEFECT
Primary carnitine deficiency is a condition that prevents the body from using certain fats for energy, particularly during periods without food (fasting). Carnitine, a natural substance acquired mostly through the diet, is used by cells to process fats and produce energy.

Signs and symptoms of primary carnitine deficiency typically appear during infancy or early childhood and can include severe brain dysfunction (encephalopathy), a weakened and enlarged heart (cardiomyopathy), confusion, vomiting, muscle weakness, and low blood sugar (hypoglycemia). The severity of this condition varies among affected individuals. Some people with primary carnitine deficiency are asymptomatic, which means they do not have any signs or symptoms of the condition. All individuals with this disorder are at risk for heart failure, liver problems, coma, and sudden death.

Problems related to primary carnitine deficiency can be triggered by periods of fasting or by illnesses such as viral infections. This disorder is sometimes mistaken for Reye syndrome, a severe disorder that may develop in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

The incidence of primary carnitine deficiency in the general population is approximately 1 in 100,000 newborns. In Japan, this disorder affects 1 in every 40,000 newborns.

LONG CHAIN L3 HYDROXYACIL COENZYME A DEHYDROGENASE DEFICIENCY
Long-chain 3-hydroxyacyl-CoA dehydrogenase (LCHAD) deficiency is a rare condition that prevents the body from converting certain fats to energy, particularly during periods without food (fasting).

Signs and symptoms of LCHAD deficiency typically appear during infancy or early childhood and can include feeding difficulties, lack of energy (lethargy), low blood sugar (hypoglycemia), weak muscle tone (hypotonia), liver problems, and abnormalities in the light-sensitive tissue at the back of the eye (retina). Later in childhood, people with this condition may experience muscle pain, breakdown of muscle tissue, and a loss of sensation in their arms and legs (peripheral neuropathy). Individuals with LCHAD deficiency are also at risk for serious heart problems, breathing difficulties, coma, and sudden death.

Problems related to LCHAD deficiency can be triggered by periods of fasting or by illnesses such as viral infections. This disorder is sometimes mistaken for Reye syndrome, a severe disorder that may develop in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

TRIFUNCTIONAL PROTEIN DEFICIENCY
Mitochondrial trifunctional protein deficiency is a rare condition that prevents the body from converting certain fats to energy, particularly during periods without food (fasting).
Signs and symptoms of mitochondrial trifunctional protein deficiency may begin during infancy or later in life. Features that occur during infancy include feeding difficulties, lack of energy (lethargy), low blood sugar (hypoglycemia), weak muscle tone (hypotonia), and liver problems. Infants with this disorder are also at high risk for serious heart problems, breathing difficulties, coma, and sudden death. Signs and symptoms of mitochondrial trifunctional protein deficiency that may begin after infancy include hypotonia, muscle pain, a breakdown of muscle tissue, and a loss of sensation in the extremities (peripheral neuropathy).

Problems related to mitochondrial trifunctional protein deficiency can be triggered by periods of fasting or by illnesses such as viral infections. This disorder is sometimes mistaken for Reye syndrome, a severe disorder that may develop in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

**VERY LONG CHAIN ACYLCOENZYME A DEHYDROGENASE DEFICIENCY**

Very long-chain acyl-CoA dehydrogenase (VLCAD) deficiency is a condition that prevents the body from converting certain fats to energy, particularly during periods without food (fasting).

Signs and symptoms of VLCAD deficiency typically appear during infancy or early childhood and can include low blood sugar (hypoglycemia), lack of energy (lethargy), and muscle weakness. Affected individuals are also at risk for serious complications such as liver abnormalities and life-threatening heart problems. When symptoms begin in adolescence or adulthood, they tend to be milder and usually do not involve the heart.

Problems related to VLCAD deficiency can be triggered by periods of fasting, illness, and exercise. This disorder is sometimes mistaken for Reye syndrome, a severe disorder that may develop in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

VLCAD deficiency is estimated to affect 1 in 40,000 to 120,000 people.

**3 METHYLCROTONYL COENZYME A CARBOXYLASE DEFICIENCY**

3-methylcrotonyl-CoA carboxylase deficiency (also known as 3-MCC deficiency) is an inherited disorder in which the body is unable to process certain proteins properly. People with this disorder have a shortage of an enzyme that helps break down proteins containing a particular building block (amino acid) called leucine.

Infants with 3-MCC deficiency appear normal at birth but usually develop signs and symptoms in infancy or early childhood. The characteristic features of this condition, which can range from mild to life-threatening, include feeding difficulties, recurrent episodes of vomiting and diarrhea, excessive tiredness (lethargy), and weak muscle tone (hypotonia). If untreated, this disorder can lead to delayed development, seizures, and coma. Many of these complications can be prevented with early detection and lifelong management with a low-protein diet and appropriate supplements. Some people with gene mutations that cause 3-MCC deficiency never experience any signs or symptoms of the condition.
The characteristic features of 3-MCC deficiency are similar to those of Reye syndrome, a severe disorder that develops in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

This condition is detected in an estimated 1 in 36,000 newborns worldwide.

**BETA KETOTHIOLASE DEFICIENCY**
Beta-ketothiolase deficiency is an inherited disorder in which the body cannot effectively process a protein building block (amino acid) called isoleucine. This disorder also impairs the body's ability to process ketones, which are molecules produced during the breakdown of fats.

The signs and symptoms of beta-ketothiolase deficiency typically appear between the ages of 6 months and 24 months. Affected children experience episodes of vomiting, dehydration, difficulty breathing, extreme tiredness (lethargy), and, occasionally, seizures. These episodes, which are called ketoacidotic attacks, sometimes lead to coma. Ketoacidotic attacks are frequently triggered by infections, periods without food (fasting), or increased intake of protein-rich foods.

Beta-ketothiolase deficiency appears to be very rare. It is estimated to affect fewer than 1 in 1 million newborns.

**GLUTARIC ACIDEMIA TYPE I**
Glutaric acidemia type I is an inherited disorder in which the body is unable to process certain proteins properly. People with this disorder have inadequate levels of an enzyme that helps break down the amino acids lysine, hydroxylysine, and tryptophan, which are building blocks of protein. Excessive levels of these amino acids and their intermediate breakdown products can accumulate and cause damage to the brain, particularly the basal ganglia, which are regions that help control movement. Intellectual disability may also occur.

The severity of glutaric acidemia type I varies widely; some individuals are only mildly affected, while others have severe problems. In most cases, signs and symptoms first occur in infancy or early childhood, but in a small number of affected individuals, the disorder first becomes apparent in adolescence or adulthood.

Some babies with glutaric acidemia type I are born with unusually large heads (macrocephaly). Affected individuals may have difficulty moving and may experience spasms, jerking, rigidity, or decreased muscle tone. Some individuals with glutaric acidemia have developed bleeding in the brain or eyes that could be mistaken for the effects of child abuse. Strict dietary control may help limit progression of the neurological damage. Stress caused by infection, fever or other demands on the body may lead to worsening of the signs and symptoms, with only partial recovery.

Glutaric acidemia type I occurs in approximately 1 of every 30,000 to 40,000 individuals. It is much more common in the Amish community and in the Ojibwa population of Canada, where up to 1 in 300 newborns may be affected.
3 HYDROXY 3 METHYLGLUTARIC ACIDURIA

3-hydroxy-3-methylglutaryl-CoA lyase deficiency (also known as HMG-CoA lyase deficiency) is an uncommon inherited disorder in which the body cannot process a particular protein building block (amino acid) called leucine. Additionally, the disorder prevents the body from making ketones, which are used for energy during periods without food (fasting).

The signs and symptoms of HMG-CoA lyase deficiency usually appear within the first year of life. The condition causes episodes of vomiting, diarrhea, dehydration, extreme tiredness (lethargy), and weak muscle tone (hypotonia). During an episode, blood sugar levels can become dangerously low (hypoglycemia), and a buildup of harmful compounds can cause the blood to become too acidic (metabolic acidosis). If untreated, the disorder can lead to breathing problems, convulsions, coma, and death. Episodes are often triggered by an infection, fasting, strenuous exercise, or other types of stress.

HMG-CoA lyase deficiency is sometimes mistaken for Reye syndrome, a severe disorder that develops in children while they appear to be recovering from viral infections such as chicken pox or flu. Most cases of Reye syndrome are associated with the use of aspirin during these viral infections.

HMG-CoA lyase deficiency is a rare condition; it has been reported in fewer than 100 individuals worldwide. Most people diagnosed with this disorder have been from Saudi Arabia, Portugal, or Spain.

ISOVALERIC ACIDEMIA

Isovaleric acidemia is a rare disorder in which the body is unable to process certain proteins properly. It is classified as an organic acid disorder, which is a condition that leads to an abnormal buildup of particular acids known as organic acids. Abnormal levels of organic acids in the blood (organic acidemia), urine (organic aciduria), and tissues can be toxic and can cause serious health problems.

Normally, the body breaks down proteins from food into smaller parts called amino acids. Amino acids can be further processed to provide energy for growth and development. People with isovaleric acidemia have inadequate levels of an enzyme that helps break down a particular amino acid called leucine.

Health problems related to isovaleric acidemia range from very mild to life-threatening. In severe cases, the features of isovaleric acidemia become apparent within a few days after birth. The initial symptoms include poor feeding, vomiting, seizures, and lack of energy (lethargy). These symptoms sometimes progress to more serious medical problems, including seizures, coma, and possibly death. A characteristic sign of isovaleric acidemia is a distinctive odor of sweaty feet during acute illness. This odor is caused by the buildup of a compound called isovaleric acid in affected individuals.

In other cases, the signs and symptoms of isovaleric acidemia appear during childhood and may come and go over time. Children with this condition may fail to gain weight and grow at the
expected rate (failure to thrive) and often have delayed development. In these children, episodes of more serious health problems can be triggered by prolonged periods without food (fasting), infections, or eating an increased amount of protein-rich foods.

Some people with gene mutations that cause isovaleric acidemia are asymptomatic, which means they never experience any signs or symptoms of the condition.

Isovaleric acidemia is estimated to affect at least 1 in 250,000 people in the United States.

**METHYLMALONIC ACIDEMIA TYPE A AND TYPE B**

The official name of this gene is “methylmalonic aciduria (cobalamin deficiency) cblA type.”

The official name of this gene is “methylmalonic aciduria (cobalamin deficiency) cblB type.”

The *MMAA* gene provides instructions for making a protein that is involved in the formation of a compound called adenosylcobalamin (AdoCbl). AdoCbl, which is derived from vitamin B12 (also called cobalamin), is necessary for the normal function of an enzyme known as methylmalonyl CoA mutase. This enzyme helps break down certain proteins, fats (lipids), and cholesterol.

Research indicates that the MMAA protein may play a role in one of the last steps in AdoCbl formation, the transport of vitamin B12 into mitochondria (specialized structures inside cells that serve as energy-producing centers). Additional chemical reactions then convert vitamin B12 into AdoCbl. Other studies suggest that the MMAA protein may help stabilize methylmalonyl CoA mutase and protect the enzyme from being turned off (inactivated).

The *MMAB* gene provides instructions for making an enzyme that is involved in the formation of a compound called adenosylcobalamin (AdoCbl). AdoCbl, which is derived from vitamin B12 (also known as cobalamin), is necessary for the normal function of another enzyme known as methylmalonyl CoA mutase. This enzyme helps break down certain proteins, fats (lipids), and cholesterol.

The MMAB enzyme is active in mitochondria, which are specialized structures inside cells that serve as energy-producing centers. Once vitamin B12 has been transported into mitochondria, the MMAB enzyme converts a form of the vitamin called cob(I)alam to AdoCbl. Studies suggest that this enzyme may also deliver AdoCbl to methylmalonyl CoA mutase.

**METHYLMALONICA ACIDEMIA**

The official name of this gene is “methylmalonyl CoA mutase.”

The *MUT* gene provides instructions for making an enzyme called methylmalonyl CoA mutase. This enzyme is active in mitochondria, which are specialized structures inside cells that serve as energy-producing centers.

Methylmalonyl CoA mutase is responsible for a particular step in the breakdown of several protein building blocks (amino acids), specifically isoleucine, methionine, threonine, and valine.
The enzyme also helps break down certain types of fats (lipids) and cholesterol. First, several chemical reactions convert the amino acids, lipids, or cholesterol to a molecule called methylmalonyl CoA. Then, working with a compound called adenosylcobalamin (AdoCbl), which is a form of vitamin B12, methylmalonyl CoA mutase converts methylmalonyl CoA to a compound called succinyl-CoA. Other enzymes break down succinyl-CoA into molecules that are later used for energy.

**MULTIPLE CARBOXILASE DEFICIENCY**

Holocarboxylase synthetase deficiency is an inherited disorder in which the body is unable to use the vitamin biotin effectively. This disorder is classified as a multiple carboxylase deficiency, a group of disorders characterized by impaired activity of certain enzymes that depend on biotin.

The signs and symptoms of holocarboxylase synthetase deficiency typically appear within the first few months of life, but the age of onset varies. Affected infants often have difficulty feeding, breathing problems, a skin rash, hair loss (alopecia), and a lack of energy (lethargy). Immediate treatment and lifelong management with biotin supplements may prevent many of these complications. If left untreated, the disorder can lead to delayed development, seizures, and coma. These medical problems may be life-threatening in some cases.

The exact incidence of this condition is unknown, but it is estimated to affect 1 in 87,000 people.

**PROPIONIC ACIDEMIA**

Propionic acidemia is an inherited disorder in which the body is unable to process certain parts of proteins and lipids (fats) properly. It is classified as an organic acid disorder, which is a condition that leads to an abnormal buildup of particular acids known as organic acids. Abnormal levels of organic acids in the blood (organic acidemia), urine (organic aciduria), and tissues can be toxic and can cause serious health problems.

In most cases, the features of propionic acidemia become apparent within a few days after birth. The initial symptoms include poor feeding, vomiting, loss of appetite, weak muscle tone (hypotonia), and lack of energy (lethargy). These symptoms sometimes progress to more serious medical problems, including heart abnormalities, seizures, coma, and possibly death.

Less commonly, the signs and symptoms of propionic acidemia appear during childhood and may come and go over time. Some affected children experience intellectual disability or delayed development. In children with this later-onset form of the condition, episodes of more serious health problems can be triggered by prolonged periods without food (fasting), fever, or infections.

Propionic acidemia affects about 1 in 100,000 people in the United States. The condition appears to be more common in several populations worldwide, including the Inuit population of Greenland, some Amish communities, and Saudi Arabians.

**CONGENITAL ADRENAL HYPERPLASIA**

Congenital adrenal hyperplasia (CAH) due to 11-beta-hydroxylase deficiency is one of a group of disorders (collectively called congenital adrenal hyperplasia) that affect the adrenal glands.
The adrenal glands are located on top of the kidneys and produce a variety of hormones that regulate many essential functions in the body. In people with CAH due to 11-beta-hydroxylase deficiency, the adrenal glands produce excess androgens, which are male sex hormones.

There are two types of CAH due to 11-beta-hydroxylase deficiency, the classic form and the non-classic form. The classic form is the more severe of the two types.

Females with the classic form of CAH due to 11-beta-hydroxylase deficiency have external genitalia that do not look clearly male or female (ambiguous genitalia). However, the internal reproductive organs develop normally. Males and females with the classic form of this condition have early development of their secondary sexual characteristics such as growth of facial and pubic hair, deepening of the voice, appearance of acne, and onset of a growth spurt. The early growth spurt can prevent growth later in adolescence and lead to short stature in adulthood. In addition, approximately two-thirds of individuals with the classic form of CAH due to 11-beta-hydroxylase deficiency have high blood pressure (hypertension). Hypertension typically develops within the first year of life.

Females with the non-classic form of CAH due to 11-beta-hydroxylase deficiency have normal female genitalia. As affected females get older, they may develop excessive body hair growth (hirsutism) and irregular menstruation. Males with the non-classic form of this condition do not typically have any signs or symptoms except for short stature. Hypertension is not a feature of the non-classic form of CAH due to 11-beta-hydroxylase deficiency.

CAH due to 11-beta-hydroxylase deficiency accounts for 5 to 8 percent of all cases of congenital adrenal hyperplasia. It is estimated that CAH due to 11-beta-hydroxylase deficiency occurs in 1 in 100,000 to 200,000 newborns. This condition is more common in Moroccan Jews living in Israel, occurring in approximately 1 in 5,000 to 7,000 newborns. The classic form of CAH due to 11-beta-hydroxylase deficiency appears to be much more common than the non-classic form.

CONGENITAL HYPOTHYROIDISM

Congenital hypothyroidism is a condition that affects infants from birth (congenital) and results from a partial or complete loss of thyroid function (hypothyroidism). The thyroid gland is a butterfly-shaped tissue in the lower neck. It makes iodine-containing hormones that play an important role in regulating growth, brain development, and the rate of chemical reactions in the body (metabolism).

Congenital hypothyroidism occurs when the thyroid gland fails to develop or function properly. In 80 to 85 percent of cases, the thyroid gland is absent, abnormally located, or severely reduced in size (hypoplastic). In the remaining cases, a normal-sized or enlarged thyroid gland is present, but production of thyroid hormones is decreased or absent. If untreated, congenital hypothyroidism can lead to intellectual disability and abnormal growth. In the United States and many other countries, all newborns are tested for congenital hypothyroidism. If treatment begins in the first month after birth, infants usually develop normally.
Studies of populations from North America, Europe, Japan, and Australia, indicate that congenital hypothyroidism affects 1 in 3,000 to 4,000 newborns. For reasons that remain unclear, congenital hypothyroidism affects more than twice as many females as males.

HEMOGLOBIN DISORDERS
Sickle cell diseases are inherited abnormalities in the function of hemoglobin. "Sickling" is the term referring to changes in the red blood cell causing them to become hard, sticky and crescent shaped. These changes prevent them from moving smoothly through the body. The most catastrophic abnormal hemoglobin conditions are sickle cell anemia and sickle beta thalassemia. Affected newborns will appear normal, but anemia develops in the first few months of life, followed by increased susceptibility to infection, slow growth rates and the possibility of life threatening splenic sequestration. With appropriate medical care including penicillin prophylaxis, appropriate vaccinations, and long term management, the complications of sickle cell disease can be minimized.

Note: Infants identified with sickle cell "trait" typically will have few or no clinical symptoms.

SICKLE CELL ANEMIA
Sickle cell disease is a group of disorders that affects hemoglobin, the molecule in red blood cells that delivers oxygen to cells throughout the body. People with this disorder have atypical hemoglobin molecules called hemoglobin S, which can distort red blood cells into a sickle, or crescent, shape.

Signs and symptoms of sickle cell disease usually begin in early childhood. Characteristic features of this disorder include a low number of red blood cells (anemia), repeated infections, and periodic episodes of pain. The severity of symptoms varies from person to person. Some people have mild symptoms, while others are frequently hospitalized for more serious complications.

The signs and symptoms of sickle cell disease are caused by the sickling of red blood cells. When red blood cells sickle, they break down prematurely, which can lead to anemia. Anemia can cause shortness of breath, fatigue, and delayed growth and development in children. The rapid breakdown of red blood cells may also cause yellowing of the eyes and skin, which are signs of jaundice. Painful episodes can occur when sickled red blood cells, which are stiff and inflexible, get stuck in small blood vessels. These episodes deprive tissues and organs of oxygen-rich blood and can lead to organ damage, especially in the lungs, kidneys, spleen, and brain. A particularly serious complication of sickle cell disease is high blood pressure in the blood vessels that supply the lungs (pulmonary hypertension). Pulmonary hypertension occurs in about one-third of adults with sickle cell disease and can lead to heart failure.

Sickle cell disease affects millions of people worldwide. It is most common among people whose ancestors come from Africa; Mediterranean countries such as Greece, Turkey, and Italy; the Arabian Peninsula; India; and Spanish-speaking regions in South America, Central America, and parts of the Caribbean.
Sickle cell disease is the most common inherited blood disorder in the United States, affecting 70,000 to 80,000 Americans. The disease is estimated to occur in 1 in 500 African Americans and 1 in 1,000 to 1,400 Hispanic Americans.

**SICKLE BETA THALASSEMIA**

Beta thalassemia is a blood disorder that reduces the production of hemoglobin. Hemoglobin is the iron-containing protein in red blood cells that carries oxygen to cells throughout the body.

In people with beta thalassemia, low levels of hemoglobin lead to a lack of oxygen in many parts of the body. Affected individuals also have a shortage of red blood cells (anemia), which can cause pale skin, weakness, fatigue, and more serious complications. People with beta thalassemia are at an increased risk of developing abnormal blood clots.

Beta thalassemia is classified into two types depending on the severity of symptoms: thalassemia major (also known as Cooley's anemia) and thalassemia intermedia. Of the two types, thalassemia major is more severe.

The signs and symptoms of thalassemia major appear within the first 2 years of life. Children develop life-threatening anemia. They do not gain weight and grow at the expected rate (failure to thrive) and may develop yellowing of the skin and whites of the eyes (jaundice). Affected individuals may have an enlarged spleen, liver, and heart, and their bones may be misshapen. Some adolescents with thalassemia major experience delayed puberty. Many people with thalassemia major have such severe symptoms that they need frequent blood transfusions to replenish their red blood cell supply. Over time, an influx of iron-containing hemoglobin from chronic blood transfusions can lead to a buildup of iron in the body, resulting in liver, heart, and hormone problems.

Thalassemia intermedia is milder than thalassemia major. The signs and symptoms of thalassemia intermedia appear in early childhood or later in life. Affected individuals have mild to moderate anemia and may also have slow growth and bone abnormalities.

Beta thalassemia is a fairly common blood disorder worldwide. Thousands of infants with beta thalassemia are born each year. Beta thalassemia occurs most frequently in people from Mediterranean countries, North Africa, the Middle East, India, Central Asia, and Southeast Asia.

**BIOTIDINASE DEFICIENCY**

Biotinidase deficiency is caused by the lack of an enzyme called biotinidase, resulting in an inability to liberate biotin from a bound form so that it can be used by the body. Without sufficient biotin, several other critical enzyme systems are unable to function properly. Biotinidase deficiency can lead to seizures, developmental delay, eczema, and hearing loss. Newborns with the disorder appear normal, but develop critical symptoms after the first weeks or months of life. Symptoms include hypotonia, ataxia, seizures, developmental delay, hair loss, seborrheic dermatitis, hearing loss and optic nerve atrophy. Metabolic acidosis can result in coma and death. Biotinidase deficiency is treated with daily biotin supplement, and with early diagnosis and treatment, all symptoms can be prevented.
GALACTOSEMIA
GAL results from a deficiency in the enzyme needed to metabolize galactose in milk sugar. Newborns typically appear normal, however, within a few days to two weeks after initiating milk feedings, vomiting, diarrhea, lethargy, jaundice and liver damage develops. Untreated, the disorder may result in developmental retardation, hepatomegaly, growth failure, cataracts, and in severe cases death. With early detection and strict adherence to a galactose-free diet, infants diagnosed with GAL can be expected to achieve satisfactory general health. However, since some galactose can be produced in the body and cause negative effects, close developmental monitoring and assessment is recommended.

CYSTIC FIBROSIS
Cystic fibrosis is an inherited disease characterized by the buildup of thick, sticky mucus that can damage many of the body's organs. The disorder's most common signs and symptoms include progressive damage to the respiratory system and chronic digestive system problems. The features of the disorder and their severity varies among affected individuals.

Mucus is a slippery substance that lubricates and protects the linings of the airways, digestive system, reproductive system, and other organs and tissues. In people with cystic fibrosis, the body produces mucus that is abnormally thick and sticky. This abnormal mucus can clog the airways, leading to severe problems with breathing and bacterial infections in the lungs. These infections cause chronic coughing, wheezing, and inflammation. Over time, mucus buildup and infections result in permanent lung damage, including the formation of scar tissue (fibrosis) and cysts in the lungs.

Most people with cystic fibrosis also have digestive problems. Some affected babies have meconium ileus, a blockage of the intestine that occurs shortly after birth. Other digestive problems result from a buildup of thick, sticky mucus in the pancreas. The pancreas is an organ that produces insulin (a hormone that helps control blood sugar levels). It also makes enzymes that help digest food. In people with cystic fibrosis, mucus blocks the ducts of the pancreas, reducing the production of insulin and preventing digestive enzymes from reaching the intestines to aid digestion. Problems with digestion can lead to diarrhea, malnutrition, poor growth, and weight loss. In adolescence or adulthood, a shortage of insulin can cause a form of diabetes known as cystic fibrosis-related diabetes mellitus (CFRDM).

Cystic fibrosis used to be considered a fatal disease of childhood. With improved treatments and better ways to manage the disease, many people with cystic fibrosis now live well into adulthood. Adults with cystic fibrosis experience health problems affecting the respiratory, digestive, and reproductive systems. Most men with cystic fibrosis have congenital bilateral absence of the vas deferens (CBAVD), a condition in which the tubes that carry sperm (the vas deferens) are blocked by mucus and do not develop properly. Men with CBAVD are unable to father children (infertile) unless they undergo fertility treatment. Women with cystic fibrosis may experience complications in pregnancy.

Cystic fibrosis is a common genetic disease within the Caucasian (white) population in the United States. The disease occurs in 1 in 2,500 to 3,500 Caucasian newborns. Cystic fibrosis is
less common in other ethnic groups, affecting about 1 in 17,000 African Americans and 1 in 31,000 Asian Americans.

**SEVERE COMBINED IMMUNODEFICIENCY**
X-linked severe combined immunodeficiency (SCID) is an inherited disorder of the immune system that occurs almost exclusively in males. Boys with X-linked SCID are prone to recurrent and persistent infections caused by certain bacteria, viruses, and fungi. The organisms that cause these infections are described as opportunistic because they ordinarily do not cause illness in healthy people. However, in people with X-linked SCID they cause very serious or life-threatening illnesses. Many infants with X-linked SCID experience chronic diarrhea and skin rashes, and grow more slowly than other children. Without treatment, affected males usually do not live beyond infancy.

X-linked SCID is the most common form of severe combined immunodeficiency. Its exact incidence is unknown, but the condition probably affects at least 1 in 50,000 to 100,000 newborns.

9. **CONCLUSION**

This paper is a very general outline of the complex area of metabolic disorders specifically within the spectrum of disorders tested in the newborn screening Panel

10. **BIBLIOGRAPHY**

Texas Department of State Health Services
www.dshs.state.tx.us/newborn
American Academy of Pediatrics
www.aap.org
College of Medical Genetics
www.acmg.net
Genetics Home Reference
www.webmd.com
THE TEN MOST COMMON REASONS CANDIDATES DON'T PASS ATA'S ARABIC>ENGLISH CERTIFICATION EXAM

Jeffrey Hayes
Hayes Consulting & Translation Corp

Abstract: Roughly 90% of candidates who take the Arabic-English certification exam do not pass. This presentation will focus on the ten most common reasons candidates are not successful, and will give suggestions to increase their chances of passing. These suggestions will include optimal preparation before the exam, suggestions to help while taking the exam, suggestions regarding handwriting or typing, using the best strategies for translating, avoiding common syntactical errors resulting from Arabic-English interference, and planning for optimal use of the exam time. Examples from examinations will be shown, and audience participation will be elicited.

Hello. My name is Jeff Hayes, and I am the chairman of the committee that grades Arabic-English certification exams. The title of this workshop is The Ten Most Common Reasons Candidates Don't Pass ATA's Arabic>English Certification Exam.

Roughly 90% of candidates who take ATA's Arabic-English certification exam do not pass. This presentation will focus on the ten most common reasons candidates are not successful, and will give suggestions to increase their chances of passing. These suggestions will include optimal preparation before the exam, suggestions to help while taking the exam, suggestions regarding handwriting or typing, using the best strategies for translating, avoiding common syntactical errors resulting from Arabic-English interference, and planning for optimal use of the exam time. Feel free to ask questions as we go through the list.

The 10 most common reasons people don't pass the Arabic-English certification exam

A. Lack of Preparation

1. Assuming that because your native language is Arabic and you speak English, that you can translate Arabic into English accurately.

You must master formal English writing (not spoken or slang) in order to translate well. Probably 80%-90% of the exams that we grade seem to be from Arabs who seem to understand the Arabic of the exam passages. However, the exams that they submit for grading are not written in flowing, natural English. Sometimes, there are other problems related to lack of mastery of English: lack of parallelism, grammatical mistakes, misuse of connecting expressions, etc. We will cover these later.

Some suggestions to master formal English writing are these:

- Read magazines and books that use formal English. Reading well-written English helps you to get used to the proper way of writing things. It also improves the accuracy of your vocabulary by helping you to get used to how words are used in context.
• Take a writing course at a community college, college, or university. Tell the teacher or professor that you don't care about the grade but are there to improve, and will appreciate all suggestions.

If you are not confident that you will pass, you should take the practice exam. First, it is much cheaper, and second, you get to see what errors you made since the exam is returned to you. The practice exam is a teaching tool. The certification exam is not. The certification exam will not be returned to you.

2. Not bringing and using appropriate dictionaries for the exam.

Small pocket dictionaries designed for tourists are pretty worthless for a translation exam, as they generally give only one meaning for a given word. There is no one-to-one correspondence of words between languages, and you need dictionaries that give you several options so that you can choose the most appropriate one for the conference.

You should bring Arabic-English, English-Arabic, English-English, and Arabic-Arabic. My recommendations are Hans Wehr, Al-Mawrid, Webster's, and Al-Munjid, respectively. You may wish to bring other specialized dictionaries, but these are probably unnecessary. Certification exam passages are chosen to be general enough that the vocabulary words you need will be in good, general dictionaries. Since you are spending a lot of money for the exam, spend the money needed to buy these dictionaries and bring them to the exam. You will definitely need the Arabic English dictionary and might need the others. You will want to familiarize yourself with the way the dictionaries are written, especially Arabic-English dictionaries. Hans Wehr is organized according to the three root letters of the Arabic words, while the Arabic-English Al-Mawrid is organized alphabetically as the complete word is spelled.

Other suggestions on exam preparation (not included as part of the 10) are: Get a good night's sleep the night before the exam. Have some protein as part of the meal before the exam. Arrive early for the exam.

Spend time studying the ATA website for suggestions on taking the exam. The website, https://www.atanet.org/certification/aboutexams_overview.php and the pages that are reached through it are crucial to understanding what ATA wants in a certification translation exam.

B. During the exam

3. Not planning your time well.

3 hours is plenty of time to plan, translate, and review two passages of about 250 words. My suggestions on use of time is 5 minutes reading the translation instructions and the A passage, 1 hour translating, 15 minutes review, 10 minutes reading the B and C passages and choosing which one to translate, 1 hour translating, 15 minutes review, then last 15 minutes proofreading both passages again.
Many exams show evidence that the candidate did not review his work, as there are errors that should have been caught during review and proofreading.

There is no need to re-copy. Just as long as the grader can figure out what you meant, that is fine. We don't need a clean copy. You need to use the time to check your translation, not make it look nice. If you change your mind on a sentence or phrase after you have finished the passage and there is nowhere to write it in the place it goes, make an asterisk and a note that a sentence to be included later is to be inserted there.

Other suggestions on planning your time (not included as part of the 10) are: Make sure you translate the title (see #6), if there is one. Make sure you don't skip a line or sentence or paragraph.

4. Not using semantically equivalent words (including the proper register).

The most common error is an error of translation, which means the candidate used a word that does not mean the same as the word in the original text. Just because a dictionary lists a word as one possible translation does not mean that the word will be appropriate in the context. If you don't know all the words that are listed as possible translations in a dictionary, don't choose one you don't know. This problem may be related to not knowing written English well (#1) or not using dictionaries well (#2).

*Example:*
الحقائق الكونية
Error: cosmic facts
Better: universal truths

Register is another common problem. Register means the level or formality or informality, or the appropriate field of a word or expression. If the text is a medical text, don't use a legal word, a household word, or a slang word with a similar meaning. This problem may also be related to not knowing English well (#1) or not using dictionaries well (#2). Make sure you read the translation instructions at the top of each passage. These instructions will tell you about the audience of the translation and the level of formality needed.

*Example:*
أرضعت الطبيبة الوالد
Wrong register: The deer breastfed the boy.
Better: The deer nursed the boy.

5. Making mistakes in English grammar (word order, subject verb agreement, parallelism, etc.)

Make sure during reviewing and proofreading that you look for word order (Does this sound like a normal English sentence?), sentence length (Sentences in English generally have no more than 2-3 clauses maximum and usually no more than 15-20 words.), Subject -verb agreement (Singular subjects take singular verbs), parallelism (making items in a list the same grammatical part of speech or part of a sentence), etc.

6. Adding or omitting words (including the title).
Don't be more specific than the text is. Neither should you be more general that the text is.
e.g. If the text states "الولايات المتحدة الأمريكية" don't put America. If it says "أوباما" don't put President Obama.

7. Not understanding the original text.

10-20% of the exams we get seem to be from people whose native language is English and who have learned Arabic as a second or foreign language. These exams generally use grammatical English but sometimes seem to have problems in understanding the Arabic of the text.

Proper use of dictionaries is important, but especially for those who are not sure they understand the meaning of the text.

e.g. "الذهاب إلى المطعم فرصة للتخلص من الطبخ في البيت"
Misunderstanding: Going to a restaurant is a chance to escape from home cooking.
Better: Going to a restaurant is a chance to escape from cooking at home.


Many exams sound like they are Arabic sentences that use English words. It is important to make sure the word order of the sentence is natural in English. This is much more common than exams that are too freely translated. If you translate word by word, it is almost guaranteed that the result will not be natural English.

e.g. "أصبح العقل البشري أسلم تفكيرا وأسلم استنتاجا"
Literal: The human mind became of sounder thought and deduction.
Better: The human mind became better in thinking and drew better conclusions.

Another result of being too literal is when Arabic sentences are translated with English sentences of the same length. This often results in ungrammatical, unnatural sentences. (see #9)

A few exams are too freely translated. Paragraphs do not need to be re-written. Sentences do not need to be re-ordered. Lists should not be summarized. If possible, treat the sentences as they are in the text in order.


Arabic punctuation is not the same as English punctuation. Often a comma in Arabic is used to join what in English would be two complete sentences. The proper punctuation in English would be a period or a semicolon.

e.g. "كما أن مطبخ المطعم في الليل قد لا يكون مثاليًا، وخاصة مع الاستخدام المتكرر للمقلاة الذي يجعل الزيت بالتأكيد غير صحي للقلي، وهو الأمر الذي يجعل طعامك يغمس في دهون الأطعمة السابقة."
This needs to be broken up into 2-3 sentences in English, for example:
Moreover, restaurant kitchens may not be ideal at night, especially with repeated use of the frying pan. This definitely makes the oil unhealthy for frying. This causes your food to be soaked in the fats of previous foods.

In numerals, use of commas and periods are generally opposite.

10. Not spelling correctly or writing clearly.

If you are not certain how to spell a word, look it up in the dictionary. (#2) Dictionaries are allowed, so use them.

Penmanship
Sometimes handwriting is so bad that the grader cannot read what the candidate wrote. If this is the case, it is considered an error. Also, make sure to use capital letters and small letters in the proper places. For letters that are similar in small and capital versions, make sure it is clear which one you mean to put. Graders do not grade your probable intention, but what you wrote.

Appeals
A final note: If your exam fails, don't bother with an appeal. In 11 years of grading, I have never seen a single instance where a failing exam grade is overturned. Two graders grade every exam, and they first grade the exam independently. After they are both done, they compare grades. If they are not close, they confer further and discuss each error and how serious it is.

If an examination is close to the pass/fail mark, both graders will go over the whole exam and make sure that the error points they have assigned are not too harsh. Only when they both agree will they put the marks on the test. When there is an appeal, a third grader grades the exam and looks at the first two graders' grading. The result in my experience is that the appeal grader has always given a worse score than either of the first two graders.
CRITIQUE OF ARABIC TRANSLATION EFFORTS IN SUPPORT OF WARTIME EFFORTS IN THE MIDDLE EAST

Robert Hoffman

Abstract: The United States has been at war for over a decade and has needed translation support since before the attacks of 9/11. This presentation presents a look at how the United States military approached the lack of translators and the successes and shortfalls of that effort. The presentation starts with a look at the historical need for translators and how the need has increased to a point that requires contract translators in the current conflicts. It will review the two types of translators used in the conflicts, military and contract translators, and review the strengths and weaknesses of each. The presentation will look at how Afghanistan and Iraq have shaped the acquisition process, and raised the awareness of the need for credible translators. It will conclude with suggestions on corrective actions to improve the level and efficiency of translators in the future.

As part of a nation-wide effort in 2005 to improve American political and military effectiveness world-wide, Department of Defense Directive 5160.41E outlines duties of the respective Department of Defense components in regards to improving the language proficiency and regional expertise of personnel in the Department of Defense. The statement that forms the basis for change states that the Secretaries of the military departments, that being the Army, Navy, Air Force and Marines, will, “ensure, to the greatest extent practicable, all military units deploying to or transiting foreign territories have an appropriate capability to communicate in the languages of the territories of deployment or transit and provide cultural awareness training, basic language familiarization and language aid…” (Defense, 2005) This was the most sweeping and broad challenge ever given to the US Military in regards to language and regional expertise. It changed the life of every linguist and foreign area officer in the military. Within the military there are three type of people who are trained in languages – enlisted personnel who will work as interrogators (emphasis on speaking), enlisted who will perform voice intercept missions (emphasis on listening) and officers who will perform duties of foreign area officers (emphasis on total language fluency and regional expertise).

At the time that directive was issued, we were 4 years into the war in Afghanistan and 2 years into Operation Iraqi Freedom (OIF) and already unable to meet language and regional expertise needs from within our forces. This directive required a quantum increase in the number of personnel in the warzone who could communicate with the indigenous people. The military can only sustain a certain number of linguists and foreign area officers during peacetime and when that number is not sufficient, or their abilities do not meet what is needed in the force, we must rely on contractors (native speakers). Hiring large numbers of contractors in a short timeframe is fraught with its own set of complications.

This paper is a look at our shortcomings in regards to military linguists, of which I also classify foreign area officers, and contracting processes for native speakers. I will conclude with suggestions for how we can improve in the future.
1. BACKGROUND

The need for a cadre of linguists is not new in the political military realm. The Dragoman of Turkey were prime examples. Ada Lonni, in her article on Dragoman published in Leviathan, writes, “The Dragoman was a key character in nineteenth-century Ottoman Jerusalem. Diplomats relied on him for the most delicate tasks.” (Lonni, 2011) These were not Turks by birth, but were, “…Christian, sometimes Jewish, or…a Druze…” (Lonni, 2011). While these personnel were essential to the operation of the Ottoman world, they were, like many of our modern-day translators in Iraq and Afghanistan, “Always in the middle, always on the border, (knowing) the two worlds, East and West…”, but “not (being) here or there”. (Lonni, 2011) That we need such people is obvious. Communication between two cultures is essential in military operations. After the conflict in Bosnia, Catherine Baker noted, “Studies of the interpreter in war and international relations concentrate on interpreters’ privileged access to power-holders and their capacity to control the transmission of information.” (Baker, 2010) As our conflicts have progressed we have gone from being able to provide enough linguists from our own military personnel to needing far more than we can provide.

As America began to get involved in wars overseas, we started with wars that we could handle from internal recruitment. During the Second World War, we found that we had many people in our country who were only a generation away from the countries where we were fighting. Total mobilization of the populace helped to mobilize language abilities, as well. Study of German and French in public schools was common and thus the support of the war effort in Europe was easy. In the Pacific it was more problematic, with the lack of trust of the Japanese many loyal second-generation Japanese were sent to Europe instead of used in the Pacific, but the Army intelligence service continued to recruit Nisei (second generation Japanese) to fill the intelligence needs of the nation. “These Nisei linguists combined the best of both sides of their heritage, calling themselves ‘Yankee Samurai.’ In fact their American upbringing so outweighed their Japanese heritage that few spoke much Japanese.” (McNaughton, 2007). Nearly 6,000 Japanese linguists were produced by this effort. They served as translators, voice intercept operators and interrogators.

Desert Storm was so short that the need for linguists did not grow substantially and there were enough displaced Kuwaitis that most of our needs were met without resorting to wholesale contracting. I was one of the linguists and know that we were short-handed, but we could meet the need. As part of an Intelligence battalion, I was tasked to do everything from translate for the general, to find and talk to local Bedouin and negotiate a price for a cow from a local butcher for a bar-b-que the unit wanted to have. I failed in that mission. The butcher would only sell me a young camel and the unit was not adventurous. After the war there were reams of captured documents to be translated, which provided us training on how to read cursive Arabic for several months. During the latter part of the war I was one of five linguists taken from our home unit and “loaned” to another to provide linguist support. Since we only forayed into Iraq and never really stayed for any period of time, we had little use for interpreters and thus the number of linguists in our units, augmented by volunteer Kuwaitis, was sufficient and we did not need contractors.

Bosnia was the first operation which really required us to “hire” linguists. No one expected the implosion of Yugoslavia in 1991. It had hosted the winter Olympics in 1984 and thus was a
‘stable’ country. The department of Defense had only a few linguists trained in Serbo-Croatian. Even the countries located near the conflict, “were still largely on a Cold War footing” and “contained very few personnel who already spoke the language they had known as ‘Serbo-Croat’.” (Baker, 2010) When the UN peacekeeping force went in, the US still held hope that we would not be involved. When finally in 1996 we moved into the UN sanctioned Implementation Force (IFOR), which would become the Stabilization Force (SFOR), we relied heavily on local hires, since we had spent the 80’s dismantling our Serbo-Croatian capability. In my office that worked for the commanding general of SFOR, we had one officer who spoke broken Serbo-Croatian, one local translator and one sergeant who happened to originally be from the Dalmatian coast and spoke the language, but that was coincidental. Later we received a contract linguist. We found that she was very civilian with no experience at interpreting and had troubles adjusting to a warzone, but once she got used to it and gained the military vocabulary she needed, she performed well, but had to be handled differently than our military linguist. When dangerous missions came up, it was always the military linguist who would go, although her pay was considerably less than that the contract linguist but her ability just as good, if not better. The contracting was to continue well past the IFOR and SFOR period as conflict spread into Kosovo and Macedonia, resulting in a 2002 contract awarded to the TRW company for the amount of $12.9 Million for linguist support in the Balkans region.

2. CURRENT CONFLICT

With the latest conflicts we never had a chance of being able to handle the linguist need in house. It was obvious from the start that we would need contract linguists. With the restructuring of the military under Defense Secretary Donald Rumsfeld, the Army was no longer able to deploy without substantial help from contractor services. The logic was that contractors could provide the surge requirement at a substantial savings over maintaining a larger support arm of the Army, especially when long-term costs like medical care and retirements were considered, so personnel like logistics experts and cooks were few and contractors filled the void. The Congressional Research Service reported that in, “March 2011, DoD had more contractor personnel in Afghanistan and Iraq (155,000) than uniformed personnel (145,000).” (Schwartz & Swain, 2011). As early as 2002 the alarm was raised about the availability of Arabic linguists. In the Joint Inquiry into the Terrorist Attacks of September 11, 2001, it was reported, “prior to September 11, the Intelligence community was not prepared to handle the challenge it faced in translating the volumes of foreign language counterterrorism intelligence it collected.” And a “readiness level of only 30% in most critical terrorism-related languages…” (Congress, 2002) The Government Accounting Office (GAO) was reporting, “Officials in the four agencies we reviewed reported varied types and degrees of foreign language shortages depending on the agency, job position, language, and skill level. They noted shortages of translators and interpreters and people with skills in specific languages, as well as a shortfall in proficiency level among people who use foreign language skills in their jobs. The Army’s greatest foreign language needs were for translators and interpreters, cryptologic linguists, and human intelligence collectors. “ (Westin, 2002) At that time the Army was only meeting 50% of its Arabic Linguist need in its units during peacetime. (Feingold, 2003) The majority of military

---

1 In the late 80’s the Serbo-Croatian section of the 142d MI Battalion was closed because strategic planning determined them to no longer be needed. (Tarbet, 1999)
linguists are trained at the Defense Language Institute (DLI) on the Presidio of Monterey, California. At any one time as many as 4,000 linguists may be in training. Of those, Steve Collins, the Chief of Staff at the presidio says about 25% are training in Arabic. (Collins, 2014) Since it takes a year and a half of training to produce an Arabic linguist at the Presidio, we can anticipate no more than 700 linguist per year added to the pool of available linguists. This number, even if at 100%, would still be far below the number needed in Iraq. The Army had a contract in 2008 for 11,000 civilian linguists in Iraq. In comparison, the 300th Military Intelligence brigade of the Utah National Guard, a strategic reserve for linguists, was able to mobilize 700 soldiers to work as linguists in 2002 during the initial OIF push (Mitchell, 2004), but they cannot be deployed indefinitely. They have to eventually come home for a period and with only 60% of their 1400 soldiers trained in major conflict languages, they are at their limit. The military just cannot provide enough linguists from organic assets to fulfill the DOD 5160.41E. This is why we have contract linguists.

3. **ISSUES WITH TRANSLATORS**

**Military Linguists.** There are several issues that keep DLI trained military linguists from being as effective as we need them to be. The first hurdle, as mentioned above, is availability of linguists. Often the personnel system fails to properly locate those who are linguists, where they are located and their level of proficiency. During the Bosnian peacekeeping efforts, where needs were far fewer than in Iraq, it was recorded that “Many of the extra military linguists came from the 300th Military Intelligence Brigade… (which) supplied five-member teams to ‘plug into’ other units as required, but an audit in 1994 had revealed that 78 percent of the teams… were understaffed and 73 percent of the teams had at least one underskilled member.” (Baker, 2010) I saw a similar situation in Iraq when I met a young lieutenant who I noticed had scribbled notes on his hand in Arabic. When I inquired further I found he had grown up in Lebanon until he was 14 then moved to the United States. He was fluent in Arabic and could communicate with the locals. His assignment in Iraq – running a supply depot on the American base where he had zero contact with Iraqis. While the US Army Personnel system requires annual testing of the linguists, there is no real mechanism to establish a hierarchy of proficiency that can be managed for resourcing, thus selection of linguists for special duties is the prerogative of the unit to which the linguist belongs. Selection should be based on adequacy of the linguist to fulfill the mission, but may be based on the whim of the lower command, sending out less qualified or problem linguists to support the higher command and maintaining a greater capacity to complete the mission of the home unit.

Maintaining the number of linguists in the units has always been difficult. As linguists gain expertise and proficiency, other agencies come calling. The Department of the Army reports that it costs $123,000 to train a linguist at DLI. At the conclusion of a four year enlistment, that linguist can walk out of a job that pays $27,000 per year and requires deployments to a job that requires no deployments and pays much higher in the federal or private sector. Additionally they usually have a security clearance that adds to their earning potential. “The overall Army rate for first-term reenlistments for fiscal year 1998 was 30.1 percent, but within the linguist structure, the retention rate was only 23.3 percent for the same period” (Tarbet, 1999) We saw this in our units when we returned from the Gulf War. Many of the best linguists were departing the service
to work for other organizations inside and outside the government. This causes a constant flow of new linguists coming in and needing further training.

One of the greatest challenges for the Arabic linguist in the military is maintaining proficiency. When not deployed there is a lack of time and resources to adequately maintain proficiency. The military training required and life in general have a great pull on the linguist, if they are not lucky enough to work in a location where they deal with the language on a daily basis. (King, 1991). It has been documented and is well accepted that “time on task is essential to build higher-level skills” (Language, 2004). While there have been a plethora of Arabic language products come to market in the last two decades, the majority are introductory level and not rigorous enough for military linguists. Thus a linguist goes through cycles of gaining in proficiency during deployments and losing in proficiency when they return to the US.

One area that is lacking in cultural proficiency. This lack of proficiency is partly due to a narrow field of vision on the part of the military. At DLI the cultural training in the curriculum is relegated to the tourist level, “do not show the bottom of your feet” type training or training on extremist Islam. Once in the filed they are focused only on job specific training. A 2010 report from General Michael Flynn, the Intelligence chief in Afghanistan in 2009, opens talking about the intelligence community (where linguists reside) “Having focused the overwhelming majority of its collection efforts and analytical brainpower on insurgent groups, the vast intelligence apparatus is unable to answer fundamental questions about the environment in which U.S. and allied forces operate and the people they seek to persuade.” (Major General Michael T. Flynn, CAPT Matt Pottinger, & Paul D. Batchelor, 2010) This lack of true cultural expertise was echoed by Gail McGinn, deputy undersecretary of defense for plans when she stated in 2005, “Just as important as language skills is an understanding of other countries’ geographies, cultures and people.” (Miles, 2005) A part of this education is an education in the history of Islam. The Defense Language Institute has struggled with this for many years. Since most of the instructors are first generation native speakers, who come to the United States with the biases, fears and prejudices of their home country, the Christian instructors do not want a Muslim teaching the history of Islam, because they are worried about proselyting and the Muslim instructors do not want a Christian teaching about Islam because they do not want them to run their religion down. The compromise was a chaplain making a DVD set about all religions, but focusing on extremism in religion, so again being very narrow in focus, as mentioned by General Flynn’s report.

The last hurdle for military linguists is gaining the trust of the commander. Many commanders do not feel the linguists are capable of accomplishing the mission. In some cases that is true, but without contact time with the language the linguist will never gain the proficiency they need. One first hand account states,” When I arrived for my first shift in-country, I quickly saw who would be turning those purloined insurgent communications into English: a large middle-aged Arab… rumor had it he made more than $250,000 – easily five times my paycheck. Meanwhile, the military linguists on my team simply sat to one side, numbly monitoring equipment and our computer screens for uneventful hours on end.” (Rosenthal, 2011) Often commanders think they need a native linguist for every language related task. The logic is they want the best to ensure they get correct translations. They feel native linguists are the best, when studies have shown that often non-native school trained speakers can function better in a simultaneous translation
scenario. (Collins, 2014) I had this experience when the general commanding the Multi-National Corps in Iraq took me to task for thinking my 20 years of experience with Arabic and Iraqis did not equal the knowledge of one author who published a book on extremist Islam. I was not even allowed to question her privately about some of her findings.

**Contract Linguists.** To meet the demand for linguists, the military had to rely on contract linguists. It makes fiscal sense to use contract linguists in the short run for reasons I have already explained, but still cost becomes an issue. With just the Army needing 11,000 linguists in 2008 (GAO, 2008), it was impossible to provide that level of manning without contracting. Contractors provided two types of linguists, interpreters, who would work with troops, and translators, who would mostly work with documents. These contracts were in the billions of dollars. In 1999 the US Intelligence and Security Command (INSCOM) awarded a $4.5 billion contract for 5 years of linguist support. This contract was eventually acquired by L-3 communications and they provided over 15,000 linguists worldwide. This was one contract let by one command. In 2005 the contract from INSCOM was re-competed and won by Global Linguist Solutions (GLS) for $4.65 billion. In total since 2001 over $16.6 billion has been spent of contracts for linguists. (Staff, 2013)

Cost was not so much the problem as how to institute management controls. During a periodic assessment of the GLS contract it was determined that the company was spending faster than they were providing services. It was discovered that funds had been used for private 3 bedroom apartments for GLS individuals, deployment of dependents at government expense and each management personnel having their own vehicle. Total overspending was $5 million. Of course this does not affect the effectiveness of the linguist provided, but demonstrates additional costs for poor management.

Since the need for linguists was immediate, the initial contracts were vague in setting parameters. The first wave of linguists were to be able to speak Arabic, but no qualifiers were placed on dialect or regional qualifications. This is in part because the military contracting offices were given the directive to get Arabic Linguists and the bidding companies, many of which were unfamiliar with Arabic regional differences, saw Arabic and the Middle East a monolithic area where a Moroccan and an Iraqi were interchangeable. It was only later that the differences were acknowledged. In a discussion with two linguists who had served in Iraq, one with Titan and one with Mission Essential Personnel, one can see how the process was refined. Frea and Khalid both worked at translators in Iraq. Frea was hired by Titan in 2002. He related that he only had to pass an oral proficiency interview in Modern Standard Arabic. Khaled, who was hired by Mission Essential Personnel in 2009, stated that he had to pass an oral proficiency exam in Arabic, another in Iraqi dialect and then had to take a written exam, which 50% of the candidates did not pass. (withheld, 2014) Frea also shared that during his time as an interpreter he met several others who could not understand Iraqis and the Iraqis could not understand them. Feras reported of one interpreter in the Kurdish area who spoke Farsi, the language spoken in Iran. He had no work and was sent to Baghdad, where there was more need for interpreters, but he still had no work.

This leads us into the proficiency of the linguists themselves. Many served well, but there were many instances where linguists were paid large salaries and did not contribute significantly to the
war effort. I have already touched on dialect, but there is also the matter of military vocabulary. There were over 1000 military phrases, many of which were also acronyms, like VBIED (Vehicle-Borne Improvised Explosive Device), that had to be translated. Many of them were new phrases developed as a result of developing warfare. Many were even new to personnel who may have served in the military for long periods of time, but had not been involved in the war. For linguists, it was an even greater task. It could not be left to each translator to determine the translation, since they would work across sectors and divisions. The translations had to be standardized, so the Multi-National Forces produced a document containing all the phrases and the acceptable translations. Each translator was responsible for learning the 1000 phrases in English and the proper Iraqi translation.

It cannot be ignored that some translators join the ranks for personal reasons and these reasons may affect the way in which they translate. It is a matter of where their loyalties lie. This can really come into play when the translators are locals. In Afghanistan “a translator…from a tribe or ethnic group that suffered under the rule of the Pashtun-dominated Taliban regime… (may) treat the Pashtun village elders with contempt – the kind of behavior that can turn an entire village against the foreign troops.” (Synovitz, 2008) While in Iraq, I was tasked with processing prisoners from the Western Sector. I noticed that several from the same town were possibly influential, but not dangerous. One was an old retired policeman, the other a former low level Baath party official. One was taken while sitting down to dinner in his house, the other while drinking tea at a local café. When I asked the unit why they had taken these two in, they explained that their translator, who was from the same town, had indicated they were trouble and should be taken in. I told the unit they needed to watch their translator and insure he wasn’t building his power base, by taking out those who could cause him troubles. This is an example of the translator using American military muscle to his ends.

Fear can also be a motivation not to translate correctly. Either fear of how they are perceived in their own community, if they are locally hired, or fear of displeasing the military commander and putting their job on the line. Margaret Mills, an Ohio State University professor of Near Eastern languages and cultures, stated in an interview that the locally hired translators in Afghanistan, “are seen as carpetbaggers… Because of this they are always being scrutinized and tested to see if they are still Afghani.” (Wartenberg, 2009) In Iraq I was asked to review a DVD of a translation between the head sheik of Fallujah and the commander of the Marine Corps element stationed in Anbar. The subject of the meeting was the withdrawal of the Marines from Fallujah and turning over the daily policing of the city to the locals – the Sons of Anbar. This was a first step in turning Anbar over to the Iraqis in preparation for US withdrawal from Iraq. The Marines had questions on the validity of the translation. As I watched the Marine commander made opening comments about how he looked forward to working with the local people to develop a good security plan that will allow the Marines to withdraw from town and provide only an overwatch for security purposes. The translation of the commander’s comments was accurate. The Sheikh then made his opening comments about how he was glad they were having the meeting and that they were ready for the Marines to leave Anbar, since the Anbaris knew how to secure their city and there was no need to have occupiers in the area. The translation was that the Sheikh was also very excited to work with the Marines to find a viable solution. The Marines changed translators shortly thereafter. Fear of one’s position, standing or safety can affect the translations.
The last way that the proficiency of the translator is affected is when they begin to control the decisions. In the civil action of Ilham Nassir Ibrahim, et al. vs. Titan Corporation, et al., concerning translators’ actions at Abu Ghraib prison, it was established that translators took part in the abuses of prisoners. The only question was if they were under direct military control or if their companies had control of them. In the case of Titan the military controlled them, but the company CACI international exercised control over their own translators and were thus liable in the case. (Ilham Nassir Ibrahim, et al. v. Titan Corporation, et al., 2011) In both instances the translators abused prisoners. This is indicative of a form of power that develops with translators – expert power. Since no one on the team could do their job without the translator, the translator takes on authority as a key player. Authority is given in the measure to which the translator is needed. Also, everyone knew that the contractor was being paid a hefty sum and in our western minds higher pay meant more importance. To compound the action, units would rotate out of Iraq and new units would arrive, but translators could stay for multiple tours, some staying for up to five or six years, while units usually spent one year on the ground. To the arriving unit this is the person with not only language capability, but institutional knowledge of how things were done. This authority can be heady and misused, with translators infusing themselves into decision making processes, where they should not be.

4. ATTEMPTS TO REFINE AND CORRECT DEFICIENCIES

During the course of the wars, the US government did not sit idly by and make no effort to improve the situation. There were several government language programs meant to address the deficiencies. Some were successful and others were not. Some were new ideas, like the 09L program and others were rehash of old ideas, like proficiency pay. In all, it was a shotgun approach to the problem that a 2009 GAO claimed had “made progress in transforming its language and regional proficiency capabilities over the last 5 years but continues to lack a comprehensive strategic plan to guide this transformation effort.” (Office, 2009). This finding is after the language roadmap of 2005 set parameters for military linguist improvement. The major finding was lack of measurable goals. Also, this only covered the military side of the translators, and did not include issues with the contractors.

In line with the Defense Language Review Board and the Defense Language Transformation Roadmap established in 2004, the Defense Language Institute was given the challenge to produce true level 2,2 linguists, based on the ILR ratings, and given the overall responsibility for maintaining linguists in the field. (Defense, DOD Instruction 5160.70, 2007) The curriculum for Arabic was rewritten and a new Defense Language Proficiency Test was developed. The previous test had been pencil and paper and took three hours to complete both the reading and listening portions. The passages for the listening were recorded by DLI faculty in Modern Standard Arabic with soundbooth-type clarity. The reading passages were never longer than a paragraph and were written by DLI faculty. The new test was computer–based and would be three hours of reading with passages taken from the media and multiple paragraphs. The listening was also three hours taken out of media with some background noise and accents. Initially the linguists scored lower, but scores have climbed as teachers and students adjusted to the new curriculum and testing. Now approximately 90% of students attain the S1+/L2/R2 goal.
Additionally DLI opened a School for Continuing Studies, to address the maintenance of language and provide tools through a web-based program named GLOSS (Global Language Online Support System) to facilitate improvement by independent study. Classes were started in Iraqi dialect and a School of Emerging Languages was opened to address Dari and Pashto courses and look ahead to what other languages may be needed in the future. DLI even had to develop a Dari-English dictionary, since no commercial products could be found. “Language Survival Kits” were developed for soldiers with no language exposure to provide them basic familiarity. These were small pamphlets with critical words and phrases accompanied with a CD to help pronunciation. Thousands were sent to deploying units. Finally, the Defense Language Institute was given oversight of the language maintenance courses at the various military bases where linguists are stationed. This has helped to provide a more robust language program. Despite all this, the regional expertise and culture were still missing.

DoD started the 09L program in an effort to boost linguist numbers, but also in an effort to provide commanders with regional knowledge. A “09L” (zero-nine-lima), was a person who was usually a second generation American who grew up in a family that followed the cultural norms of the home country and spoke Arabic at home. These were people who could be brought into the Army as a pure linguist with a knowledge of cultural issues and a loyalty to the United States. In 2008 it was reported that the Army had enlisted more than 600 09Ls and were looking to recruit 250 more the next year. (Joyner, 2008) The exact number currently in the ranks is not disclosed. These soldiers may come from Egyptian, Moroccan, or Iraqi background, but can quickly be trained in the cultural differences and dialect, since they already have an Arabic base. They then become a useful tool for the commanders.

To correct the contractor issues there have been a myriad of congressional hearings and reports. As the efforts in Iraq and Afghanistan wind down the companies finally have a good grasp on how to screen the linguists they hire and are doing a much better job at managing them. The initial rush to fill thousands of positions in a short period of time led to companies cutting corners on qualifications. (Synovitz, 2008) Government oversight and the ability to dismiss the companies without cause has made the issue a self-correcting one.

5. THE WAY AHEAD

There are several things that still need to happen not only to improve our linguists and prepare us better for the final days in Afghanistan and Iraq, but also to prepare us for the next time we have a sudden need for a large number of linguists in a short period of time. We must make sure the people setting up contracts know about language proficiency and regional differences. Contracts must include standards of proficiency and regional knowledge. In order to contain costs we have to train more personnel in contract management so they can act as contracting officers representatives (COR). Secretary of Defense Robert Gates said of efforts in Iraq and Afghanistan that “without any supervision or without any coherent strategy on how we were going to do it and without conscious decisions about what we will allow contractors to do and what we won’t allow contractors to do… We have not thought holistically or coherently about our use of contractors, particularly when it comes to combat environments.” (Congress, 2009) We must conduct a thorough review of contracting and set measures in place so next time we surge, we
will not recreate the wheel, like we did this time in Iraq and Afghanistan despite having had similar experiences in Bosnia and the Gulf War which should have prepared us. Once contractors are hired, if they are locals and loyalty is in question, they should be shadowed for a period of time by military linguists, or at a minimum their translations should be spot checked. People responsible for handling contract linguists should be familiar with linguist issues. In Iraq in 2009, the officer at the Multi-National Forces Headquarters who was responsible for assigning new contract linguists to specific units, knew nothing of Iraq or the Arabic language. He would often call me to help him decide where to place people so they would be effective.

While we have increased the proficiency of linguists at DLI, we still have not addressed the regional expertise and definitely not the history of Islam. There has to be an evaluation, by linguists who were in the field, of what they could have used and where they fell short. Too often this is done by a third party, who cannot understand the realities of the linguist on the ground. A curriculum development department is not effective unless the curriculum is relevant to the linguist on the ground. Tribal affiliations in Iraq is relevant, while Iraqi fashion in the 1960’s is not. There will have to be a determination not just of what will be taught, but who will teach it. The issue of faculty not trusting each other on instruction in Islamic history, relegates the subject of Islamic history to the non-Arab instructors. It will be difficult, but must be part of the instruction. An example best demonstrates why it must be taught, besides the fact that Islam enters into all aspects of life in the Middle East. A story is told among linguists that during the opening days of OIF, a unit rolled into a Shia town. There were banners up that stated “Long Live Hussein”. When asked what they said, the translator gave a correct translation, at which point the troops tore down the banners thinking they referred to Saddam Hussein. The fact that first names are usually how people are mentioned in the Middle East, and knowing the background of the Shia and that they revere Hussein, the son of Ali and grandson of the Prophet Mohammed, could have saved much strife in that town. Without teaching the history of Islam, these connections cannot be made.

There is also a need to train units on how to use interpreters and what different levels of interpreters can do. This type of training was being conducted with some of the units getting ready to deploy, but usually only with lower level officers and enlisted. Commanders need to understand that not every situation requires a native linguist and at times it may be better to not have a native. When I was in Iraq, I was to accompany a group of Iraqi journalists to a forward operating base so they could see operations and get a good feeling for how we were doing things and had secured the area from extremists. I was told I was merely an escort and they all spoke English. When we arrived and the commander was ready to give his briefing, we found out they did not speak English and I was drafted to translate. I told the commander that I knew he would use many acronyms and so I would need him to say a few sentences, pause and allow me to translate, since simultaneous translation was difficult with military acronyms. He said he understood and he launched into his briefing, speaking quickly and not pausing. I had to switch to simultaneous translation once I realized he was not stopping. I was reassured by the Iraqis that I had done fine, but I was stretched to my limit. With training commanders will know how to properly use linguists.

In conclusion, the wars have changed the role of the military interpreter and made us take a good look at the role of contractors. We have refined our programs, but can and should do more. As
the wars continued, we found we did not have the organic capacity to fill all needs and linguists were stretched thin with back-to-back deployments. We now realize that contractors will be needed in a surge capacity, but that we need to train our linguists to be able to fill any position and stand side-by-side with contractors in abilities to fulfill mission requirements. They will rarely be as fluent, but they can be fluent enough to fulfill the needs. To do that we need to relook training and maintenance of linguists skills. Real opportunities for advanced language study need to be offered. We need to have personnel with language background involved in the contracting procedure to ensure standards are written into the contract that apply to the situation. With the new Regionally Aligned Forces plan there will be more emphasis placed on language and regional familiarization for all units, but the main effort needs to remain with producing fluent, regionally proficient linguists who can aid the military wherever it needs to go.

6. BIBLIOGRAPHY


http://www.rferl.org/content/Mistakes_By_Translators_Hamper_Afghan_Antiterrorism_Campaign/1195783.html


THE MOST IMPORTANT THINGS INTERPRETERS SHOULD KNOW BEFORE STARTING THEIR PROFESSIONAL CAREER

Maria Ângela Levy
Associação Alumni

Good morning, experienced colleagues and “green ones” just starting!

Contrary to the abstract written for this lecture, I, on second thought, came to the conclusion that the best way to do the job would be to insert, in the text, the frightening – or comic – experiences I had to go through, where appropriate to illustrate the point in hand.

I know I’ll find among attendees, young ones just graduated from college and experienced colleagues who teach the “green ones” or only like to help them. So, here we go:

You lucky guys and gals have studied translation and interpreting at a good school or college, but these were non-existent when I started in 1950 – May 9, to be exact. Being the first simultaneous interpreter to work in Brazil, I had nobody I could go to and beg to please help me in my struggle to take my first step into this strange “factory of loonies” as my sister, who accompanied me in that unforgettable, momentous 1st IBM Panamerican Congress, called it. So, here is my first experience (Automóvel Clube). Though hard to believe, even with the many difficulties I had to face in that Congress, I became addicted to this strange way of communication and became one of those loonies. To this day, I have loved every minute of it.

Let’s go back to you:

Diploma in hand, even though you still have no professional experience whatsoever in translation, or interpreting, you firmly believe you are ready to accept a job interpreting for a doctor, an engineer, politician, lawyer, bishop, or any other professional that needs the help of an interpreter…

Well, my friends, it pains me to have to tell you that your diploma - important as it is – is just the first sign that shows you are ready to be taught and trained by an experienced professional interpreter, and start watching good colleagues at work. This last advice is simple to follow when you have a good friend in the profession, who is willing to let you “be there” when he has a job. Many interpreters do not like to have beginners listen to them and watch them closely in the booth, but you will be lucky, I know, and find a good friend or a very good interpreter turned teacher.

But still, with all the help you get, never forget that the most important person, the one who will really make of you a professional truly efficient, reliable, honest, dedicated, nice, always polite when dealing with colleagues, clients and the public, interested in studying and learning new things every day is you, yourself, and nobody else… But how?

Well, here are some important tips which will help you “get there” and become that special, most sought-after, “one in a million” interpreter.
1. Study your “work languages” every day, specially in the areas of your choice: literature, medicine, finance, robotics, quantic physics, history, technology and a million others the market offers us today.

Train interpreting with a colleague who is a fierce fighter beginner like you, (a sort of give and take game, you know…). Perfect your knowledge of the languages you’ll be working in till you reach a perfect command of your active, A language and a deep knowledge of your passive B language. And I mean DEEP!

2. Begin by learning something new every day in the areas of your choice, a proverb, an idiom, a word, the easier terms which are important in your chosen areas, jargon and words of relevance in all areas. And, please don’t forget to add them to your personal glossary (don’t tell me you haven’t started one yet…) which you will keep in your computer… All this will take a long period of your time at first, but will prove very effective before you go to the Google for help – (incidentally, do not trust the Google implicitly, or turn it into your Bible – many times it will not give you the surgical term you need).

And remember that your vocabulary – that mammoth collection of terms I just mentioned - has to be, at all times, vast, rich, well-placed. But to reach that stage you will have to stock in your memory (this stocking has to be made piecemeal, of course, or you’ll go crazy in a very short time) all sorts of technical terms, idioms, proverbs, etc. so you will always be able to use what I call the “surgical term”, when interpreting…. or translating…

3. Always keep in mind that interpreters - and translators are much more than trained parrots or just scribes. They are interpreting or translating not merely words, languages, or even jokes, for that matter, but a whole cultural universe, totally different from theirs, specially in the case of clients from countries which have no similarity whatsoever with your own language, culture, society and rules of etiquette, etc (bucalawaca) (chip chip).

4. Develop your spirit of analysis and synthesis, memorize or take down the essential points and technical terms recurrent in the work, lecture, speech or whatever you are doing (your boothmate can help you here). This will help you to always use them right, even when you don’t understand the subject and have to follow a lecturer who talks 1000 miles a minute…

5. Develop your intuition so you can sort of guess the terms which will be recurrently used in the lecture, for this will enable you to help a client in trouble: this happens especially in consecutive interpreting. And then, if it’s your lucky day, you can finish his/her sentence for him/her and make it come out clearer and better constructed. Believe me, that’s one of those “glorious days” for an interpreter.

6. Develop your reflexes, which must always be present – and preferably – exalted. This will enable you to never panic and always act right in the event of an unpleasant, horrifying surprise… Examples? Lights go off, your boothmate or, worse still, the lecturer faints, your mike goes dead, the booth collapses etc… Let me tell you of my experiences with reflexes, one when light goes dead (Mackenzie), and the other when I myself caused the booth to collapse(rio Nilo).
7. Develop your power of concentration: when you’re working, the only thing that should exist for you are the words that you hear in your earphone. If possible, I mean if you manage to “kill” your curiosity, keep your eyes shut, and open them only when you have to read tables or some list that appears on the screen. Let me tell you of my first awful experience when my curiosity got the better of me in a whispering(or chuchotage) interpreting job (hair in ear). Also, if it happens that on the day you are hired to work in the booth – whether an important event or a “no problems” one – you have serious personal problems (husband left you for secretary, child in hospital or sick at home, your family has been evicted from your house, you have a splitting headache that has been in you companion since the day before or whatever problem makes you very nervous and jumpy – ask a colleague you know you can trust will do a good job, to take over for you, because you will never ever manage to interpret even 10% of what is being said.

8. Do memory drills every day, or anything else that will help you keep your memory working: do crossword puzzles, memorize song lyrics, poems, articles (read them first, of course, and then try to repeat them from memory); if you have a problem, the original is there to help you.

9. Develop a mammoth intellectual curiosity, and always have paper and pen at hand, wherever you go. The minute you hear a word you don’t know, never heard before but which keeps being repeated on and on, in a conversation, a lecture, two strangers talking in the subway, bus, plane, note it down and look it up in the google or dictionary or any other source of information, and don’t forget to memorize both, word and meaning.

In my view, interpreters and translators have to be “pests”. Here I mean nice, gentle, likable, educated pests, but with guts to over to a table in a restaurant when he/she hears people using repeatedly a word that – with your intuition and will to learn - is something important. Approach them gently, tell them you are an interpreter and translator and lives off words – old and new – and your key interest lies in learning every acronym that you don’t understand – or word, idiom, whatever. Don’t forget to add(while they’re still speechless at your “nerve”…) that, of course, if it’s classified information or a personal matter, will they please forgive your intromission – and go back to your place, with a humble look on your face and a smile on the wrong side of your mouth. Let me tell you a fact that happened to me – but, thank God, with a happy ending. (ZPG)

10. Live all your life with an absolute intellectual honesty: don’t ever make comments or give information about ANYTHING, any word that you interpret or translate. When you leave the booth or turn off your computer after work, forget everything you heard, said or wrote, and never, ever sell information on classified matters or private conferences. Why? Because you may “hit the jackpot” and pocket a fortune ONCE, but the counterpart is that your career will be gone and done with right then and there, for news travel fast, and in no time you will be known as the interpreter or translator who sells information to strangers for a price. And since the community of interpreters and translators is relatively small, nobody will hire you again for any job – important or otherwise – starting with the person or company you sold the information to. Here’s what happened to me in this regard: (Hilton, 20,000.00)

I always keep in mind a sentence I heard from a famous client: A personal or professional reputation is the easiest thing to be destroyed, and the hardest, almost always impossible to mend, rebuild, or reconstruct.
Now more tips:

11. Develop an all-encompassing sense of tact and diplomacy, for they are indispensable in delicate situations, like fights because of opposite opinions in the matter under discussion: Here’s an experience of mine (slap on the face), rude clients that make you want to jump at their neck and any and all kinds of misunderstandings, including clients who put the blame on you for whatever goes wrong (A.A union syndicates). But if you put your all—encompassing tact and diplomacy to good use you'll be able to sustain your position as “a most important piece for the good development of the event” and – most important – will help lecturer, client and the audience remain calm, cool and collected… And, I might add, enchanted to see you can act like a really trust-worthy professional, even in moments of distress and confusion…

Also, a professional attitude is important even when you deal with people who seem to be there expressly to watch your every gesture and move and take down only negative points they find – or think they find – in your demeanor, in your work in the booth, or stage or wherever you’re interpreting (you’d be both surprised and shocked to learn of the most improbable places where I have had to do my whispering, intermittent and consecutive interpreting, or take notes when the speaker is jailed, hospitalized or locked in a bathroom having to answer questions put to him by lawyers and policemen… Also in this category, when tact and diplomacy are very much needed, I place colleagues who don’t have “it” in them, and almost always are not good at interpreting at all and keep telling you, within everybody’s hearing that they are much better professionals than you are, but for some incomprehensible reason clients never like their work or hire them for another job. Here again, keep your calm and your shirt on, and smile…

I would like to add a thought that has always intrigued me. I wonder why some clients hate us and many many (thank God) love us. The only answer I could - to this moment, after 60 years in the area - find in my mind is that those who hate us do so only because, besides being too proud of themselves, - or too big for their pants, in my view – they just can’t accept the revolting, humiliating fact that without our help they would never be able to put their wonderful ideas and unrivaled teachings across to the audience – and win it – so he/she can be admired, worthy of enthusiastic, long rounds of applause and never-ending compliments.

12. Now, a most important, indispensable quality, or virtue maybe, to develop in your preparation to get to the top of the ladder in the interpreting and translation world: NEVER, EVER, even when you are in dire straights or desperate to get work, accept to interpret or translate a subject, or theme, or ideology that goes against your principles. You will never be capable of doing a good job and you know now that one badly done job will pull you down many steps down the ladder of the perfect reputation you are trying so hard to build… Same goes to the interpreter or translator who – even being still very new and green in the business, accepts to interpret or translate a speech, text, medical article or any kind of an oral or written text which is very complicated and still way above your knowledge, comprehension and professional ability (capacity), for here again your nascent newborn reputation will suffer a very serious downfall, difficult to mend in this demanding, exhausting journey through the bumpy road that will make of you that special, talented, most sought-after, one-in-a million professional interpreter or translator, hailed by everybody in the business as the one whose career should be looked up to by
all colleagues, one that, besides all his/her professional qualities, is also blessed with an endearing, nice, friendly, genuine personality.
EL ORIGEN Y LA FORMACIÓN DE LOS TÉRMINOS MÉDICOS

Mercedes De la Rosa-Sherman
Traductora independiente

Extracto: La motivación de ofrecer esta presentación surgió de mi experiencia como estudiante de la Maestría en Traducción Médico-Sanitaria impartida en línea por la Universitat Jaume I de Castellón de la Plana, España. Cuando estudié el material por primera vez pensé que sería útil compartirlo con mis colegas que trabajan en traducciones médicas. Esta presentación está basada en el material de clases impartidas por la Dra. Bertha Gutiérrez Rodilla, licenciada y doctora en Medicina y Cirugía, licenciada en Filología Hispánica y profesora titular de Historia de la Ciencia de la Universidad de Salamanca, donde imparte docencia en los estudios de Medicina, Odontología, Humanidades, Traducción e Interpretación y Filología Hispánica. El presente material se usa con su permiso. Puesto que uno de los campos de la traducción de inglés a español más activos y que más trabajo genera entre los traductores independientes es el de las ciencias biosanitarias, creo importante que conozcamos el origen y los mecanismos de formación de los términos biosanitarios, ya que el lenguaje científico exige una gran precisión.

1. EL ORIGEN DE LOS TÉRMINOS MÉDICOS

La terminología médica es el conjunto de términos usados por los profesionales de las ciencias de la salud. Esos términos son el resultado del ejercicio de 25 siglos de medicina científica, desde el siglo V a.C. hasta nuestros días. Una gran mayoría procede de las lenguas clásicas: griego, latín y árabe. Otro grupo de términos tiene su origen en las lenguas modernas europeas: inglés, alemán, francés, italiano, etc. Hay un tercer grupo que comprende los términos procedentes de lenguas no europeas, como el japonés, asamés, guaraní o el malayo entre otros. Por último, hay un grupo de términos que se construyen mediante unos mecanismos especiales de formación. A él pertenecen los que conocemos como epónimos, acrónimos y onomatopeyas.

El griego fue el idioma de la medicina científica durante la Antigüedad clásica. Esa medicina quedó recogida en lo que conocemos como Colección hipocrática, formada por unos 70 libros donde ya quedaron registrados términos que continúan usándose en la actualidad (coma, catarro, diagnóstico, espasmo). Durante la Edad Media, la medicina más relevante se practicó en el mundo islámico, en el que se potenciaron las traducciones médicas desde el griego. Esas versiones árabes se trasladarían en los últimos siglos medievales al latín, aunque también a algunas lenguas vernáculas, como el castellano o el catalán. En el Renacimiento, que se caracterizó por la tendencia a volver a lo clásico, muchos de los términos árabes desaparecieron, pero aún quedan algunos que todavía se usan (alcohol, elixir, jarabe).

Los médicos renacentistas acuñaron un vocabulario médico grecolatino que constituye la base de la terminología médica actual. El latín fue la lengua médica de preferencia durante todo el mundo moderno, aunque plagada de helenismos y con la presencia cada vez mayor de términos procedentes de las lenguas vernáculas. Si bien las lenguas vernáculas fueron sustituyendo poco a poco al latín en la comunicación científica, el vocabulario de origen grecolatino se ha mantenido...
como terminología médica internacional. Todavía hoy se forman términos médicos recurriendo a las raíces, prefijos y sufijos de origen grecolatino.

A partir del Renacimiento y hasta la actualidad, el lenguaje médico se ha ido enriqueciendo con vocablos de las lenguas modernas. En este sentido cabe señalar que el origen de los términos médicos está estrechamente relacionado con la lengua de los países que se han destacado en el campo de la medicina. Desde el siglo XVIII hasta el XX, fueron países europeos los líderes (Francia y Alemania), y del francés y el alemán salieron varios términos médicos. Sin embargo, después de la Segunda Guerra Mundial, Estados Unidos pasó a la delantera y desde entonces y hasta el presente, el inglés ha ido ganando fuerza hasta convertirse en lengua universal de la ciencia. Esa es la razón de la gran abundancia de términos médicos procedentes del inglés.

Algunos ejemplos de términos que proceden de lenguas totalmente distintas a las mencionadas son escorbuto (del islandés), beri-beri (del cingalés) y malaria (del italiano). Además, hasta los profesionales sanitarios más alejados de las lenguas clásicas usan habitualmente expresiones latinas, como angor pectoris, rigor mortis, halux valgus o diabetes mellitus, entre otras.

2. LA FORMACIÓN DE LOS TÉRMINOS MÉDICOS

Decíamos antes que había un cuarto grupo de términos que se construyen mediante unos “mecanismos” especiales: las onomatopeyas, los acrónimos y los epónimos.

Las onomatopeyas son aquellas palabras que imitan fonéticamente los sonidos a los que corresponden sus significados. No abundan en el lenguaje médico, pero hay algunas, como por ejemplo hipó (sonido que se produce cuando hay espasmo del diafragma) y tinnitus (sonido de campanillas o pitidos en el oído, asociado a diversas formas de pérdida de audición).

Los acrónimos son términos constituidos por combinaciones arbitrarias de letras o sílabas, raíces, prefijos, sufijos y hasta palabras completas. Los más comunes son los formados por las letras iniciales de palabras (siglas), como TAC (tomografía axial computarizada), EPOC (enfermedad pulmonar obstructiva crónica) y SIDA (síndrome de inmunodeficiencia adquirida). Pero algunos se forman de una manera más compleja. Un ejemplo de ellos es la palabra ribosoma, que es un complejo supramolecular encargado de sintetizar proteínas a partir de la información que le llega del ADN (ácido desoxirribonucleico). Esta palabra se formó con las siglas en inglés del Instituto Rockefeller de Biología (Rockefeller Institute of Biology, RIB), donde se descubrieron, la vocal O, que cumple función conjuntiva, y la raíz griega soma, que significa cuerpo.

Los epónimos son aquellos cuyo significado se asocia con un nombre propio, que puede ser de un científico, un personaje histórico, mitológico, literario o bíblico o un lugar. En la medicina los más comunes son los asociados con la persona que descubrió una parte anatómica, proceso fisiológico, enfermedad o signo patológico: trompas de Eustaquio y de Falopio, mal de Parkinson o factor de von Willebrand. Algunos epónimos “curiosos” formados con nombres de personajes tanto bíblicos como literarios son la personalidad de Cain y el onanismo (de personajes bíblicos), el síndrome de Alicia en el país de las maravillas o el de Huckleberry Finn
(personajes literarios), tularemia (de Condado de Tulare, un lugar) y hermafrodita (de Hermes y Afrodita) que son personajes mitológicos.

Una de las principales preocupaciones del traductor médico es asegurarse de utilizar siempre el término preciso para lo que tiene que expresar. Puesto que sus lectores dependen del conocimiento del traductor, no se puede exagerar la importancia de manejar bien los términos biosanitarios en la traducción médica. Ahora vamos a ver tres maneras en que surgen los términos científicos; a saber: la neología sintáctica o funcional, la neología de sentido y la neología de forma.

A. **La neología sintáctica o funcional** es el cambio de categoría gramatical o de función de un elemento. Es decir, cuando una forma existente en la lengua empieza a comportarse funcionalmente de una manera distinta, sin sufrir alteración alguna ni en su significante ni en su significado. Por ejemplo, cuando un adjetivo comienza a funcionar como sustantivo tras producirse una elipsis: así, “investigador científico” se convierte en científico a secas; “fármaco analgésico”, en analgésico; y “sustancia anticoagulante”, en anticoagulante.

B. **La neología de sentido** es la atribución de un significado nuevo a una palabra existente. Se puede producir de dos maneras. Una es mediante la incorporación de una nueva acepción a una palabra del lenguaje cotidiano. Ejemplo de ello es cuando se usa una palabra como “silencio” referida a la documentación (silencio documental). La otra es cuando un tecnicismo de una rama pasa a usarse en otra rama. Por ejemplo, una palabra de la física, “cortocircuito”, pasa a usarse en la rama de la medicina o la biología (cortocircuito neuronal u hormonal). La mayoría de los términos creados en los primeros momentos de existencia de un área de conocimiento suele tener este origen. Ese es el caso de muchos términos usados en genética e inmunología, tales como código genético, mapa cromosómico, población linfocitaria y cooperación celular, entre otros. El mecanismo mediante el cual se asigna el nuevo significado a la palabra existente es un proceso analógico, es decir, se hace una comparación que pone de manifiesto la semejanza entre los dos términos. Esa semejanza puede relacionarse con la forma, la función u otro aspecto de los elementos que se comparan. Por ejemplo, el píloro, que está a la salida del estómago, y se llama así gracias a la palabra griega que quiere decir “portero”, que es exactamente la función que cumple: hacer de portero en el estómago.

C. **La neología de forma** consiste en la creación de una palabra o expresión nueva. Se produce combinando elementos que ya existen en la lengua, ya sean palabras completas o partes de esas palabras. Los procedimientos para combinarlos pueden ser de dos grandes tipos: la construcción y la complejización. La construcción puede, a su vez, dividirse en derivación y composición. La complejización puede producirse por yuxtaposición o por coordinación de varios elementos, obteniendo así expresiones terminológicas formadas por más de una unidad léxica.

Cuando se quiere crear un tecnicismo, muchas veces se recurre a formantes cultos de origen grecolatino: raíces, prefijos y sufijos (pericardio, postoperatorio). Otras veces los términos científicos se forman usando palabras del lenguaje estándar (complejización). Es el caso de mano en garra o vientre en tabla.
La construcción se puede producir por derivación y por composición. En la derivación, uno de los elementos no puede funcionar de manera aislada, sino que necesita apoyarse en otro. Un ejemplo de ello es el elemento co- que se usa para formar términos como coenzima o comorbilidad. Por otro lado, en la composición, los elementos que se usan sí pueden funcionar independientemente. Es el caso de marcapasos. Tanto “marca” como “pasos” tienen sentido de manera individual.

En la complejización, se combinan varias palabras para formar una expresión, lo que se conoce como lexía compleja. La lexía compleja puede ser yuxtapuesta o coordinada. En la yuxtapuesta, no hay ningún elemento de conexión. Es el caso de hipertensión arterial, accidente isquémico transitorio o enfermedad pulmonar obstructiva crónica. En cambio, cuando hay un elemento de conexión, que generalmente es una preposición, se habla de lexía compleja coordinada. Algunos ejemplos son vómito en escopetazo o infarto de miocardio.

Consideremos ahora otras dos importantes maneras de formar términos médicos que forman parte de la derivación. Se trata de la prefijación y la sufijación. Estas dos tal vez sean las más “productivas”, ya que con una misma raíz y una serie de prefijos y sufijos formamos una gran cantidad de términos. Veamos primero el caso de la prefijación.

En la prefijación, podemos tener dos prefijos distintos con un mismo significado, como sucede con circun- y peri-. Circuncorneal y pericorneal significan ambos “alrededor de la córnea”. O podemos tener un mismo prefijo con distintos significados. El prefijo pro- puede significar “a favor de” (prolactina) o “delante de” (proencéfalo).

La sufijación es, en mi opinión, la más interesante y útil al momento de traducir textos médicos. Los mismos sufijos que se usan en el lenguaje común para formar sustantivos, adjetivos y verbos, se usan en el lenguaje científico para formar términos especializados. Entre los utilizados para la creación de sustantivos (-aje, -ado, -ismo, -ista, -ción), el más común es el último, que convierte verbos en sustantivos. Por ejemplo, de inseminar obtenemos inseminación; de instilar obtenemos instilación; y así sucesivamente. Entre los que se usan para la sufijación adjetiva (-ar, -ario, -ico, -ano, -al), el que más se usa es -al, cuyo empleo recibe una fuerte presión del inglés y, a veces, desplaza a términos ya existentes formados con otros sufijos. Algunos ejemplos de este caso son retiniano / retinal, térmico / termal y vírico / viral.

En lo que respecta a la sufijación verbal, se utilizan sufijos como -izar e –ificar, que dan lugar a verbos que también compiten con formas tradicionales. Es el caso de señalar / señalarizar; inocular / inoculizar.

Abundemos un poco en la composición y practiquemos lo que hemos aprendido. En el lenguaje científico, la composición permite crear series de términos homogéneos, lo cual facilita la traducción entre diferentes idiomas. Por ejemplo, si usamos la raíz gastr(o)- (que significa estómago) y la sometemos a la composición, podemos obtener los siguientes términos, entre otros:

- gastralgia: dolor de estómago
- gastrectomía: extirpación del estómago
- gastrocito: célula propia del tejido gástrico
gastrografía   registro gráfico del estómago
gastromegalia  aumento del tamaño del estómago
gastropatía    enfermedad del estómago
gastroplastia  reconstrucción quirúrgica del estómago
gastrógeno     que tiene su origen en el estómago
gastropexia    fijación quirúrgica del estómago
gastroptosis   caída del estómago
gastrorraffia  sutura de heridas del estómago
gastrorragia   hemorragia gástrica
gastroscopia   observación del estómago
gastrotomía    incisión en el estómago

Si luego cambiamos gastr(o) por esplen(o) o hepat(o), obtenemos los mismos términos, pero ahora referidos al bazo y al hígado respectivamente: esplénalgia, esplenectomía, esplenocito, etc.; hepatalgia, hepectomía, hepatocito, etc.

¿Se animan a formar sus propios términos? Les sugiero las siguientes raíces y los dejo practicando…

Cardio = corazón
Cefa = cabeza
Rino = nariz
GENE THERAPY: THE NEW FRONTIER OF MEDICINE

Tapani Ronni, PhD

Abstract: This brief review of gene therapy is aimed at translators in medical and scientific fields. Gene therapy can be defined as an experimental technique that uses genes to treat or prevent disease. There are multiple technical problems to be overcome, but the field has a lot of promise. Current applications will be discussed, with their limitations and risks. Possible future applications include gene editing and tailor-made anticancer therapies. The exceedingly high cost of developing therapies that may have to be tailored for each patient separately raises issues of fair pricing. Finally, the talk will explore philosophical and ethical issues related to germ line gene therapy, which are hotly debated in the field. Do we have the right to improve future generations?

1. HUMAN GENOME AND GENETIC DISEASES

The human genome is complex and varies among individuals. It is over 3 billion (3x10⁹) base pairs (nucleotide pairs) long, divided over 22 chromosome pairs (autosomal chromosomes) and 2 sex chromosomes (females have two X chromosomes, males have one X and one Y chromosome). The full sequence of human genome is known, and a recent study comparing 1092 individual genomes was published in 2012¹. This large study ("The 1000 Genomes Project") revealed that there are considerable differences among different genomes - the investigators found 1.4 million small insertions and deletions and 14,000 large deletions. (Insertion means that the chromosome contains at least one extra nucleotide, deletion means that at least one nucleotide is missing.) In addition, 38 million single nucleotide polymorphisms (SNPs) were found. SNP represents a difference of one base in the genetic sequence. The 1000 Genomes Project thus revealed that there are large personal variations between people at the genetic level. This accounts for personal traits and the evolution of mankind. However, particular mutations can also cause genetic disorders if they disrupt the function or regulation of an essential gene.

At least 3000 to 4000 genes are known to be associated with phenotypic traits or genetic disorders.² These mutations range in size from one nucleotide change to large deletions or insertions in a chromosome, or even abnormal amounts of chromosomes (for example, three copies of chromosome 21 in Down Syndrome). The current state of the medical art is to give palliative treatment for a genetic disorder, or in some cases, patients can be given purified protein that they are missing or are unable to produce correctly (this is called protein therapy). For example, patients with a rare genetic disorder called Gaucher disease have deficiency in an enzyme called glucocerebrosidase. This defect causes problems in multiple organs. One available treatment is called enzyme replacement therapy, where the patient gets an infusion of recombinant glucocerebrosidase in regular intervals for the rest of his or her life. The results are often good, with alleviation of symptoms and improvement of quality of life, but these kinds of treatments can be very expensive. Commercially available glucocerebrosidase, Cerezyme, from Sanofi, can cost up to 200,000 dollars per patient per year.

Gaucher disease is an example of autosomal recessive disease - both copies of a given gene (here glucocerebrosidase gene) have to be faulty in order for the disease to manifest itself. Some
diseases are autosomal dominant - if one copy (from either parent) is defective, the symptoms of the disease will show up. An example of this is Huntington’s disease, a debilitating and fatal hereditary disorder where nerve cells degenerate in certain brain areas.

Even cancer can be considered to be a genetic disease. Accumulating genetic defects in a given cell eventually cause uncontrolled division and proliferation, leading to exponential growth of cancer cells. However, cancer is not a hereditary disease - it is not inherited in families in the sense that children would be born with cancer. In some cancers there is a hereditary component - family members can have increased susceptibility to develop cancer.

2. THE CONCEPT OF GENE THERAPY

Gene therapy can be defined as an experimental technique that uses genes to treat or prevent disease. The goal is to correct the underlying genetic defect in patients suffering from inherited genetic diseases and other genetic disorders, including cancer. The concept is not new, but developing practical applications has been very difficult. Multigenic diseases - diseases where multiple genes are faulty - are currently too complex to tackle. Monogenic diseases, where the problem lies in only one gene, are more amenable targets but still very challenging.

How can one correct a genetic defect in a cell? Genetic engineering of certain bacteria is easy, since they readily take in DNA. The process of introducing DNA into bacteria is called transformation. This is not trivial task in human cells, which are eukaryotic cells. In eukaryotic cells, genomic DNA is located in the nucleus. With the exception of mitochondrial diseases, all genetic diseases originate in the nuclear DNA. Thus, if one wants to correct a genetic defect, one has to find a way to move desired genetic material (usually DNA) into the target cell. The process of introducing DNA into mammalian cells is called transduction. Efficient gene therapy requires an efficient transduction method, preferably one capable of delivering DNA to 1% or more of the cells of interest.

There are several ways to introduce DNA into mammalian cells. One is to encapsulate DNA into lipid droplets called liposomes. Liposomes can fuse with the cell membrane (the layer that separates the cell from its environment), and thus the DNA payload is released into target cell. Also, different nanoparticles can carry DNA into target cell.

However, the most attractive gene delivery method is to use tailored viruses. Viruses have developed very efficient ways of infecting their target cells. Viral genomes can be modified so that the DNA of interest is carried into the target cells, but the virus is unable to propagate itself and create progeny viruses. This is an important safety feature.

The simplest way to attempt gene therapy is to introduce a healthy version of the diseased gene into the cell so that a healthy protein can be produced, and the cell can function normally. This is called gene augmentation. Another, more challenging approach is gene correction, where the genetic defect itself is fixed in the nucleus.

The problem with augmentation is that it may be possible to generate enough protein from the introduced gene that the cell can function normally, but the underlying genetic defect is still there. Therefore, over time, protein production may stop, and the cell can revert back to a
diseased state. Also, if the diseased gene is a dominant negative one, the presence of a healthy copy of this gene is not enough to create a desired change in the phenotype.

3. HISTORY OF GENE THERAPY

Genetic engineering techniques were developed first with viruses and *Escherichia coli* bacterium. With the discovery of restriction enzymes in the 70’s it became possible to cut and paste genetic material (DNA) at will. Simultaneously, viruses were studied and their use as carriers of foreign DNA was envisioned. As early as 1972, it was proposed that human genetic disease could be treated with gene therapy. In a related branch of genetics studies, in 1982 the first transgenic animal was created. This mouse contained a transgene (foreign piece of DNA) in its genome. Most transgenic animals are mice, but other species can also be used.

The first approved gene therapy attempt in humans was in 1990 when two children suffering from severe combined immunodeficiency (SCID) due to a defective adenosine deaminase (ADA) gene were given a corrected ADA gene by using a viral vector (a retrovirus). The results were encouraging, as the patients’ immune systems were normalized for several years.

The prospects of gene therapy suffered a severe setback in 1999 when an 18-year old patient named Jesse Gelsinger died during a clinical trial where adenovirus was used as gene delivery vector. It was later found out that he should not have been included at all and that he had developed a strong immune response against the viral vector used in the trial (an early version of adenovirus vector). The Gelsinger case led to new Food and Drug Administration (FDA) regulations on genetic therapy. The field has since rebounded with new safety regulations in place, and now there are over 900 ongoing clinical trials in the United States alone and over 1400 worldwide.

4. GENE DELIVERY VECTORS

The aim of gene therapy is to deliver the desired genetic material (DNA) into the recipient cell. While chemical methods, such as liposomes and nanospheres, are being studied, viruses have shown to be most versatile gene transfer vehicles. Viruses in their natural state have efficient ways to bind to their target cells and enter them. (Also see my previous article in ATA Proceedings 2013.) It is now possible to modify viruses using genetic engineering. Viral genomes can be rearranged so that some genetic material is removed so that the virus can not propagate itself in the host cell. This is essential for safety, so that the viral vector does not cause unintended infectious disease in the patient. Since there is now space in the virus genome, a desired piece of DNA can be spliced in. This DNA usually consists of the desired gene (the correct version of defective gene that the patient has) and required regulatory elements.

a. Adenoviruses

Adenoviruses are medium-sized viruses with a double-stranded DNA genome. In their natural state, they cause respiratory infections. They are well understood and they have been used as
gene delivery vectors. They have benefits and drawbacks. Modern adenoviral vectors can infect many types of cells, with the exception of lymphocytes. The efficiency of transduction is high and up to 8 kilobase long DNA inserts can be inserted into a vector genome where two elements have been removed to make the recombinant virus replication defective. Adenoviral DNA is injected into the host cell nucleus, and the delivered gene is expressed along with other host cell genes. However, viral DNA is not integrated into the host cell genome, so there is little danger of unintentional gene insertions into the host cell genome. On the other hand, when the host cell divides, the adenoviral DNA is not copied, so in a growing cell population the therapy needs to be re-administered. The drawback is that many people have antibodies against adenoviruses so the recipient may generate an immune reaction that can neutralize the vector and cause major symptoms. While adenoviruses can be modified to minimize this possibility, it is not zero. Adenoviruses are being actively studied as tools in anti-cancer therapy. Preparing recombinant adenoviruses is complicated.


### b. Adeno-associated viruses

Adeno-associated viruses (AAV) are small viruses with a single-stranded DNA genome. They are harmless viruses that belong to the family of parvoviruses. Most people carry these viruses naturally, so they are mostly non-immunogenic. They can infect a broad variety of cells, including non-dividing cells. The viral genome integrates in a known site in human chromosome 19. This is an appealing feature compared to retroviruses with more random chromosomal integration process (see below). AAV vectors are being used in clinical trials where muscle cells, eye cells, and brain cells are being treated. While AAV particles are not very immunogenic, T cell responses against transduced cells have been reported in some clinical trials. The drawback of AAV vectors is that their small size limits the amount of DNA that can be delivered to the host cell to around 4 kilobases. The only gene therapy product having received a marketing authorization in European Union, Glybera®, is based on AAV vector. Glybera is to be used to treat patients with lipoprotein lipase deficiency and who have severe or multiple pancreatitis attacks.7
c. **Retroviruses**

Retroviruses are members of the family Retroviridae. Their genome is ribonucleic acid (RNA), not DNA as is the case with adenoviruses and adeno-associated viruses. During their complicated life cycle, retroviral RNA is reverse transcribed into DNA that then integrates into the host cell chromosome, without any obvious preference as to the integration site. Retroviruses can be modified so that three essential genes for viral replication (gag-pol-env) are removed and substituted with DNA of interest. Retrovirus vectors are easy to produce. When the host cells are infected with the modified retrovirus, the desired DNA is integrated into the host genome and replicated along with other host DNA when the cell divides. Thus retroviral gene therapy can generate long lasting effects.

The big drawback of using retroviral vectors is the fact that the insertion site of the DNA is random. This can cause insertional mutagenesis (disruption of the host gene), or unintentional activation of host oncogenes (potentially leading to cancer). In a French study, eight out of nine patients with X-linked SCID benefited from retroviral therapy, but four developed leukemia, and one subsequently died. Modern versions of retroviral vectors are expected to reduce the randomness of gene insertion and moderate the risk of unintentional consequences.

d. **Lentiviruses**

Lentivirus is a genus of Retroviridae family. Thus lentiviruses have similar life cycle as retroviruses. The lentiviral gene delivery vectors are based on human immunodeficiency virus (HIV) that has been rendered safe by removing the genes coding for the gag-pol-env proteins. Lentiviral vectors are easy to produce, and their natural affinity is towards lymphocytes. This makes them an attractive choice for certain gene therapy trials where the aim is to correct gene defects in lymphocytes. Lentiviral vectors can infect both dividing and non-dividing cells and can carry up to 18 kilobases of foreign DNA. This makes them of interest in cases where the gene in question is large - not an unheard of situation in case of human genome. It is possible to alter the surface proteins of lentiviral vectors. This method is called pseudotyping. Pseudotyping allows one to change the affinity of the vector towards target cells. Thus one can create pseudotyped lentiviral vectors that recognize different target cells than the original ones.

Lentiviral vectors are suitable not only for expression of the gene of interest in host cells but also for expressing various small regulatory RNA molecules (such as micro-RNAs and small interfering RNAs). These could allow up- or down-regulating the expression of target genes of interest. This exciting field is beyond the scope of this article.

The safety of lentiviral vectors is an important factor. It is hoped that improved design will lead to future versions of lentiviral vectors that insert themselves into the human genome only once per cell and into sites that are not in the middle of genes or close to an oncogene.

5. **TYPES OF GENE THERAPY**

There are two possible target cell populations in gene therapy: germ cells and somatic cells. Germ cells are female eggs and male sperm. They are haploid, meaning that they only contain one set of 23 chromosomes. In principle germ cells could be manipulated by gene therapy. This
could be appealing in some cases where the disease is caused by a single defect in a single gene and is recessive - fix the problem at the egg stage and you should get a baby that has a corrected gene. The next generations would be also cured. However, this approach is ethically questionable and not allowed by current regulations. Some people are against the idea of “playing God.” Others point out that you could permanently harm unborn generations if something goes wrong and the therapy ends up having adverse effects.

Thus all gene therapy attempts so far have been targeted to somatic cells. Somatic cells mean all the cells that are not germ cells. They are diploid, so in humans, they contain 23 pairs of chromosomes, with total of 46. Somatic cells are nonreproductive, meaning that any changes to their genome will not be inherited by the next generation. One concern in gene therapy is to avoid accidentally infecting primordial germ cells (located in female ovaries and male testes) with a viral vector.

Gene therapy of somatic cells can be divided into *ex vivo* and *in vivo* gene delivery. *Ex vivo* is historically older and easier to do. It is especially suitable for manipulating blood cells as they can be removed from the patient by taking a blood sample and separating the blood cells into groups based on their surface properties (flow cytometry). The separated cells are subjected to gene delivery vector and gene delivery is then verified. The cells with desired properties are then propagated in the laboratory (*in vitro*) and transplanted back to the patient. *In vivo* gene therapy entails delivering the desired gene into the patient without removing the target cells from the body. This method would be appropriate if the target is a solid organ (for example, lung or brain). One candidate for *in vivo* gene therapy is cystic fibrosis, a debilitating genetic disease of lungs.

### 6. GENE AUGMENTATION VS. GENE EDITING

Gene augmentation is a process where a healthy gene is transferred into a cell with a defective gene. The hope is that the healthy gene can overcome the cellular defect caused by the defective gene. There are limitations in this approach though. If the defective (mutated) gene produces an abnormal gene product (protein) that has a dominant negative effect, adding a healthy copy of the same gene may not help that much. However, if the defective gene is recessive, then gene augmentation may have a definite positive effect on the target cell. Gene augmentation is also not effective in treating multigenic diseases or chromosomal abnormalities.

Most of the current clinical trials are based on gene augmentation. However, in the case of a dominant negative effect, the defective gene must be corrected by removing the mutation. This can be done using targeted gene editing.

Gene editing is a well-established technique where the host genome is targeted using nuclease-recombination systems. In brief, this concept involves using molecules that contain the targeting domain (brief DNA sequence of interest) that matches the target gene, a donor DNA sequence, and the editing domain that is usually a nuclease (an enzyme that cuts DNA).

There are multiple engineered nucleases available for gene editing. The most interesting ones are meganucleases (MN), zinc finger nucleases (ZFN), TALENs and the CRISPR/Cas9 system. They all share the same common concept: a targeted double stranded break is created and then
either the donor DNA is inserted into the target DNA sequence (donor knock-in) or the faulty DNA sequence is substituted with donor DNA sequence (substitution). Substitution is the optimal end result, as no extra DNA is inserted into the genome and thus the long-term adverse effects are likely to be minimal. See FIGURE 2.

host DNA

double strand break

Homologous recombination

Donor knock-in

Substitution

FIGURE 2. A highly schematic view of targeted gene editing. Adapted from Li et al (2014).

While gene editing by nucleases is an exciting prospect and is already used in some clinical trials, some caveats and concerns remain. The biggest concern is off-target mutagenesis. Homologous recombination mediated targeting is not 100% accurate so donor DNA could get inserted into random places in the genome, possibly activating oncogenes (possibility of cancer later) or breaking essential tumor suppressor genes (this could also increase the risk of cancer). Regardless of the type of nuclease used, it is important to select a targeting sequence that is unique in the genome, so that risk of off-target mutagenesis can be reduced. Also, selecting correctly edited clones in the case of \textit{ex vivo} gene therapy is important.

7. REGULATORY FRAMEWORK FOR GENE THERAPIES

Gene therapy trials, like any other clinical trials, are regulated by government authorities. In the United States, the authority is the Food and Drug Administration (FDA), specifically its branch, the Center for Biologics Evaluation and Research (CBER). All gene therapy trials in humans have to be approved by the FDA, which performs stringent evaluation of the application. The applicant must have done preclinical studies in laboratory animal models (usually rodents) and shown that the technique is safe and effective. One special concern is long-term adverse effects in the case of vectors that integrate the donor DNA into the host genome (mostly retroviruses and lentiviruses). CBER has not yet given marketing approval for any gene therapy product in the US, but this may change in the future. In addition to regulating clinical trials, CBER provides proactive scientific and regulatory guidance to medical researchers and companies.7

In the European Union, the regulatory authority is the European Medicines Agency. The first gene therapy product ever to receive a marketing authorization is called Glybera (alipogene tiparvovec). Due to perceived risks, Glybera got a very limited indication in the EU. Glybera is to be used to treat patients with lipoprotein lipase deficiency and who have severe or multiple pancreatitis attacks.7 Glybera is an AAV vector that is meant to be injected into a muscle. There
are only few patients for which Glybera is suitable to be used. The developer uniQure expects to launch the product in 2015.

8. PRICING MODELS FOR GENE THERAPIES

Traditional pricing for pharmaceutical drugs is based on models that take into account payors’ (governments or insurance companies) ability and willingness to pay. Industry argues that drug development is exceedingly expensive - bringing a new drug entity to market can take a decade and cost over a billion dollars. In the case of rare (“orphan”) diseases, due to the small size of the patient populations, the cost of treatment of individual patient can be over 100,000 dollars per year. But how can one price gene therapy treatments when only one administration of the drug can have long-term positive effects, perhaps even cure the disease?

Brennan and Wilson argue in a recent commentary that payors might well refuse to pay enough for gene therapies. Companies have to be able to recoup the expenses of developing these therapies in the first place. But single dose of gene therapy might end up costing over 1 million dollars. If the disease is cured, this might actually be a good deal if one considers the hospital and drug expenses during patient’s lifetime; however, the sticker shock might be too much for payors. The first payor would bear the cost of a therapy likely to benefit the many other subsequent payors over a patient’s lifetime. An alternative model is “pay for performance,” where payors would provide yearly payments to drug company after the initial gene therapy administration, provided that the patient shows long-lasting positive effects.

9. FUTURE PROSPECTS

The entire gene therapy field is too wide to completely cover in a short review like this. One exciting avenue of research is cancer gene therapy. This means attacking cancer in human body by targeting the cancer cells directly and manipulating their gene expression by viral vectors so that cancer cells either self-destruct or change their behavior into more benign direction. Alternatively, the immune system can be boosted to recognize and kill cancer cells more efficiently than naturally would be the case.

One highly promising idea involves chimeric antigen receptor (CAR) T cells. In this approach, T cells are removed from cancer patient and they are altered by gene therapy to express novel, cancer cell specific receptors. Once these CAR T cells are re-introduced into the patient, they can efficiently recognize and kill cancer cells. Early clinical trials have shown promise. Ideally, this approach should be non-toxic to patient since only cancer cells would be recognized and destroyed.

It can be expected that gene therapies become available for rare diseases first, once their pricing models have been sorted out. If gene editing becomes reliable enough that risks are minimized, the field could grow exponentially. The health care savings and improvements in individual quality of life can be substantial. Current regulations only allow somatic cell gene therapies. Germ line gene therapy remains off limits as any changes made in germ cell haploid genome.
would be passed on to future generations. However, some argue that the benefits may one day exceed the risks.11

Acknowledgments
The author is grateful to Monica Eiland, PhD, for helpful suggestions and expert editorial assistance.

Bibliography


AGRI-FOOD FOR THOUGHT: HOW AGRICULTURE TRANSLATES INTO FOOD

Leo van Zanten
NAVAZA Translations

Abstract: This presentation covers the background of agriculture and agricultural systems, and how these relate to providing one of our basic necessities, our daily food. We’ll have a closer look at some concepts in agriculture that are currently receiving much attention and some of the challenges and outlooks for the near and far future. We’ll discuss subjects like sustainable agriculture, organic agriculture, and explain in detail concepts such as food safety and food security. The idea is to provide you with a better understanding of the terminology and what’s behind it. Towards the end of the presentation everyone can take home references to read or watch, and explore on their own.

1. INTRODUCTION

Food – it is important to all of us on a daily basis. We all need to eat every day, and get our food from the farm, store or restaurant. This might be processed in some way or another, or not, but it almost all originates from agricultural activities.

Agri-food refers to the production of food agriculturally, as opposed to through hunting, fishing, gathering, and so on. However, agriculture is a very broad term that includes many different types of activities that depend on as many factors. We’ll have a look at some of the basic criteria and describe several of the concepts of agriculture in today’s world. This is farming without getting your hands dirty.

2. FROM AGRICULTURE TO FOOD

Typically our food is produced on farms and/or comes from fishery. We’ll refer to this as Production. If needed, the product is then processed and prepared for human consumption, and/or packaged. This step we call Processing. The next step is to transfer these products to the consumers through a distribution system, which will get this either to restaurants - where it will be prepared - and where in the end people will come to enjoy the food. Another possibility is the Distribution to retail (supermarkets/stores) where consumers buy to take it home to prepare a meal and enjoy breakfast, lunch or dinner.

This is the basic outline to get from point A to F or from Agriculture to Food, and there are several variants of this pathway. You could for example skip the processing and distribution steps where consumers get their agricultural products directly from the farm.
3. **CRITERIA FOR AGRICULTURE**

Agriculture in itself is a broad term that covers many different types. There are many ways or criteria to distinguish types of agriculture or farming. The various agricultural types are distinguished on the basis of *Inputs, Processes* and *Outputs* used and produced in these farming types.

Inputs are divided in Human factors (labor, money, machines), and Physical factors (temperature, rainfall, landscape, wind, capital, and soil).

Processes are ploughing, sowing, harvesting, and milking.

The outputs of a system are the agricultural products, such as grains, fruits, vegetables, meat, and dairy products.

Based on these criteria we can define different types of farming.

If we make a classification by **Input**, we can distinguish between:
- *Intensive* - high levels of input producing a high yield per hectare. (e.g. rice farming in Asia; crop farming in US and Western Europe), and
- *Extensive* - low levels of input producing a low yield per hectare. (e.g. cattle farming in South America)

When classified by **Process** we distinguish:
- *Arable* farming - growing and harvesting of crops
- *Pastoral* farming - specialized in rearing of animals
- *Mixed* farming – a combination of Arable and Pastoral

Finally when classified by **Output** we get:
- *Subsistence* farming - produce is consumed by the farmer, and surplus is usually sold to buy other goods.
- *Commercial* farming - the majority of products is sold for financial profit.

This is a basic outline of how to traditionally distinguish types of agriculture in the world.

Next are some concepts and terminology that you probably already have read and heard about recently, and which resonate due to the impact on environment and consumers.

4. **SUSTAINABLE AGRICULTURE**

Agricultural activities are under pressure. There is concern about the international competition for resources, the stricter environmental requirements/laws (e.g. recycle waste, chain management), about public health and animal welfare (outbreaks of animal diseases). Consumers are more critical about production processes, and the origin of food products, and plant and animal biodiversity is shrinking in the landscape.
This means that agriculture needs to become more sustainable. In short sustainable agriculture is:

• Economically viable - If it is not profitable, it is not sustainable.
• Socially supportive - The quality of life of farmers, farm families and farm communities is important.
• Ecologically sound - We must preserve the resource base that sustains us all.

This translates into the following requirements for sustainable agriculture:

• Reasonable price for products
• Reasonable wellbeing and social aspects
• No negative effects on the environment
• Optimal care of biodiversity
• Care of the landscape
• Use of water, energy, and natural resources without causing shortages.

We might ask ourselves: “How can we determine if an agricultural production system is sustainable?” or “Is there a general certificate for Sustainable Agriculture?”

Nowadays there are several types of certificates used in the world of agriculture, but there actually is no specific certificate for ‘Sustainable Agriculture’.

Sometimes the Utz certification is confused with this. Utz is used for commodities like coffee, cacao, and tea. Where Utz-certified farmers grow their crop with attention to people and the environment. Meaning responsible use of agrochemicals, and the labor force has access to housing, health care and education, broad attention to labor rights and the market.

Then there is the Starbucks Ethical Sourcing where Starbucks developed Coffee and Farmer Equity (C.A.F.E.) Practices and Cocoa Practices to ensure a long-term supply of high quality, ethically sourced coffee and cocoa. C.A.F.E. Practices and Cocoa Practices include comprehensive criteria for social responsibility, economic accountability, and environmentally-sound cultivation and processing practices. Similar certification authorities are the World Cocoa foundation, the Ethical tea partnership, and Fair Trade.

Another certification you might have come across is the one for Rainforest Alliance Certified Sustainably Grown. This is managed by the Sustainable Farm Certification International, Ltd., a subsidiary of the Rainforest Alliance, which is an accredited Certification Body of the Sustainable Agriculture Network, responsible for making certification decisions of farms and groups that comply with the requirements set forth in the Sustainable Agriculture Standards.

And in horticulture, more specifically the flower culture, we have the Veriflora certificate for sustainably grown flowers.

I want to clearly point out that Sustainable Agriculture is entirely different from our next topic.
5. ORGANIC AGRICULTURE

Another concept that has gained momentum in the past few years is Organic Agriculture. This word/concept stands for various agricultural systems or methods that adhere to specific standards and requirements for:

- Environment
- Nature and landscape
- Wellbeing of animals, and
- Production methods

The translation of this term is quite specific, and the word *organic* will not always be found in other languages. In some languages they use the word *ecological*, in others we see the word *biological*.

Organic agriculture relies on techniques such as crop rotation, green manure, compost, and biological pest control. There exist different definitions of organic agriculture in the world, but this farming method uses fertilizers and pesticides (which include herbicides, insecticides, and fungicides) if they are considered natural (such as bone meal from animals or pyrethrin from flowers), but it excludes or strictly limits the use of various products (including synthetic fertilizers and pesticides, plant growth regulators, antibiotics in livestock, genetically modified organisms, human sewage sludge, and nanomaterials) for reasons including sustainability, independence, health, and safety.

Organic agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by IFOAM (International Federation of Organic Agriculture Movements), an international umbrella organization for organic farming organizations established in 1972.

The objectives of organic farming according IFOAM are:

- To provide food of high quality in sufficient quantity
- To work with natural system and cycles
- To encourage and enhance biological cycles involving micro-organisms, fauna, plants and animals
- To promote the sustainable use of natural resources
- To maintain and increase the soil fertility for long term.

Since 1990 the market for organic food and other products has grown rapidly, reaching $63 billion worldwide in 2012. This demand has driven a similar increase in organically managed farmland, which has grown over the years 2001-2011 at an annual rate of 8.9%. As of 2011, approximately 37,000,000 hectares (91,000,000 acres) worldwide were farmed organically, representing almost 1 percent of total world farmland.

This area is divided over the globe as follows (*2012 statistics from IFOAM)*:

- North America - 3.2 million Ha
- South America - 6.8 million Ha
- Europe - 11.2 million Ha
• Africa - 1.1 million Ha
• Asia - 3.2 million Ha
• Oceania - 12.2 million Ha

5.1 ORGANIC AGRICULTURE STANDARDS

The minimum requirement for a farm or product to be certified as ‘organic’ are precisely defined by organic standards. The standards that apply to organic farming can be established on different levels. There are organic standards on the national as well as international level.

We have standards set by the United Nations, or more specifically the World Food and Agriculture Organization (FAO). Then there is the NGO we already mentioned, IFOAM, who established extensive standards. We also know standards exist on regional levels, like for the European Union, and many of the individual countries have their own standards regarding organic agriculture.

5.2 ORGANIC CERTIFICATION

For certification, the standards of the target market or importing country are relevant. Organic agriculture is based on a foundation of strict standards with information pertaining to these standards being conveyed by labels.

Generally, these standards were updated as technology and consumer demands changed. Standards should be published for all production systems or product categories certified by the inspection and certification agency. These standards can be voluntary or mandatory, and most regulations require producers to be registered with an approved, independent certification body in order to label their product as ‘organic’.

Organic standards differ depending on the technical, philosophical, and cost factors present in a country or region. Organic standards reflect the needs of the group that expressed them, if the needs and group differ then so will the standards. It is believed that organic standards should reflect the environmental conditions of the region, therefore what may be good for a farmer in Vietnam may not be appropriate for a farmer in Sub-Saharan Africa. For most producers Europe and the US are the main target markers, hence their products need to comply with for example the Organic Regulation Act No 2092/91(EU) or the Organic Foods Production Act (USA) on Organic Production.

EU countries acquired comprehensive organic legislation with the implementation of the EU-Eco-regulation in 1992. Supervision of certification bodies is handled on the national level. For example in the UK, organic certification is handled by a number of organizations, regulated by The Department for Environment, Food and Rural Affairs (DEFRA), of which the largest are the Soil Association and Organic Farmers and Growers. In Japan, the Japanese Agricultural Standard (JAS) was fully implemented as law in April 2001. This was revised in November 2005, and all JAS certifiers were required to be re-accredited by the Ministry of Agriculture.
5.3 VARIATIONS OF ORGANIC AGRICULTURE

Within organic farming there are numerous different farming systems. For example Biodynamic farming is a comprehensive approach, with its own international governing body. Biodynamic agriculture is based on ideas from Rudolf Steiner (1923), the founder of organic farming.

Nature farming is the dominant Japanese form of organic agriculture founded by Mokichi Okada (1935), and is similar to biodynamic agriculture with emphasis on soil biologicals.

Then there is Permaculture which was developed in Australia in the seventies. This system focuses on accurately developed ecosystems. Similar to permaculture is Forest agriculture which is based on the book "The Forest Garden" by the British author Robert Hart (1987). Permaculture is a philosophy of working with, rather than against nature. It uses thoughtful observation rather than thoughtless labor, and looks at plants and animals in all their functions, rather than treating any area as a single product system. It’s a design system for ecological and sustainable living, integrating plants, animals, buildings, people and communities. This system takes an integral approach considering climate, ethics, energy, shelter, food, soil, and water.

Another system of organic agriculture is Fukuoka agriculture. This started in 1975 and is based on the ideas of the Japanese Masanobu Fukuoka. This system strives for minimal interference in natural processes. All these types of organic farming produce organic foods.

5.4 WHAT IS ORGANIC FOOD?

Organic food is produced by farmers who emphasize the use of renewable resources and the conservation of soil and water to enhance environmental quality for future generations. Organic meat, poultry, eggs, and dairy products come from animals that are given no antibiotics or growth hormones. Organic food is produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge, bioengineering or ionizing radiation.

5.5 ORGANIC FOOD LABELS AND CERTIFICATION

Before a product can be labeled ‘organic’ in the US, a Government-approved certifier inspects the farm where the food is grown to make sure the farmer is following all the rules necessary to meet USDA organic standards. Companies that handle or process organic food before it gets to your local supermarket or restaurant must be certified too. The final national US organic standards rule was published in the Federal Register in 2001. The law was activated April 21, 2001. The rule, along with detailed fact sheets and other background information, is available on the National Organic Program's website http://www.ams.usda.gov/nop/

In Europe the European Commission issued an EU-wide label in March 2002 for organic food. In 2009 a new logo was chosen through a design competition and online public vote. The new logo is a green rectangle that shows twelve stars (from the European flag) placed such that they form the shape of a leaf in the wind. Unlike earlier labels no words are presented on the label lifting the requirement for
translations referring to organic food certification. It has been mandatory throughout the EU since July 2010.

In Germany the national label was introduced in September 2001 following in the footsteps of the political campaign of "Agrarwende" (agricultural major shift) led by ‘Die Grüne’. This campaign was initiated after the mad-cow disease epidemic in 2000. The effects on farming are still challenged by other political parties. The national green-black-white hexagon shaped Bio-label had gained wide popularity. This has now been replaced with the European logo.

Deciphering food labels and marketing claims can be a challenge for the average consumer. Companies use production and handling claims as a way to differentiate their products in the marketplace. Organic is one label that most consumers are familiar with, but understanding what “organic” really means can help consumers make informed choices.

USDA certified organic products have strict production and labeling requirements. The US organic industry is regulated by the National Organic Program (NOP), part of USDA’s Agricultural Marketing Service. Certified organic products are produced without using methods such as genetic engineering or genetically modified organisms (GMOs). The organic standards are designed to allow natural substances in organic farming while prohibiting synthetic substances.

There are four distinct labeling categories for certified organic food products:

- 100% Organic
- Organic
- Made with organic…, and
- Specific organic ingredients.

There are also labeling requirements for organic livestock feed. I’d like to emphasize on the “Made with organic…” category. Multi-ingredient agricultural products in the “Made with organic…” category must contain at least 70 percent certified organic ingredients (not including salt or water). These products may contain up to 30 percent of allowed non-organic ingredients. All ingredients – including the 30 percent non-organic ingredients – must be produced without GMOs or other prohibited substances such as most synthetic pesticides.

If a product meets these requirements, its label may include a statement like, “Made with organic oats and cranberries.” A more generic statement like, “Made with organic ingredients,” is not allowed. If an ingredient is identified in the “Made with organic…” statement, it must be a truthful claim. This means the product can only contain organic forms of that specific ingredient. For example, if the label states “Made with organic corn” all raw and processed corn-based ingredients—such as blue corn, corn oil, and corn starch—must be certified organic.
6.    FOOD SAFETY

Another concept I’d like to briefly touch upon is food safety. Food safety is a scientific discipline describing handling, preparation, and storage of food in ways that prevent foodborne illness. This includes a number of routines that should be followed to avoid potentially severe health hazards. The tracks within this line of thought are safety between industry and the market, and then between the market and the consumer.

In considering industry to market practices, food safety considerations include the origins of food including the practices relating to food labeling, food hygiene, food additives and pesticide residues, as well as policies on biotechnology and food and guidelines for the management of governmental import and export inspection and certification systems for foods.

In considering market to consumer practices, the usual thought is that food ought to be safe in the market and the concern is safe delivery and preparation of the food for the consumer.

Food can transmit disease from person to person as well as serve as a growth medium for bacteria that can cause food poisoning. In developed countries there are intricate standards for food preparation, whereas in lesser developed countries the main issue is simply the availability of adequate safe water, which is usually a critical item.

In theory, food poisoning is 100% preventable. The five key principles of food hygiene, according to the World Health Organization (WHO) are:

1. Prevent contaminating food with pathogens spreading from people, pets, and pests.
2. Separate raw and cooked foods to prevent contaminating the cooked foods.
3. Cook foods for the appropriate length of time and at the appropriate temperature to kill pathogens.
4. Store food at the proper temperature.
5. Do use safe water and cooked materials.

Now, Food Safety should not be confused or mistaken with our next subject.

7.    FOOD SECURITY

The reason why this can be confusing is because the FDA (US) says that Food Security is “the prevention of intentional contamination of food through tampering or other malicious, criminal, or terrorist actions or threats ...”

While the UN stated during the World Food Summit in 1974 that Food Security is “The availability at all times of adequate world food supply of basic food to sustain a steady expansion of food consumption and to offset fluctuations in production and prices”.

Food Security was the overall theme of last year’s FAO World Food Day, which is held annually on October 16. During that summit the following important facts were stated.
About 2 billion people are food insecure, because they fall short of one or several dimensions of food security. Globally, 842 million people are chronically undernourished, while almost 2 billion suffer from micronutrient deficiencies. Micronutrient deficiencies, or 'hidden hunger', occur when diets fail to provide sufficient amounts of micronutrients such as iodine, iron, zinc and vitamin A. Micronutrient deficiencies increase morbidity and mortality, impair cognitive development, reduce learning ability and productivity, and reduce work capacity in populations as a result of higher rates of illness and disability—resulting in a tragic loss of human potential. Overcoming micronutrient malnutrition is essential for development.

Some 65% of the world's population lives in countries where overweight and obesity kills more people than do factors related to underweight. Globally, more than 40 million children under the age of five were overweight in 2010. Once considered problems of only high-income countries, overweight and obesity are now on the rise in low- and middle-income countries, particularly in urban settings.

The world is increasingly faced with a double burden of malnutrition, whereby undernutrition, especially among children, coexists with overweight and diet-related chronic diseases and micronutrient malnutrition. The reason for this coexistence is that being overweight is not necessarily a matter of eating too much food, but of eating food that is not nutritious, and poor consumers may have less access to good nutrition.

Several ways we can contribute in the solution to this issue and reduce the amount of food we need, is to focus on vegetable rich diets, more equal food access, and by eliminating food waste. Let’s just highlight two of these aspects and look at some related statistics.

7.1 DIETS

Increased Consumption
Globally, food consumption has increased from 2,250 calories per person per day in 1961 to 2,750 calories per person per day in 2007, and is projected to increase to 3,070 calories per person per day by 2050. Despite the increased consumption, South Asia and sub-Saharan Africa will continue to have the lowest daily food caloric intake per capita by 2050.

The fastest increases in consumption per person between 1961 and 2007 were in cereals, followed by vegetable oils and livestock products. But in relative terms, consumption of vegetable oils, vegetables, fruits, livestock products, tea, coffee and cocoa increased more rapidly than cereals. Consumption of roots, tubers and pulses declined during the period. Per capita consumption of roots and tubers will continue to decline everywhere except South Asia.

By 2050, per capita food consumption in Latin America, the Near East/North Africa and East Asia will be similar to that of high-income countries in 1990.

Meat and dairy demand
The total global animal protein consumption has more than doubled since 1970. The growing global population and increasing per capita consumption of meat and dairy will increase global animal protein demand by 60% by 2030.
Meat consumption in low- and middle-income countries (excluding China and Brazil) is projected to grow by 75% from 2005 to 2050, reaching 30 kg per person per year. By 2050, Latin America’s per capita meat consumption (84 kg per person per year) will be on par with that of people in high-income countries (91 kg per person per year). Globally, people consume an average of 39 kg of meat per person each year. North Americans consume 121 kg, Europeans consume 91 kg, Chinese consume 54 kg, and Africans consume 14 kg.

Producing food energy and protein from livestock takes between 2.5 to 10 times as much energy as producing the same amount of food energy and protein from grain. Currently, one third of the world’s cereals supply is used for livestock feed, which results in lower energy efficiency. If people could be persuaded to switch from eating livestock-based foods to cereals and vegetables—a difficult task—the energy efficiency of the global food system would be increased. The production of animal protein must be more than tripled if the projected global population of 9 billion people in 2050 were to consume meat and dairy products at current North American and European levels.

7.2 FOOD WASTE

Globally, roughly one-third of the food produced for human consumption, about 1.3 billion tons per year, is lost or wasted. While 1 billion people are going hungry. Producing this much food accounts for 6–10% of human-generated greenhouse gas emissions. People in Europe and North America waste 95–115 kg of food each year, compared with only 6–11 kg a year for people in Sub-Saharan Africa and South Asia.

Food waste is a huge problem globally, but the underlying reasons differ between regions. Food waste in high-income countries is dominated by consumer waste. Developing countries have high losses at the post-harvest and processing stages because of spoilage. Spoilage is high because of lack of modern transport and storage infrastructure, and financial, managerial and technical limitations in difficult climatic conditions. The total amount of food wasted by consumers in industrialized countries is nearly as high as the total net food production in sub-Saharan Africa.

Some 14 to 24 % of grain is lost in China along the whole supply chain, with the largest losses in the consumer segment. These food losses and waste in 2010 were estimated to waste the equivalent of 135 billion m³ of water, equivalent to the total amount of water consumed in Canada. Such losses also imply that 26 million ha of land were used in vain, equivalent to the total arable land of Mexico.

The blue water footprint (i.e. the consumption of surface and groundwater resources) of food wastage is about 250 km³, which is equivalent to the annual water discharge of the Volga River or three times the volume of Lake Geneva.

A total of 1.4 billion ha of land (28% of the world’s agricultural area) is used annually to produce food that is lost or wasted. This is equivalent to the areas of Canada and India put together. Food wastage costs food producers some US$ 750 billion annually.
8. COMMUNITY SUPPORTED AGRICULTURE (CSA)

Community Supported Agriculture (or Community Shared Agriculture) is an alternative, locally-based economic model of agriculture and food distribution. A CSA also refers to a particular network or association of individuals who have pledged to support one or more local farms, with growers and consumers sharing the risks and benefits of food production. CSA members or subscribers pay at the onset of the growing season for a share of the anticipated harvest. Once harvesting begins, they receive weekly shares of vegetables and fruit, in a vegetable box scheme.

9. URBAN AGRICULTURE

Urban agriculture can be defined shortly as the growing of plants and the raising of animals within and around cities. The most striking feature of urban agriculture, which distinguishes it from rural agriculture, is that it is integrated into the urban economic and ecological system: urban agriculture is embedded in - and interacting with - the urban ecosystem. Such linkages include the use of urban residents as laborers, use of typical urban resources (like organic waste as compost, and urban wastewater for irrigation), direct links with urban consumers, direct impacts on urban ecology (positive and negative), being part of the urban food system, competing for land with other urban functions, being influenced by urban policies and plans, etc.

10. VERTICAL FARMING

Vertical farming is basically growing food crops ‘in the air’ instead of on the ground. It’s a fairly new concept of the last decade where "vertical farms" are promising a new, environmentally friendly way to feed the rapidly swelling populations of cities worldwide.

The idea behind it is that food should be grown year-round in high-rise urban buildings, reducing the need for the carbon-emitting transport of fruit and vegetables. The plant racks in a vertical farm can be fed nutrients by water-conserving, soil-free hydroponic systems and lit by LEDs or natural light. Control software can be used to rotate racks of plants so each gets the same amount of light, and control water pumps to ensure nutrients and water are distributed.

Proponents see vertical farming as a way to feed a global population that is urbanizing fast. The United Nations predicts that 86% of the people in the developed world will live in cities by 2050. It could make food supplies more secure as well, because production can continue even in extreme weather conditions. And as long as farmers are careful to protect their indoor "fields" from pests, vertical farming needs little herbicides or insecticides. They also conserve water far better than earthbound farming.

Opponents say that generating enough electricity using solar panels requires an area about 20 times larger than the area being illuminated. For a skyscraper-sized hydroponic farm, that is clearly impractical. So vertical farming will work only if it makes use of natural light. The immediate solution may simply be to take advantage of the space available on urban rooftops, and to pursue urban farming rather than vertical farming.
11. VIRTUAL FARMING

And then there is Virtual Farming like the social network game of FarmVille. FarmVille is a farming simulation game developed by Zynga in 2009. It is similar to Happy Farm, Farm Town, and video games such as the Harvest Moon series. FarmVille is available as an Adobe Flash application via the social-networking website Facebook, and was available as an application ("app") for the iPhone, iPod Touch and iPad for a time. The game is free to play; however, to progress quickly within the game, players are encouraged to spend Farm Cash (in FarmVille) or Farm Bucks (in FarmVille 2) which are purchasable with real-world currency, or to "get help from their friends." Apparently this app is even used for educational purposes.

12. FUTURE DEVELOPMENTS

Finally let’s get out our crystal ball and see what developments will influence agriculture in the future. The biggest challenge of all relates to demographics, something we already mentioned in details above. This leads to a growth in food demand through a high projected population growth in the low and middle income countries. The world population, currently 7.2 billion, is expected to reach 8.1 billion in 2025, 9.6 billion by 2050 and 10.9 billion by 2100. Population projections are uncertain, and so the global population estimates for 2050 range between 8.3 billion and 10.9 billion.

12.1 SCIENCE & INNOVATION

Scientific developments can and will play a role in the future of agriculture.

Genetically Modified Crops
I know this subject is controversial. And we can blame the large transnational chemical companies for this. They have given this term a bad name by exploiting a new technology for power and financial gains. However, I am referring here to the proper application of a modern technology. After all in other life sciences medicine is produced with this technology, gene-therapy is based on this technology. We saw that water, fertilizers, and land are increasing in price and the additional 3 billion people expected to populate the planet in the coming decades will put extra pressure on these precious resources. Advances in genetics can continue to produce gains in the yield of a number of crops. For example, the Gates Foundation is striving to develop genetically modified cereal crops and, if successful, vast tracts of land on the African continent could suddenly become significantly productive. Other popular crops such as rice and cassava will also be modified to grow faster, stay fresh longer, be more resistant to insects and disease, and/or be imbued with enhanced nutrients.

Nanotechnology
This vast field of the 21st century is making a very significant impact on the world's economy, industry and people's lives. It deals with the physical, chemical and biological properties of matter considered at nanoscale (1–100nm) and their implications for the welfare of human beings.
There has been significant interest in using nanotechnology in agriculture. The goals fall into several categories:

- Increase production rates and yield
- Increase efficiency of resource utilization
- Minimize waste production

And specific applications include:

- Nano-fertilizers
- Nano-pesticides
- Nano-based treatment of agricultural waste
- Nanosensors

Nano-fertilizers often contain nutrients/growth promoters encapsulated in nanoscale polymers, chelates, or emulsions. Slow, targeted, efficient release becomes possible, and in some cases, the nanoparticle itself can stimulate growth.

Nano-pesticides often follow a similar model to nano-fertilizers. It’s an active pesticidal ingredient associated with or within a nanoscale product or carrier. The benefits are: Increased stability/solubility, slow release, increased uptake/translocation, and in some cases, targeted delivery (analogous to nano-based delivery in human disease research). This could result in lower required amounts of active ingredients with fewer burdens on the environment.

Nanosensors can be used to detect pathogens, as well as monitor local-, micro-, and nano-conditions in the field (temperature, water availability, humidity, nutrient status, pesticide level).

Nanotechnology has a range of practical agriculture applications in everything from advanced packaging and next-generation sensors to advanced animal husbandry techniques. To demonstrate, consider just one recent advance: a new nanoparticle vaccine. If successful this nanotechnology-enhanced treatment will allow cattle to receive a single vaccine for a multiple number of diseases, including bovine viral diarrhea, bovine ephemeral fever and cattle tick fever.

**Robotics/Automation**

A number of family dairy farms are now using robots to milk their cows. Ironically, rather than putting farmers out of work the technology is encouraging younger farmers to stay on the family farm, because it frees them from the burden of having to be available to milk cows seven days a week.

Another example is a new robot designed for use in orchards and vineyards that could revolutionize agricultural robotics. Created via a partnership between several private firms and the Technical University of Dresden and with European Union funding support. This is an autonomous robot designed for typical orchard and vineyard tasks, including fertilizing, tillage, grounds care and transportation. Once farm managers input the robot’s path and tasks, the device can operate autonomously, guided by a GPS signal.

As robots continue to get better and more affordable, we can expect the technology to continue to move from the large corporate farms to even the smallest of family farms and, in the process, it will transform agriculture as we know it.
12.2 ENERGY OPPORTUNITY

Agriculture is set to play a huge role as we wean ourselves away from our dependence on oil and natural gas. The US plans to see alternative fuels provide 5% of the nation’s energy by 2020, up from 1% today. And it is expected that there will be US$1.2 billion in new income for farmers and rural landowners by getting involved with new energy sources such as wind power. Liquid fuels from agricultural feed could replace 25% to 30% of US petroleum imports by that time. Europe plans to have a market that involves at least 20% usage of biofuels by 2020. These include Bioethanol from sugarcane, sorghum and corn, and Biodiesel from soybean, rapeseed and algae.

13. REFERENCES

Below a list of some books and films related to the subject of this presentation. Happy reading and viewing!

Books

*Organically grown and genetically engineered: The Food of the Future* - Pamela Ronald & Raoul Admachak. To meet the appetites of the world's population without drastically hurting the environment requires a visionary new approach: combining genetic engineering and organic farming. Genetic engineering can be used to develop seeds with enhanced resistance to pests and pathogens; organic farming can manage the overall spectrum of pests more effectively. Agriculture has been a revolutionary biological science for 10,000 years, husbanding soil, tweaking the genes of the food crops. This is the next stage.

*Future Harvests: The next agricultural revolution* - Christophe Pelletier. This book explores a very hot topic: Will we be able to feed 9 billion people by 2050? The world population is growing fast. It is expected to pass nine billion by 2050. The urban population will double. Water shortages, climate change and soil degradation present a serious threat to the ability of farmers to produce the quantity of food required to meet future demand. The author presents an objective and comprehensive overview of both the challenges and the potential solutions to produce more food. The next agricultural revolution will be about the way we think!

*Balancing on a Planet: The future of food and agriculture* - David Cleveland. This is an interdisciplinary primer on critical thinking and effective action for the future of our global agri-food system, based on an understanding of the system's biological and sociocultural roots. Key components of the book are a thorough analysis of the assumptions underlying different perspectives on problems related to food and agriculture around the world and a discussion of alternative solutions. It is a tool to help students, faculty, researchers, and interested readers understand debates about the current crisis and alternatives for the future.
Films

*Food Inc.* (2008) - About the industrial food system in the US.

*Food Fight* (2012) - A story of culinary revolt. About the industrial food system and the US food policy (leading to diabetes, obesity, etc.), produce large amounts of cheap food.

*Farmageddon* (2011) - About different farming/food systems (industrial food system/agriculture vs. local independent food system/agriculture). About food safety and USDA regulations using the example of raw milk and BSE (mad cow disease) in sheep.

*Years of Living Dangerously* (2013) - A new series started in April on Showtime about the long term negative effects of agriculture and our food demand on the environment. Using global warming and palm oil as a model. Palm oil was a great alternative when we needed to ban trans-fat from our food. Easy to grow, cheap and ideal for commercial baking (just check the label on your cookies, candy, popcorn, crackers and other snacks). Now the rainforest is disappearing through ‘slash and burn’ in several Asian countries.
INTERNATIONALIZATION AND LOCALIZATION FOR TRANSLATORS

Rick and Diana Dudgeon
Dudgeon International

Abstract: In times when communications and brands “go global”, ironically there is also an increasing need for them to “go local” through the adaptation of multicultural content. To localize means to adapt a particular product or service for a specific country or region. Although the most obvious part of this consists of the translation of words or text, this is only a part of the localization process. Linguistic nuances and cultural aspects need to be taken into consideration as well as the social context of the target audience. More frequently, localization refers to the process of translating and adapting websites, video games and computer software for a particular geographic region or locale. For this to happen, technical design needs to be done at a programming level so that a software application can potentially be adapted to various locales without further engineering changes. This process is called internationalization. Both localization and internationalization are integral parts of an overall process called globalization. We describe in detail these concepts as well as the practical steps to take on a localization project with all the elements that should be considered.

1. OVERVIEW AND DEFINITIONS

With the fast evolution of technology in our everyday life, the Digital Age has allowed rapid global communications and networking to shape our society. We are now all “connected” and avidly consuming and producing all sorts of information. Over 200 million emails are sent every minute, close to 600 websites are made and nearly 60 hours of video are uploaded on YouTube. Most of that content is in multiple languages. Actually only about a quarter of it is in English, causing translation, localization, internationalization and globalization to be key elements in making that information accessible to everyone in the world virtually instantly.

The translation industry today is a huge enterprise that enables the movement of information, not only by translating words, but by adding cultural relevance and understanding. Products and services are adapted so that they can account for differences in distinct markets. Linguistic nuances and cultural aspects need to be taken into consideration, as well as the social context of the target audience. From changing graphics, currencies, date and time formats, colors, slang and dialects, to local laws or even rethinking the whole presentation of a product, these adaptations acknowledge regional sensitivities and cater to a carefully defined consumer.

The translation and globalization business keeps growing every day. According to research by Common Sense Advisory, the estimates for this year put the world market at nearly US$40 billion and The Centre for Next Generation Localisation reports that localization is the fourth fastest-growing industry in the United States.

So what exactly are we talking about here? Let’s start with some definitions. What are i18n and L10n? First of all, what’s with the weird abbreviations? The i18n means that there are 18 letters between the letters i and n in internationalization. L10n works the same way. There are 10 letters between l and n in localization. Why do we do this? Basically it just takes too long to say
**internationalization and localization.** By our calculations if you need to say *localization* ten times a day, five days a week, for a year, you can get to your New Year’s Eve party 6.3 minutes earlier if you switch to *L10n*. Plus, it sounds cool. Really, it’s just a convention. Every industry comes up with its own jargon and acronyms. Yes, the upper-case *L* and the lower-case *i* are part of the convention, because an upper-case *i* looks like a lower-case *L*, and this is confusing enough already.

According to the Localisation Industry Standards Association (LISA),

Internationalization is the process of generalizing a product so that it can handle multiple languages and cultural conventions without the need for re-design. Internationalization takes place at the level of program design and document development.

What about *localization*? Again, according to LISA,

Localization involves taking a product and making it linguistically and culturally appropriate to the target locale (country/region and language) where it will be used and sold.

It should be noted that LISA is no longer with us. And they spelled *localization* with an *s*, so how seriously can we take them, really? As we will use the term *localization*, we’ll be talking about the process of adapting software for a particular region or locale.

If you google around you’ll find all kinds of definitions. We’re not suggesting that ours are the precise definitions and that all the others are wrong. We just want to establish what we’re talking about today so that we’re all on the same page.

Another term that comes up in this discussion is *globalization*, or *g11n*. (It’s up to you whether to use an upper-case or lower-case *g*. Have fun with it.) Some view *g11n* to be the combination of *i18n* with *L10n*. We don’t disagree with that, but there is more involved. *G11n* is more of a marketing or business concept. As we will use the term, it describes your strategy for taking a message and transmitting it to a variety of locales while crossing language barriers and geographic borders.

While we’re off in the weeds, we’d better define *software*. By *software* we mean a computer program, or a sequence of instructions that a computer executes to achieve a desired outcome. This includes things we obviously think of as software, like *Microsoft Windows*, *FireFox*, and *Trados*. But we’re also talking about web applications. By web application, we mean any website that accepts input and changes its output based on the input. If you need to log in, if it has a shopping cart, if it has a search box, if it asks you for your favorite color, this is software. This means more or less every website unless the site has truly static content. So most of what we are talking about applies equally to both websites and traditional computer programs. When there are differences we’ll try to point them out. We’re also talking about the apps that run on your smartphone and your tablet. This is the fastest growing category of software, and if it is not already the biggest market for *i18n* and *L10n*, it soon will be.
2. INTERNATIONALIZATION

While you’re searching the web, you’ll find that i18n is often used interchangeably with L10n. A better way to view them is as two parts of the same process. They are really two distinct processes, requiring different skill sets. Localization is typically done by translators, while internationalization is normally done by software engineers.

To visualize this, consider the example of a gourmet kitchen. It takes a very different set of skills to create a gourmet kitchen than it does to create a gourmet meal. But without the kitchen, there can be no meal. Similarly, without internationalization, there can be no localization. Localization cannot begin until the internationalization is complete. Just as many kinds of meals can be created in a well equipped kitchen, localization can be done into many different languages, while the internationalization only needs to be done once.

Why do we need internationalization? We can take a Word document written in English and hand it to an experienced English-to-French translator, and they can give back a Word document with our content translated into French. We didn’t have to “internationalize” anything. When do we need to do internationalization? Why do we need it?

Consider a computer program. If you are handed a computer program, and you don’t have experience in writing software, it will mostly look like nonsense to you. You might wish for a Java to English translator. What if we then hand the program to a Greek translator and say we’d like this translated to Greek, what’s going to happen? They might cry out “It’s Greek to me!” (Sorry, couldn’t resist.) Most programming languages are created using an instruction set of mostly English words. What happens if our translator accepts the document and translates all of the English to Greek? Then the program won’t work. Why not? The computer doesn’t understand Greek. It understands Java. We don’t want to translate the instructions to the computer, just the content that the end user will see.

Now suppose we’re lucky enough to find a translator who also has experience with software and knows Greek, English and Java. They will be able to recognize which strings are computer instructions and which are output that will be seen by the end user. Then they can translate only the end-user output. Mission accomplished, right? Probably not.

The problem here is that we now have two programs, one for English users and one for Greek users. What happens when we discover we have a bug in the program? (This is not hypothetical. We will find a bug in the program.) Now what? We need to fix both programs. Who does this? Does the same programmer change both programs? Does the original programmer change the English version and the English/Greek/Java wizard change the Greek version? We’ve now doubled our work. Not only do we need to modify two computer programs, we now need to test those changes in both languages. What happens if our software is available in twelve languages? This becomes expensive fast.

This is where internationalization becomes important. The first responsibility of the i18n engineer is to go through the code and separate all of the computer code from the text strings, words or phrases that are translatable. These strings are then moved to resource files. The
A resource file can then be sent to a translator who will localize these words or phrases into the target language. Meanwhile, back in the computer code, the i18n engineer will modify the computer code so that, instead of outputting the original English string, it will look up the correct phrase in the right resource file so that the end user can see the right content in their preferred language.

Resource files may come in a variety of formats. At the most basic level, a resource file should be a map of unique identifiers with a corresponding string in the target language. For example, a resource file may contain an entry like this:

```
Greeting.Morning = Good Morning
```

In this case the identifier is `Greeting.Morning` and, in English, the source language, it is represented as “Good Morning”. The value chosen as the identifier is actually arbitrary. A thoughtful i18n engineer will try to use something meaningful, but the only actual requirement is that the identifier be unique. The file may have another entry for `Greeting.Afternoon`, but this should be the only entry for `Greeting.Morning`.

Another format you might see is to use numbers as the identifiers:

```
16 Good Morning
17 Good Afternoon
```

A common format for resource files is XML (Extensible Markup Language). XML is a set of rules for creating documents that are both human readable and machine readable. Here is an example of an XML entry:

```
<string name='greeting_morning'>Good Morning</string>
```

XLIFF (XML Localization Interchange File Format) is an XML-based format specifically designed for localization.

While separating the localizable elements from the software is the primary function of i18n engineers, there are other issues that they need to handle. For example, they need to properly handle conversions from left-to-right languages like English and Spanish, to right-to-left languages like Arabic and Hebrew. For example, a menu that used to be on the left needs to be on the right. They also need to handle things like number and date formats that can differ, and even currency conversions.

3. **LOCALIZATION KIT**

To ensure a clear understanding of the overall project, it is necessary to put together a Localization Kit, or LocKit (it needed a shorter name, of course) for localizers, engineers and testers to properly plan ahead. It should contain tools, instructions and resources that will allow a software product to be localized.
Nadine Kano defines it in her book *Developing International Software* (Microsoft Press, 1995) as:

A subset of tools, source files, binary files, test scripts and appropriate instructions that can be used to create a localized edition of a program. Generally given to translators, localization agencies or international distributors.

The more information we have about the project, the better we can efficiently quote, schedule and manage deliverables. It will also help prepare a proposal, which is how vendors are usually selected, and it can be especially useful when multiple languages have been split between vendors. The kit should be complete with as much information as the development team can provide about the product itself and should include clear documentation and instructions to use its contents. It should also use a well-organized folder structure and it should be divided into sections specifically designed for the team who will be working on the project.

The kits are as varied as the projects they represent, but we can usually find the following components in them: localization guidelines and schedule information, build environments and source files, and reference materials. Any kit should include a letter of assignment to be signed and returned by all team members and it should include a Statement of Work (SoW) where all requirements are detailed. This would also allow the project manager to outline the work plan through a WBS (Work Breakdown Structure) diagram and delivery schedule. *Divide et impera*, if your first language is Latin.

Each SoW should also be accompanied with a detailed Bill of Materials (BoM) including a list of the files to localize grouped by type; an image of the directory structure of resource files, build files, compiled files and documentation files by locale; directory structure requirements for deliverables; a list of expected deliverables; a list of drivers for creating deliverables; a list of build environments and source files; and a list of documentation files. Let’s describe some of essential elements in more detail.

**Product description:** Describing what it is, what it does, and the way in which different elements interact with each other will help understand the general architecture and possibly prevent potential problems later on. Defining the components clearly and associating them with a set of files will provide a clearer picture of what needs to be done.

**Requirements:** There will be specific requirements to consider such as length limitations, preformatted text to be kept in a certain layout, subset of characters, etc. Here is specified the platform, operating system version, browser, editors, etc.

**Contacts:** From the main project manager and the internationalization engineer to contacts who have good technical understanding of the product, people who will be involved in approving the terminology and even in-country reviewers who are in touch with the target market, it is essential to know who to call.

**Delivery:** This should describe in detail everything that the customer expects from you, from specific locales, to the types of files that should be delivered. All expectations should be clearly detailed to avoid confusion or misunderstandings. Is the Spanish for a European or a
Mexican audience? Are the XML files used to generate printed manuals to be localized after they’ve been converted to PDF? What about encoding? Usually the files are kept as similar as possible to the source data, but it doesn’t hurt to detail this in writing.

**File and Folder Names:** A product that has been well-internationalized will have a directory structure with rules to show where the translated files should go, what they should be named and what convention to use, etc., but this should still be spelled out for clarity. Should file names and directory names be translated? Although this is an unusual scenario, names of files and folders should be taken into consideration.

**Process Definition:** A description of the localization process should include what steps are to be taken and when, as well as contingency plans in case they’re needed. This is an important element since it includes the mechanism for inserting updated source material during the project and the procedure for reporting bugs and other issues.

**Schedule and Time Frame:** Often times there are milestones to be achieved at particular times and/or updates made to the product once the project has started and that need to be stated.

**Source Material:** If you will be directly modifying the software, source material will be an important part of the kit. The localizer will want the original source files as well as any collateral and reference material that may be relevant to the translation. A full build environment, including all resource files, includes batch files that automatically set any required system parameters, batch files that allow engineers to compile each language, any proprietary or translation tools used for compilation and testing, and resource files and/or glossaries of previously localized versions. Reference materials, documentation and online-help files, graphics, multimedia and other collaterals should be taken into consideration here.

**Word Counts:** Translators are normally paid by the word. A huge part of the localization project depends on the number of words to be translated and accuracy in the word count is very important. Different tools will often give different word counts, so it’s important to agree on a final count before the translation starts. Besides discrepancies, other issues to keep an eye on are possible problems with ideograph-based script (like Chinese or Japanese) or languages like Thai, with no space between words and complex linguistic rules.

**Ownership:** It is very important to determine the client’s position regarding ownership of translation memories created during the project. It should be established who the owner is and how TMs can or cannot be used outside the project. This is a controversial topic and misunderstandings should be avoided by clearly putting in writing what’s agreed on.

4. **STRING LOCALIZATION**

So the kitchen has been built, and it’s time for the gourmet cooks to get involved. We’re ready for localization! What happens next?
At the most basic level, it’s time to translate the resource files from the source language to the target language. Consider the example from above:

Greeting.Morning = Good Morning

Assuming you were localizing this into Spanish, you might change this to:

Greeting.Morning = Buenos Días

Notice that we did not translate the identifier. Everything breaks down if we translate the identifiers. Then localization just becomes obfuscation (9n).

So we’ve translated our strings. We’re done. We are now L10n engineers. Congratulations! But wait… Isn’t that just translating? Of course it is. L10n is generally more complicated. That’s why you’re making the big bucks now.

Let’s talk about some other things you might see. Suppose your file is formatted so that you see the following entry:

Greeting.Morning = "Good Morning";

The i18n engineer has actually sent you a source file, a file containing code that will be read directly by the computer’s interpreter. Notice there are some new characters here. First, notice the quotation marks ("). These tell the computer where the beginning and end of the target string are. Make sure you have both an opening and closing quotation mark so that you and the computer will be in synch. The semi-colon (;) tells the computer where the end of the instruction is. Don’t delete this.

Most programming languages are whitespace-insensitive. This means that if you type the space-bar three times, Tab twice, and hit three Enters, the computer will ignore most of this and treat it like a simple space. Not all environments are whitespace-insensitive. Do not make assumptions. The example above has a single space between the identifier and the equals sign (=), a single space between the equals sign and the opening quote, no spaces between the string and the quotation marks, and no spaces between the closing quote and the semi-colon. Whatever the convention is, make sure you follow it.

Beware of Microsoft Word. Word is the best thing that ever happened to desktop publishing. It is an important tool in translating. But it has no place in localization. Never, ever, ever use Word for localization. An exception might be if you are localizing an HTML document. In this case the rule is never, ever, ever use Word for localization. Word does things behind the scenes that you may not want and may not know about. For example, it gives you those really cool curly-quotes (‘’). These look really slick if we’re writing a resume or trying to pass English 1C. But a compiler doesn’t know what they mean. If you are localizing source code and you replace a regular quotation mark (") with a curly-quote (“) the compilation will fail. The program will not run.
We don't mean to pick on Microsoft. The point is to make sure to understand the tools you use and to be sure they are not too helpful, especially if they aren't designed specifically for localization. In this particular case, your target audience is a microprocessor.

What happens if the translated text contains a quotation mark?

```
Greeting.Morning = "Guten "Morgen";  
```

This doesn't work. In general, it's best to avoid quotation marks in translated strings, both single (' ) and double (" "). But sometimes a quotation mark is the correct punctuation. The next choice is to use single quotes between double quotes.

```
Greeting.Morning = "Guten 'Morgen';  
```

It may be possible to change the enclosing quotes to single quotes:

```
Greeting.Morning = 'Guten "Morgen"';  
```

If all else fails we need to escape the quote character. How you do this depends on the language. Sometimes we need to precede the character with a backslash (\ " ").

```
Greeting.Morning = "Guten \"Morgan\";  
```

In other languages we want to double the quote sign: (""")

```
Greeting.Morning = "Guten ""Morgen"";  
```

You need to understand the quoting rules for the language you are using, and may need to refer to the developer to find out which rules are in play.

Here is an example from web localization:

```
Primer.Emphasis = "Some words are <em>emphasized</em>.";  
```

Notice here the use of the HTML tags <em> and </em>. In this case, these tags tell the browser to italicize the enclosed text. We don’t want to translate the tags or this formatting won’t work. It may be that italics are inappropriate for the locale you are translating for. In this case, it might be appropriate to remove the tags. Or this can be addressed using CSS (Cascading Style Sheets.) Sometimes you might see a string like this:

```
Dress.Alternate = "The dress is also available in $color.";  
```

Here the dollar sign ($) is a special character that tells the interpreter that $color is a variable. The actual color is inserted into the string at run time. You do not want to translate the variable name or what the user will actually see is an empty string. This is an example of using a placeholder. Here is another placeholder you might see:
Dress.Alternate = "The dress is also available in %s.";

Again, you don’t want to modify the placeholder in any way.

Sometimes you might see multiple placeholders in the same string:

Container.2args = "%1$s is in %2$s.";

This string tells the compiler that we will insert two strings at run time. These placeholders are numbered so that the string can be reordered in the target language, if necessary.

Container.2args = "%2$s contiene %1$s.";

The localized string must contain the same number of placeholders as the original string, and the placeholders should not be modified in any way.

How would you localize this string?

Misc.String2 = "%s to %s.";

This could mean anything. It could be A to F, 10 to 15, Monday to Friday, transport to market, or soup to nuts. This is probably impossible to localize properly without understanding the context. You’ll need to contact the developer for clarification, or run the application to see how this is used. This is an example of poor internationalization. Ambiguities like this should be avoided.

A special consideration is the use of plurals. Consider this string:

Cart.Apples = "You have %d apples in your shopping cart.";

This could have multiple translations depending on how many apples are involved. We want to avoid seeing things like You have 1 apples in your shopping cart. Multiple rules need to be created for this case.

Cart.Apple1 = "You have one apple in your shopping cart.";
Cart.AppleMore = "You have %d apples in your shopping cart.";

Different languages and frameworks have various ways to handle plurals. This is how it might look in XML:

```xml
< plurals name='cart_apples'>
  <item name='one'>one apple</item>
  <item name='other'>%d apples</item>
</ plurals>
```
English has only two rules for plurals, one for singular, and one for everything else. Some languages have additional rules for zero, two, small numbers, and big numbers. Polish has a rule for numbers that end in 2, 3 or 4, except 12, 13, or 14. These kinds of rules need to be handled on the i18n side. On the L10n side your responsibility is to translate the strings appropriately, or to report cases where this hasn’t been properly implemented by the i18n engineer.

This discussion would be incomplete without a comment about comments. Here are some sample comments:

```
// This is a single line comment. It ends with the newline
/*
   This is a multiline comment.
   It ends with these characters: */
#This is different style of single line comment.
```

Comments are there for the benefit of those who are working on the file. They may include instructions for the L10n engineer. They could include information you need about context. Comments are ignored by the computer and are never seen by the end user. Do not translate the comments. Don’t count the comments if you are preparing a quote based upon the word count.

5. SOFTWARE LOCALIZATION

So far all we have looked at is really just translation. But there are other issues that may have to be addressed. A big issue when moving from one language to another can be text expansion. Say, for example, you’re working on a dialog box in an email program. One of the strings to be translated is the word SEND as it appears on a button. You translate this into the Spanish ENVIAR, and open the dialog box. Sadly, the button now says NVIA. What happened? The translation is longer than the source and no longer fits on the button. The E and the R have been pushed off the edges.

There are a number of ways to address this. Sometimes the initial design can be improved. Maybe the size doesn’t need to be static. The button can be sized automatically depending upon what text it contains. This may not be practical. A page with several buttons of different sizes may not look very good. Perhaps a graphic icon can be used instead of text to identify the button. Now it may not need to be localized at all.

On the localization side, we could consider using a different word. Perhaps a synonym is available with fewer letters. Could we use an abbreviation? (How about E4R?) This is generally not the best solution. If another word was better, you would have used that in the first place.

When all else fails, we need to change the code itself. Different customers will handle this differently. Some clients won’t let you anywhere near their source code. If an element needs to be changed they will want their development team to fix it. Other customers will expect to hand the project off and having the L10n engineer fix everything. If you’re going to call yourself an engineer, you’ll need to be able to change the size of a button.
Before you can change something like a dialog box or a button, you need to have the code that defines that element. If you’re expected to make changes like this, these files should be part of your localization kit. You may receive the files in either text files that define the element, or in binary files. A binary file has already been converted to machine instructions and is essentially not human readable.

If you have the source text files available you may be able to edit them with a simple text editor. There should be a line similar to the following in the resource file that defines the dialog box.

```
PUSHBUTTON "ENVIAR",3,280,175,60,15
```

What does this mean? We have a button whose label is *ENVIAR* with an ID of 3, and that is 280 pixels from the left of the dialog box, 175 pixels from the top, and 60 pixels wide by 15 pixels high. (These kinds of definitions vary widely depending on which environment the code was created in. You may need to look at a manual. We said you could use a text editor. No one said it would be easy.) So change the 60 to a larger number that will handle your wider text. Some trial and error might be needed to figure out what the right number is.

If you’ve been given a binary file then using a text editor isn’t an option. You’ll need to use a resource editor, like the one built into Visual Studio, or a software localization tool. These tools allow you to see and adjust the properties of each element. So you can quickly see what the current width is and type in a new value. Most will also let you change the element graphically by dragging one of the edges of the control.

Some guidelines for resizing controls:

- You should have the same number of buttons when you are finished as when you started.
- If you resize a button, it should be the same size on every page. For example, if you make the *Cancel* button bigger in one dialog box it should be the same size in every other dialog box that has a *Cancel* button.
- If there were two buttons on the page with the same size, you should resize them both to be the same size.

6. TESTING

There are at least three kinds of testing involved with a localization project.

**Linguistic testing** is where we’re testing the quality of the translation. This might be done by a third party like an in-country reviewer. We’re checking that the correct terminology is used and that the translation is understandable and consistent with the feel of the source language. You should also do your own linguistic testing. Sometimes the translation is perfect, but a string appears in a context that you didn’t expect and where it doesn’t make sense. If possible, test your changes by running the software. Sometimes you won’t have access to the development environment and this won’t be possible. In this case, ask to be sent screen shots from the integrated product for you to review.
Cosmetic testing is checking that the look, feel, and flow of the software hasn’t been changed by the linguistic changes. Primarily we’re checking that expansion hasn’t caused text to be truncated or hidden, or broken the layout of the page. The customer should test this as well, but the first responsibility here is with the L10n engineer. Again, you may need to ask for screen shots to test this properly.

Functional testing is usually done by the product team. This usually doesn’t involve L10n engineers, but i18n engineers may be involved, and i18n engineers should always do functional tests of their own changes. Any time we make changes to software code there is a risk that we will introduce a defect. Defect-free code is the exception, not the rule. We can create spectacular failures just by deleting the wrong semi-colon or adding a quotation mark where it doesn’t belong. So even when we are making minor linguistic changes, the changes need to be integrated and tested to make sure everything still works.

An exception where you might do functional testing on your own changes is if you are provided a test framework. This is a separate computer program that will generally run a suite of tests that validate the basic functioning of the software. If you are given such a framework you should confirm that it runs successfully before turning in the work.

If you are working on actual source code you should compile it, if possible. (Some languages, like PHP, are not compiled.) Compilers cannot catch every error, but they can detect a variety of defects. At a minimum your code should always compile.

7. LOCALIZATION TOOLS

What does a good L10n engineer need in their tool kit? The most important tool is a good text editor. There are a lot of good ones out there, including some that are free or are shareware. I do 99% of my work with a plain text editor. But that’s because I have control issues. I don’t trust a software program to do things exactly the way I want it. But with great power comes great responsibility. It’s much easier to make a mistake when you’re controlling every character.

Which editor you get depends a lot on how you use it. Some handle various languages better than others. Make sure your editor supports Unicode (UTF-8). We recommend using one with syntax highlighting. Syntax highlighting renders different things in different colors, so that your text strings are one color, the computer instructions are a different color, and the comments are still another color.

Don’t use an editor that adds the UTF byte-order mark (BOM), or use one that allows you to turn the BOM on and off. The BOM is a supposedly non-printing character that tells the client application which flavor of Unicode that you are using. The problem is that the BOM is only invisible if it is the first character in the file. A lot of the files you will be working on will be merged with other files, either before production, or at run-time. Then you end up with weird characters in your output that are really hard to find and get rid of.
If you’re working with a lot of string translation, a translation memory (TM) can be a timesaver. If you already have a favorite this will continue to be useful for you. If shopping for a new TM, make sure it can handle a variety of file types. It’s important that it can edit XML files. (There are also XML editors out there designed specifically for this purpose.)

If you’re going to be modifying things like dialog boxes, page layout, and menus, you’ll want to use a Software Development Kit (SDK) or a resource editor. (A good SDK includes one or more resource editors.) Most languages have a specific SDK for that language. You want Microsoft Visual Studio if you’re working with a lot of Windows software. If you are working with a variety of computer languages you might try something like Eclipse that is language-generic but has packages available for working with different languages. If you will be working directly on binary files, you need to use a resource editor or a software localization tool.

Software localization tools are designed to allow you to work directly on software. You can use them to translate strings, but they give you a lot more. A good tool will allow you to resize elements, change fonts and colors, find and fix hotkey conflicts, and more. If you’re working with a lot of binary files this is a critical tool.

8. HOW DO YOU CHARGE?

Here is where the rubber meets the road, right? Of course we all love linguistics, but we also need to pay for the groceries. There are essentially three ways to charge for i18n and L10n: by the unit, by the project, or by the hour.

Translation is typically billed by the unit. Traditionally we charge by the word. This method works fine for localization if all you are localizing is text based resource files that contain strings. If you are expected to resize controls and allocate hot key assignments, do not charge by the word unless this work is a small portion of a much larger project. You might spend two hours working on a dialog box that only has a dozen words. Don’t work for pennies.

Charging by the word makes no sense if you’re doing internationalization, but you could agree on a rate per file or per line of code.

There are good things and bad things about charging by the project. The customer knows up front how much this is going to cost, and you know how much you’re going to get. For this to work well, you need to be very good at estimating how long a project will take. If you underestimate the work involved you may end up working for next to nothing. On the bright side, if you overestimate the size of the project you can end up making a lot of money for not much work. Or you could end up losing the project to a competitor who was better able to judge the scope of the work. If you charge by the project it is essential that you have a well written agreement that says exactly what you will deliver. It should explicitly say that changes are not included or how you will charge for change requests. Changes are inevitable in large software projects. If you don’t address this up front you can end up doing a lot of extra work for free.
There is a lot to be said for charging **by the hour**. The client has an incentive not to waste your time with unimportant details. You have an incentive to do quality work without rushing through it. But this isn’t always possible when budgets have to be met and costs need to be understood before a project is committed.
SOFTWARE LOCALIZATION QUALITY ASSURANCE FROM THE TESTER’S PERSPECTIVE

Carola F. Berger
CFB Scientific Translations

Abstract: The presentation will give a very brief overview over the localization process for software and mobile apps before covering the quality assurance process in detail. The talk will not only discuss the fundamentals of the testing process, but will also help you become a better tester by presenting some tips, tricks, best practices, and pitfalls. The presentation is intended for beginning and intermediate localization testers and discusses the testing process from the tester's perspective. The talk will not cover other steps in the localization process such as file preparation, translation, etc., which have been covered at past ATA conferences.

1. Introduction

In the following, I will discuss the localization process for software applications, whereby software applications, or apps, refer to computer programs that carry out operations or tasks for a specific application. Traditionally, apps were executed on desktop computers, but lately more and more apps run on mobile devices or over a network (in the “cloud”). In the following, I will refer to all of these types of programs collectively as apps or alternatively simply as software.

According to a recent study, the worldwide software revenue totaled around 407 billion USD in 2013 (Gartner, 2014), whereby the mobile app market accounts for about 25 billion USD (Wall Street Journal, 2014). While the software market enjoys a yearly increase of a few percent, the mobile app market was expected to rise over 60% in 2013 compared to 2012, according to the above sources. These growing markets also mean a greater need for internationalization and localization of the software.

Below I will briefly outline the entire internationalization and localization process before discussing one crucial step in more detail: the QA testing process. QA testing is an important step, and many large software companies employ in-house linguistic testers or contract out the task to full-time linguistic testers. I will explain the entire process and present tips and tricks at the example of fictional software applications. After a brief summary, I include a glossary and references. Glossary entries are denoted in bold on their first occurrence.

2. Overview over the Internationalization and Localization Process for Software Apps

Figure 1 illustrates the localization process for software applications, from the linguistic and software design preparations to the final product. The first step in the process is the preparatory phase, which includes the so-called internationalization phase (abbreviated i18n), and the preparation of style guides and glossaries. Internationalization is the process of preparing the software such that it can be translated and adapted to a specific locale without design changes. Here, the term locale denotes a set of parameters such as currency symbols, number formats, date
and time formats etc. for a specific country or region. Internationalization needs to take into account not only these various formats but also the ability to accommodate languages with different letter types (Roman versus Chinese characters, for example) and/or directionality such as left-to-right versus right-to-left. This step is the task of software engineers, for further technical details I refer to the list of references at the very end. The linguistic step of the preparatory phase includes the development of style guides and glossaries to ensure consistency in terminology and voice and the identification of potential challenges during the localization step. For details on this step I refer to the excellent summaries in (Bodeux, Whitty 2013), (Bodeux, McKay, Whitty 2014), and also (Esselink, 1998).

The next step is the translation and review of the **software strings**. The translation can be prepared in various forms, from a simple Excel table to online translation tools that display the string in its original context. Context can be very helpful for the translator, since software strings are generally very short and sometimes consist of only one word, whereby it can sometimes be hard to distinguish a verb from a noun without the necessary context. Here, adequate naming conventions of the **identifiers**, that is, the names of the string variables, can help tremendously, if these are supplied to the translator along with the strings to be translated. It should also become clear now why the subsequent linguistic QA testing is so important, because during that step the translation will be reviewed in the full software context.

![Software localization process flow](image)

*Figure 1: Software localization process flow (adapted from (Bodeux, Whitty 2014))*
In the next step, the software engineers read the translated and reviewed strings into the software and produce a localized program version. They also test for functionality, that is, whether the imported software strings broke the code due to leftover special characters as artifacts of the translation process or due to leftover or missing code that was mistakenly added or left out of the translation. Furthermore, a QA test plan, or script, for the next step is usually developed during this step or earlier in the process. Occasionally, the QA testers develop the test script themselves as part of the next step.

The fourth step is the linguistic and functional testing by a language expert. This functional testing goes beyond the preliminary testing performed in the previous step and will be discussed in detail in the next section. Here, the QA testers follow the QA test plan developed earlier. The QA plan guides the linguistic QA testers through the entire app and ideally encompasses all scenarios that could possibly be encountered by an end user located in the target country or region. If errors, usually called bugs, are present, the testers file bug reports to inform the software engineers about the problem and, if applicable, submit corrected strings. Then the software engineers recompile the software, produce a new so-called build, and send the (hopefully corrected) programs back to the testers. This cycle repeats until no more bugs are found, and the final product is released. The testing is frequently done on site at the premises of the software manufacturer, for confidentiality reasons or to test apps on new devices that are not yet publicly available and have been set up specifically for this purpose.

Concurrently, manuals, help files, marketing material and other associated documents also need to be translated and localized. Further information about this aspect can also be found in (Bodeux, McKay, Whitty, 2014) and (Esselink, 1998). The entire localization process for specific types of apps is also discussed in (Seeburg, 2012) and (Niedermair, Dietz, 2013).

In the following, we will look at the QA testing step and the interplay with the engineering stage in more detail.

3. Software Quality Assurance

The software QA process can be summarized as follows: QA testers try their best to “break” the localized software in order to locate bugs, which are then eliminated, such that the end users in the target region speaking the target language can enjoy an error-free product.
3.1 The QA testing process

In brief, a typical QA testing process looks as follows, as illustrated in Figure 2 above:

1. Familiarize yourself with the product in the source language and read the test script, if the engineers have provided one. If there is no test script, go very carefully through all the screens, buttons, menu items, and error messages of the product in the source language and write a test script in order to test every single screen, button, menu item, message, and error scenario.

2. Set up the operating system for testing – this usually requires changing the locale, the language, and other settings as appropriate for the target region. Occasionally, a second device is available for comparison in the source language, but often the comparison is done with the screenshots in the test script.

3. Go very carefully through every single screen and button, following the test script. However, at every step, question whether there is a setting, input, or touch of a button not mentioned in the test script that might cause an error.

Document all bugs that were found, the precise version of the software and the OS, and the precise steps to reproduce the bugs without referring to the test script. This is important, because test scripts and build versions change. Ideally, every step of the process illustrated in Figure 1 is concluded before the next step is begun, but more often than not the entire process
is in flux, and software engineers are already adding functionality to the product while the QA testing of the current build is not yet complete.

4. Send the bug reports to the engineers, following the precise requirements and instructions. Many companies have their own proprietary bug reporting system and it is important to use this system as instructed, whereby it helps to remember that the person who receives the report likely does not speak/read the target language.

5. Wait for a new build of the software without the bugs reported in step 5. Go back to step 1 and repeat.

3.2 Problem types

There are several types of problems (see also (Globalme/Golota 2013) that software QA testers look for. (Esselink, 1998) mentions that these problem types are identified in separate rounds of testing. In my experience, however, testers generally look for all problem types in the same round of testing at once, although the problems are clearly classified separately in the respective bug reports.

• **Linguistic problems**
  These include:
  - *Grammatical, spelling, and punctuation errors*
  - *Translation errors due to context*
    The translator sometimes does not have the full context of a single word on a button, and it is sometimes hard to guess whether the source word is a noun or a verb.
  - *Linguistic consistency*
    Is the terminology consistent throughout the product and in accordance with the glossary?
  - *Missing translations*
    Is the source language or even the identifier displayed instead of the translation in any part of the interface including buttons, pop-ups, tool-tips, and obscure error messages?
  - *Cultural aspects*
    Does the translation respect local sensitivities and will the end users understand all cultural references?

• **Layout and formatting issues**
  - *Truncations, text expansion in the entire interface including error messages, pop-up windows, text boxes, etc.*
  - *Wrong alignment – especially in left-to-right versus right-to-left languages*
  - *Character corruption issues, wrongly displayed (non-ASCII or accented) characters*
  - *Line breaks*
  - *Number, date/time, currency formats, addresses, zip-codes, phone numbers*
    Some of these problems with formats may also be functionality issues, as discussed next.

---

1 Occasionally, new functionality or new test steps are added as well, and the script changes.
Symbols and icons
Do symbols and icons respect the cultural sensitivities of the target population?

**Functionality problems**
- **Link, button, menu functionality**
  Do all links, buttons, menu items function as intended in the localized environment?
- **Input/output validation**
  Do the input fields allow proper entries in the units/format as customary in the target region? For example, in Austria postal codes only have four digits, whereas in Germany they have five, in other parts of the world up to 10. Does the software allow proper entry of these postal codes without error messages or give the correct error message as appropriate for the country/region?
- **Number, date/time, currency formats, addresses, postal codes, phone numbers, paper sizes**
  Can the software handle these number formats properly? Are the calendars adjusted appropriately? Is there interference between the OS settings and the software settings?
- **Problems with character display, sorting, or input**
  Are all (non-ASCII) characters of the target language properly handled upon input, displayed, saved, and sorted? Some characters such as & or ~ label keyboard shortcuts for quick access to menu items, others, such as \n, \t, denote line breaks and tab stops. Can the software handle it, if these or other non-ASCII characters are entered into an input field by the user?
- **Keyboards and shortcuts**
  Can all keyboard shortcuts and control functions be accessed with international keyboard layouts?
- **Interaction with OS functions such as copy/paste and locale and language settings in the OS**
  Does the software properly handle interactions with the OS, such as copying/pasting to/from the clipboard? Do the settings for locale and language in the OS interfere with the app?

**Installation/delivery problems**
This type of problem is in fact a functionality problem, possibly the most fundamental of all functionality problems, since the end result of a failed delivery is that the app cannot be run on the target system due to an incompatibility. The details that are to be tested depend on whether the software is a desktop app (delivered via installation discs or other media), a mobile app (downloaded through an app store), or a web app (accessed via web browser AKA the “cloud”). Sometimes, this functionality is tested separately from the overall testing process; sometimes it is included as the very first step (after setting up the OS) in the testing process.
3.3 A few concrete examples

Below, I will show some concrete examples to illustrate the problem types discussed in the previous section.

![Figure 3: A classic example of a layout problem English > German.](image)

Figure 3 illustrates a classic example of a *layout issue* when the label “Settings” of a button is translated from English into German. The German word “Einstellungen” clearly does not fit on the button, but there is no shorter word with the same meaning. In general, Western languages can take up to 30% more space than English (see for example (Bratu, 2014)). GUI designers usually take this into account, but some problems can still arise. In this case, if at all possible, the quickest resolution is sometimes an alternative, shorter translation that conveys the same meaning. If this is not possible, as in the above example, a smaller font may be a possible solution; otherwise, the interface may need to be redesigned.

Another example of a possible problem source is the use of different number formats in various regions of the world, as shown in

**Figure 4.** In about 60% of the world, including most English-speaking countries, the decimal point is used as the decimal mark. These countries are colored in blue in the figure. The green colored countries, about 24% of the world’s population, use a comma as decimal delimiter. The red colored regions employ Eastern Arabic numerals, and for the gray colored regions there is no data available. These different number formats can lead to functionality problems, especially when the app has its own settings for number formats or expects a certain number format, which interferes with the locale settings in the OS (usually separate from the language settings). It is therefore important to thoroughly test the functionality of apps that include operations on numbers entered by the user and to try all available combinations of locale, OS, and app settings.
Many apps have *built-in functions to validate the data* entered by the user. While this can be tremendously helpful, it can also render an app completely useless. For example, ZIP codes have 5 digits in the US (plus optionally 4 digits in extended ZIP codes). Many programs have therefore a check built in that requires exactly 5 (plus 4) numbers when entering a ZIP code, otherwise an error message will be shown until the user corrects their entry. For an app that specifically targets the US market, the ZIP code check is great. Suppose this app is then subsequently translated into German, to be used in Germany, Austria, and the German-speaking part of Switzerland. In Germany, the “Postleitzahl” (the German equivalent of the ZIP code) has 5 digits, so no problem there. In Austria and in Switzerland, however, postal codes have 4 digits, so there would be a problem with the functionality of the app, since the user would not be able to enter a perfectly valid postal code without receiving an error message. Figure 5 shows a global map of the postal code formats currently in use all around the world. QA testers need to know and test for these and other formats (phone numbers, paper sizes, etc.) that are in use in the target region(s). If a certain language is used in various parts of the world, the testers need to be aware of all these nuances. Sometimes, several testers are available to test for various regional variants, but in some instances, one tester is expected to be able to handle several of these variants, which requires a bit of preparation by the tester.
Finally, I want to illustrate a layout issue that borders on a functionality issue, which is not trivial to spot.

Figure 6 shows the display of a fictitious (and quite rudimentary) app for cycling, displaying the current speed and the distance ridden since the start of the current ride, in English and in German. The German equivalent of the speed display nicely illustrates how a potentially problematic length increase has been dealt with, by decreasing the font size such that the word “Geschwindigkeit” (German for “Speed”) is still readable and fits into the allotted space. The
decimal mark as discussed above is also correct, as are the units, kilometers per hour instead of miles per hour for the German speaking market.

![Figure 6: Display of a fictitious app for cycling in English (left) and in German (right) (Any similarity to actual cycling apps is purely coincidental.)](image)

It therefore seems that everything looks great. Not so fast! The digits allotted for the speed, \(xx.y\) mph, allow for a maximal speed of 99.9 mph, which is usually plenty for a bicycle.\(^2\) However, the same is not true for the speed in kilometers per hour. Professional cyclists routinely exceed 100 kph (about 62 mph) on downhills, and even I, as an amateur, have reached top speeds of over 100 kph on descents. In this case, the display cannot accommodate the data, which results in an error. The solution is to allot another digit for the speed display, which is quite feasible here, since there is enough space on the screen for another digit.

These examples, and especially the last example, nicely illustrate that QA testers do not only have to be linguistic experts, ideally they are also natives (or extremely familiar) with the target culture and very familiar with the app or the type of app they are testing. Of course, that does not mean that only golf pros should test golf apps, for example. However, clients usually expect familiarity with the terminology and the functionality of the apps that are being tested, and this means a certain amount of preparation for the testers.

I have now discussed the general QA testing process, the problem types that can arise, and a few specific examples. These bugs, when found during the QA testing process, have to be properly reported to the software engineers, such that they can be remedied.

### 3.4 Software problem reports

The project manager or localization engineer generally maintains a repository that tracks all problems and bugs that arose, along with the date of occurrence and their resolution. This

\(^2\)The current world record on a bicycle exceeds 100 mph by far, and I have friends who have exceeded 100 mph with their HPV (human powered vehicle = a special, very aerodynamic construction that could be classified as a faired recumbent), but for the everyday cyclist who might be using this fictitious app, 99.9 mph should generally be sufficient.
repository serves as the interface between programmers and testers and is essentially a summary of all problem or bug reports submitted by the QA testers.

In general, QA testers are asked to submit separate reports for every single problem that they encounter, though this depends somewhat on the client. A typical bug report usually contains the following information (see also (Esselink, 1998)):

- Number or ID of the problem to allow for easy identification and tracking
- Product, version, platform/OS, platform version, hardware/firmware version (if applicable)
- Date of occurrence and (internal) build version
- Language and locale, usually identified by an alphanumerical code (see (Wikipedia, 2014) and references therein). In case of several language variants, these details are important – e.g., Swiss German differs from German German or Austrian German, just as American English differs from British English.
- Precise location in the file plus file name or precise location and name of the application where the problem occurred
- Precise description of the steps needed to reproduce the problem, avoiding extraneous information, but containing enough information such that a software engineer, who does not speak the target language and who does not have access to the test script, can reproduce the problem
- Precise description of the problem, taking into account that the software engineers most likely don’t speak or read the target language, possibly including screenshots
- Solution to the problem or linguistic correction, preferably in paste-and-copyable form because the software engineers are most likely not able to enter special/non-ASCII characters on their keyboard. An annotated screenshot alone is therefore not sufficient and possibly confusing to the software engineers.

The precise format of the bug report and the submission procedure depends on the client’s preferences. In general, it is always a good idea to keep in mind that the report needs to be detailed enough such that a person who is familiar with the product but who cannot decipher the specific target language can reproduce the problem. This is especially important if the source and target languages use different character sets.

It also helps the programmers if precise computing terminology is used in the bug report, e.g. if a checkbox is referred to as such instead of, say, a choice selector, or if the identifier of a variable is referred to as such instead of being called a placeholder, for example. While QA testers do not have to have a programming background, I have found that being at least able to use the correct terminology is very helpful when communicating with the people who need to implement the bug fixes. It also helps to know how to deal with remnant tags or other code fragments in the translated text. In short, some rudimentary programming knowledge is certainly an asset for software QA testers.
4. Summary

Above, I have given a brief overview over the internationalization and localization process for software programs or apps. I have then discussed the localization QA testing phase in more detail, outlining and explaining the individual steps. There are several classes of problems or bugs that QA testers look for, and I have described these in detail along with a few concrete examples. Finally, I have listed the information that should be contained in a complete bug report such that the bug can be eliminated as quickly as possible. The following sections contain a brief glossary with computing terminology as well as a list of references and further reading.

5. Glossary

**App:** A software application, or app, is a computer program that carries out operations for a specific application. It cannot run by itself but requires an operating system to execute. An app can run on desktop computers (traditional software applications), on mobile devices (mobile apps), or over a network (in the “cloud”).

**Bug:** A software bug is an error or flaw in a computer program that causes it to malfunction or produce an incorrect or unexpected result. The term “bug” was coined in 1946 by Admiral Grace Hopper in a report about a malfunction of a computer that was caused by a moth trapped in a relay.

**Build:** An unreleased version of a software program for testing, a “sub-version” if you will. Usually, apps go through many test builds before they are publicly released.

**G11N:** Numeronym for **globalization**.

**Globalization:** The entire process of **internationalization** and **localization**.

**GUI:** A **Graphical User Interface** allows the user to interact with a program via graphical design elements such as buttons and icons instead of a command line.

**i18n:** Numeronym for **internationalization**.

**Identifier:** see **Variable**.

**Internationalization:** In computing, internationalization refers to the process of designing and preparing a software application such that it can be translated and localized without engineering (i.e. programming) changes.

**L10n:** Numeronym for **localization**. Here, the uppercase L is used to avoid a possible confusion between a lowercase l (L) and an uppercase I (i).

**Localization:** In computing, this is the process of adapting a product that has been previously translated into different languages to a specific country, group, or region. It is the second step in
the process of translation and cultural adaptation of a product, the first step being internationalization.

**Locale:** In computing, a locale is a set of parameters that defines the user’s language, country or region, and other specifics. This includes number, currency, date formats, paper sizes, etc. For example, an app in English still needs to be adapted to the various English-speaking locales with different currencies (US-Dollars, British Pounds, etc.), different spelling, and so forth.

**Operating system (OS):** An operating system is the software that enables other programs (apps) to run on a specific hardware and manages the interaction between apps, the hardware, peripherals such as printers etc., and the user.

**Script:** Here, a test plan that outlines the precise steps to navigate through an app and test all of its functionality.

**Software string:** A string is a sequence of characters. Software strings that are to be translated are not hard-coded but occur in the form of variables.

**Variable:** A variable is a symbolic name, the so-called identifier, associated with a value. The value can be changed. For example:

```python
My_name = “Carola”
```
Here, “My_name” is the identifier of the variable, and “Carola” is its value.

6. **References and Further Reading**


---

3 While the references to specific software in this book are somewhat outdated (publication date 1998), the overall strategy and detailed procedural information are still quite valid.
