Article

"Bridging the Gap Between Declarative and Procedural Knowledge in the Training of Translators: Meta-Reflection Under Scrutiny"

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RÉSUMÉ

Ayant pour but une réévaluation de la dichotomie entre connaissance déclarative et procédurale dans l'enseignement et l'apprentissage de la traduction, cet article utilise les principes connectionistes (Elman et al. 1996) de la théorie de la pertinence (Sperber & Wilson 1986/1995) pour présenter le design d'un projet qui, d'une perspective proactive, se propose d'utiliser les méthodologies des recherches sur le processus de la traduction et les mettre en service dans la classe de traduction pour accroître le niveau de conscience parmi les jeunes traducteurs. Selon cet article, la méta-réflexion est la clef pour fournir à ces jeunes traducteurs un accroissement de leurs activités conscientes et pour améliorer la formation de traducteurs.

ABSTRACT

Aiming at reassessing the declarative/procedural knowledge dichotomy in the training of translators, this article builds on connectionist principles (Elman et al. 1996) and Relevance Theory (Sperber & Wilson 1986/1995) to present the rationale for a project which, from a pro-active standpoint, suggests that translator's training could incorporate some of the methodologies used for data elicitation in translation process studies and apply them in classroom settings as an avenue to increase the level of awareness among novice translators. Meta-reflection, according to the article, is the key to promote awareness-raising and, as a consequence, an increment in the quality of translator's training.

MOTS-CLÉS/KEYWORDS

translator's training, procedural knowledge, declarative knowledge, deliberate practice, meta-reflection

1. Introduction

The role played by declarative and procedural knowledge in the training of translators has been subject to controversy as to what extent the former or the latter should provide the initial basis for training. Robinson (2003) argues in favour of integrating subliminal (procedural) and analytical (declarative) methods but insists that the former is an essential stepping stone for the application of the latter. This view is also shared by Kiraly (2000) in his socio-constructivist and Hurtado Albir (2005) in her cognitive-constructivist approach to translator's training. For all of them, teaching/learning methods for translator's training should be expected to focus, from the start, on doing rather than on learning about translation. Alves, Magalhães & Pagano (2004), Gonçalves (2003) and Schäffner & Adab (2000), on the other hand, argue that awareness of some processes and concepts involved in translation may help translators improve their performance and should be provided alongside the procedural aspects of translator's training from its very beginning. This article assumes that these authors do not necessarily have contradictory but rather complementary views. It is clear they all agree that translation competence consists of several different sub-competences which integrate declarative and procedural knowledge. However, they seem to differ in what should be emphasized first in the training of translators, i.e., procedural or declarative training. In what follows, we will try to review the declarative/procedural knowledge dichotomy in

translator's training and advocate in favour of a balanced interaction between the explicit and implicit aspects of training. We intend to embed this balanced interaction in the scope of a model of translator's competence (Alves & Gonçalves, forthcoming) and use it as an illustration of how this kind of competence changes constantly as the translation process unfolds. It is our contention that, from a cognitively situated perspective, expert performance in translation is guided by meta-reflection and awareness-raising develops as the result of consistent and persistent practice which can be monitored and refined using process-oriented data elicited by the practitioner translator him/herself in order to allow for a qualitative increment in translator's performance.

2. Theoretical Framework

It seems inevitable that any reference to declarative and procedural types of knowledge will bring together with them associations with explicit and implicit knowledge. Sun & Slusarz (2001) point out that in the development of cognitive architectures the distinction between the two latter kinds of knowledge maps roughly onto the two former ones because declarative knowledge is generally accessible and thus explicit while procedural knowledge is generally inaccessible and, therefore, implicit. Sun & Slusarz (2001) add that work on cognitive architectures has focused so far almost exclusively on top-down models which promote the learning of explicit knowledge first followed by the acquisition[1] of implicit knowledge on the basis of the former. For them, the bottom-up direction has been largely ignored hindering the possibility of accounting for learning implicit knowledge first followed by explicit knowledge later or, perhaps, for learning both in parallel. As a consequence, the interaction of explicit (declarative) and implicit (procedural) processes has been much too often neglected in the literature of skill learning.

We believe that the way these two types of knowledge interact is extremely important for research in translator's training methodologies and equally so is the kind of impact that this interaction has on skilled performance. Therefore, it becomes relevant to investigate how this balance or imbalance has been mapped onto models of translation competence and their implications to translator's training. Bearing that in mind, we will analyze two of these models, namely, PACTE's and Gonçalves's models, with a view to reassessing the role played by procedural (implicit) and declarative (explicit) knowledge in their design and possible applications.

2.1 The Role of Procedural and Declarative Knowledge in Translator's Competence
Building on Anderson (1983) and the distinction between procedural and declarative knowledge, PACTE (2003) discusses the role of expert knowledge and argues that it passes through different stages. Beginning with the initial stage of novice knowledge, it gradually evolves to become more automatic until the final stage of expert knowledge is reached. For the PACTE group, this acquisition can be natural or guided, through teaching, but in both cases there is a learning process. In order to account for the development of a particular kind of expert knowledge, namely, translation competence, PACTE conceived a dynamic model which postulates five sub-competences: a bilingual, an extra-linguistic, an instrumental, a knowledge-about-translation, and a strategic sub-competence. This latter sub-competence occupies a central position in the model and regulates the work of all the other sub-competences. In short, it accounts for the optimal processing of translation tasks. On the basis of the centrality of the strategic sub-competence, PACTE (2003:47) states that "translation competence is considered to be expert knowledge and it is primarily procedural knowledge, where strategies play a very important role and most processes are automatic". Cognitive-oriented studies of learning processes point out that the acquisition of any knowledge is a dynamic process. It is gradual and cyclical rather than abrupt and lineal. According to PACTE, these processes include successive stages of restructuring of knowledge in which learning strategies play an essential role. As learning evolves, it can be assessed, analysed, re-evaluated and, if necessary, restructured.

An equally dynamic but somewhat different view of translator's competence is proposed by Gonçalves (2003). Incorporating some of the sub-competences proposed in the PACTE model (bilingual, extra-linguistic, instrumental, and knowledge-about-translation – as well as its psycho-physiological components) and building on connectionism and Relevance Theory, the author

provides evidence that there may be a specific, core domain for translator's competence. Gonçalves calls it specific translator's competence and suggests that it is guided by the principle of relevance (Sperber & Wilson 1986/1995) and the concept of interpretive resemblance as developed by Gutt (2000). Analogous to the central position occupied by PACTE's strategic sub-competence, Gonçalves' specific translator's competence also occupies centre-stage in his model. The specific translator's competence coordinates the work of all other sub-competences and operates almost exclusively through conscious or meta-cognitive processes. The author claims that this specific translator's competence is directly proportional to the production of contextual effects generated from two counterpart translation units, one in the source language and the other in the target language. It is also directly proportional to the overlapping of the two sets of effects, that is, the maximisation of their interpretive resemblance. Therefore, Gonçalves states that translation competence is considered to be a special type of expert knowledge heavily dependent on declarative knowledge, where procedural knowledge instantiates processes which are not necessarily automatic.

Based on the Relevance Theory framework, Gonçalves also builds on connectionist principles (Elman et al. 1996) in order to propose a cognitive model of translator's competence which incorporates the dynamics of inferential processing as a basis for problem-solving and decision-making in translation (Alves & Gonçalves 2003). His model incorporates the dynamics of a fully-recurrent connectionist network, called broad translator's competence, which is the result of an increment in competence levels on the basis of the gradual increase of comprehensible input stemming from existing cognitive systems. By affiliating his proposal to connectionist principles, Gonçalves agrees with PACTE, Robinson and Kiraly in the initial role played by procedural (implicit) knowledge in the training of translators. However, as a result of his affiliation to Relevance Theory in an account of problem-solving and decision-making patterns among expert translators, Gonçalves argues that skilled performance in translation is mostly guided by higher levels of meta-reflection which is a particular type of declarative (explicit) knowledge.

We believe that both PACTE's and Gonçalves' dynamic views of translation/translator's competence[2] are in close dialogue. Although the centrality of PACTE's model is of a procedural (implicit) nature whereas the centrality of Gonçalves' proposal is declarative (explicit), both models are anchored in the gradual and systematic proceduralisation of sequential stages of the translation process. While PACTE's model is anchored on a cognitive-constructivist approach, Gonçalves' model is backed by his defence and adoption of connectionism in his theoretical framework. In our understanding, the main difference between the two models lies in the fact that Gonçalves' model presupposes the deliberate and reflective engagement of an individual for the development of a particular skill. This presupposition can be coupled with Ericsson's (2002) concept of deliberate practice, namely the engagement in solitary practice after receiving specifically designed instructions for the development of a particular skill.

With this respect, Ericsson argues that a large number of individuals engaged in a certain kind of skilled activity increase their performance for a limited time until they reach an acceptable level. Beyond this point, however, further improvements appear to be unpredictable. Connectionist networks operate in a similar way, increasing their performance for a certain amount of time until they reach an acceptable level of performance. Once this level is achieved, intrinsic changes in the network's configurations are necessary to allow for further learning. Continued improvements in the achievements of both individuals and networks appear to be closely linked to the introduction of meaningful input capable of destabilizing acquired learning in order to bring the learning process once again into motion and take it a step further. Ericsson suggests that aspiring experts tend to seek out particular kinds of experience, that is, deliberate practice in activities designed by a teacher for the sole purpose of effectively improving specific aspects of an individual's performance. As a way of illustration, Ericsson suggests that there is evidence of qualitative changes in performance after consistent engagement in deliberate practice. Accordingly, experts do not automatically extract patterns from a sample of input but rather the superior quality of their mental representations allows them to adapt rapidly to changing circumstances and anticipate future events in advance. Therefore, experts show an ability to monitor and evaluate their own performance so they can keep improving their own work. We agree with Ericsson and argue that this engagement fosters an increment in

their levels of meta-reflection, an ability that could perhaps be enhanced through the engagement in deliberate practice related to process-oriented activities involved in translation.

However, it is not without controversy that process-oriented approaches are received within the field of Translation Studies. One of its former defenders, Kiraly (2000:2), expresses his disillusionment when he writes:

> […] I see this cognitive science approach to translation processes as epistemologically incompatible with a social process perspective. The former rests on the assumption that meaning and knowledge are products of the individual mind – replicable, transferable, independent of social interaction and essentially static – while the latter assumes that they are dynamic, intersubjective processes.

Kiraly's objections may be perhaps true with respect to a cognitivist view of cognition. However, we insist that it no longer holds true when there is a paradigmatic shift and cognition is viewed from the perspective of situated action (Elman et al., 1996). A connectionist view to development considers cognition as embodied action which depends on the organism's interactions with the environment and incorporates the dynamics of intersubjective processes. From a connectionist perspective, we could say that in the process-oriented approaches to translation the search for optimal interpretive resemblance and the optimization of cognitive effort and contextual effect (cf. Alves, 2005) falls under the scope of the following principles listed in Gonçalves (2003):
- cognition depends heavily on external stimuli which include the social interactions experienced by the individual;
- although parallel processing is an important feature of cognitive systems, a certain level of modularity (specialization) tends to appear as the system evolves, justifying a possible effect of the stabilisation of long-term recursive processes in cognitive development;
- connectionist networks are conceived to gradually re-calibrate their connections' weights in order to adjust responses to a certain external pattern to gradual changes experienced in their internal dynamics.

Building on connectionist principles, Gonçalves (2003) and Alves & Gonçalves (forthcoming) suggest that the development of translator's competence is considered to embody, from a situated perspective, emergent principles responsible for cognitive development. Like a fully-recurrent connectionist network, it is the result of an increment in competence levels on the basis of the gradual increase of comprehensible input stemming from existing cognitive systems. As seen above, one of main the tenets of a connectionist perspective to cognitive development is to start small and progress consistently by means of the gradual increment of meaningful input. This implies a view of development which is biologically coupled with the individual and his/her environment and the resulting interactions. We assume that such a view of cognition may offer an alternative to Kiraly's objections and his decision to move away from a cognitive perspective for translator's training and advocate in favour a socio-constructivist approach.

Based on the previous considerations, we may be in a position to say that Ericsson's concept of deliberate practice could be easily accommodated within the tenets of connectionism. Bringing together the positions assumed by Elman (1996), Sun & Slusarz (2001) and Ericsson (2002) provides us with rationale why translator's training should be procedural in an initial phase. It develops gradually on the basis of meaningful comprehensible input and implies changes in the cognitive organization of an individual. However, drawing on Elman (1996), Gutt (2000) and Alves & Gonçalves (forthcoming) we are also able to justify why training becomes more reflexive as declarative knowledge grows. Due to the centrality of meta-reflection for problem-solving and decision-making, expert knowledge needs an extraordinary amount of declarative (explicit) knowledge; a type of knowledge that is conscious and deliberate. On the bases of such a justification, we are now in a position to advocate in favour of working on awareness-raising processes in translator's training. But before we discuss it in more details, we would like to restate our main tenets of what constitutes translator's competence.

2.2 Pre-Requisites for a Revised Model of Translator's Competence

As seen elsewhere, the model proposed in Gonçalves (2003) incorporate the following characteristics:

- cognition is seen as situated action (Elman et al. 1996);
- expertise is considered as an instance of deliberate practice (Ericsson 2002);
- a broad translator's competence compasses a set of sub-competences which operate in parallel (PACTE 2003; Gonçalves 2003);
- a specific translator's competence is relevance-oriented (Sperber & Wilson 1986/1995; Gutt 2000);
- the latter requires meta-cognition for problem-solving, decision-making and the attribution of interpretive resemblance to translation units (Alves & Gonçalves 2003).

Given the conditions above, Alves & Gonçalves (forthcoming) introduced two modalities of performance which can be placed within a cognitively situated model of translator's competence. The profile of a subject who shows evidence of expert performance is named "wide-band" translator. Alternatively, the profile of a subject who shows lack of expert performance is known as "narrow-band" translator[3]. Each one of them shows some performance traits as outlined below:

Characteristics of an expert translator:
- efficient allocation of effort to orientation, drafting and revision phases – balanced cognitive rhythms (Jakobsen 2002);
- evidence of long-term working memory in segmentation patterns (Dragsted 2004);
- meta-reflection leading to successful problem-solving and decision-making (Alves 2005)
- more balanced relation between cognitive effort and contextual effect (Alves 2005).

Characteristics of a novice translator:
- poor allocation of effort to orientation, drafting and revision phases – erratic cognitive rhythms (Jakobsen 2002);
- inability to deal with revision as an independent phase (Lorenzo 2002);
- segmentation mainly at word level due to lack of awareness of discursive features (Alves & Magalhães 2004);
- lack of meta-cognition leads to problems in inferential processing (Alves & Gonçalves 2003).

According to Alves & Gonçalves (forthcoming), the differences between a "wide-band" and a "narrow-band" translator are accounted for by the position occupied by an individual, at a given moment, in the model of translator's competence. By introducing the concept of bands into the model, the dynamics of a particular kind of competence can be easily visualized and it is possible to search for a relationship between subjective and intersubjective performance traits in a cognitive-oriented account of translators' competence. The concept of bands is considered to have a subjective nature since the same individual can be placed differently in the model depending on conditions which constrain task performance. At the same time, it can be seen as intersubjective since the performance of a group of translators can be mapped and compared within the group as each member of the group stand in the model in relation to everybody else. Picture 1 provides a graphic illustration of the above-mentioned dynamics.

Picture 1 - From "narrow-band" to "wide-band" translator
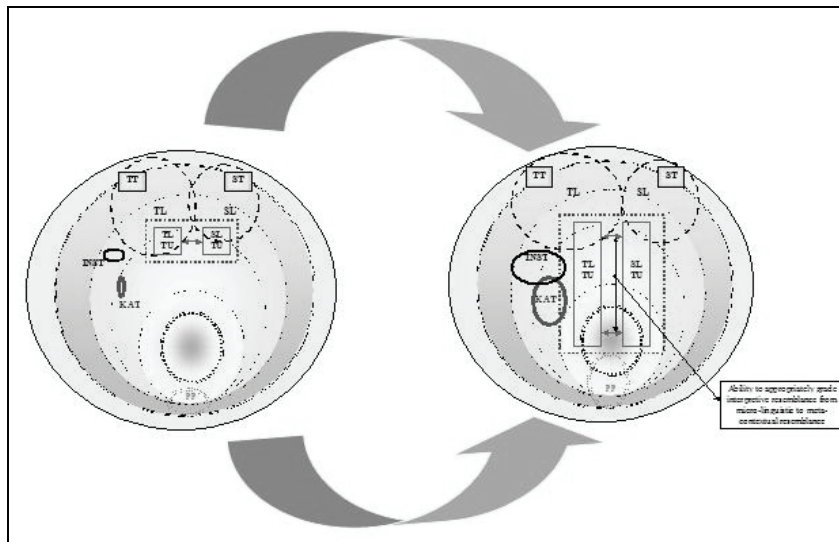
Bearing the mobility of the band concept in mind, we think to be in a position to offer a way out of Kiraly's objections and suggest that it is possible to conceive a model of translator's competence which displays the dynamics of a cognitive system and yet preserves the idiosyncrasies of the individual and captures his/her social interactions. From a perspective of cognition as situated action, we, therefore, bring together a connectionist vector which has a procedural nature and combine it with a relevance-theoretic vector which has a declarative basis. Following connectionist principles, we suggest that the internal dynamics of translator's training should start small by means of procedurally encoded cognitive operations and quickly evolve, through retro-propagation, to a position where the synergy between implicit (procedural) and explicit (declarative) modes of cognitive processing would be achieved. In our next section, we present the design and the preliminary results of a pilot study which incorporates some of the methodologies used for data elicitation in translation process studies and applies them in classroom settings.

3. A Methodological Framework for a Process-Oriented Approach to Translator's Training

In this section, we would like to suggest that a process-oriented approach could be introduced in translator's training courses. In Alves, Magalhães & Pagano (2004) we suggested the application of empirical methods used to map the translation process with a view to leading novice translators to observe their cognitive and discourse processing of a text. The proposal, however, was limited to the use of verbal protocols alone and lacked information about the dynamics of textual production such as that offered by *Translog* recordings. Aiming at applying in classroom settings the thoughts expressed in our theoretical framework, the present approach fosters the use of *Translog* recordings, captured online, in conjunction with retrospective verbal protocols collected with the aid of the *Translog* replay function immediately after the translation works ended. We believe that this approach can promote awareness on the part of novice translators of the paths they used when co-constructing a text in a new language and culture. Instructions on how to apply the methodology of triangulation to translation process research were taken from Alves (2003) and slightly converted into the context of students' interactions and used in the pilot study described in this section.

The pilot study was developed over a period of four months and involved 18 second-year students at the Federal University of Minas Gerais. They all showed matching levels of foreign language proficiency and had hardly no previous experience in translation. Mixed language combinations were used and included English-Portuguese, German-Portuguese and Spanish-Portuguese. The same language direction was used in the study, i.e., translations were carried out

from the foreign language into the student's mother tongue, namely, Brazilian Portuguese. Texts used in the pilot study were of similar size and showed similarities in terms of topic, genre and register across the language pairs.

3.1 Design and Characteristics of the Pilot Study

The pilot study was divided into three consecutive phases. In each phase students translated a text into Brazilian Portuguese using the software *Translog* to record their performance. All 18 students worked in the same environment, at the same time, without time pressure and with access to several forms of external support including access to the internet and to online and printed reference material. They also received a translation brief to guide their decisions as to how the texts should be translated. Immediately after the conclusion of the translations, students were encouraged to comment on their performance by means of retrospective protocols recorded with the aid of the *Translog* replay function. Having just finished their renderings, we assumed that their impressions on the translation works were still vivid to allow for significant recall. We expected that students would visualize their own patterns of text production and reflect critically upon them. Afterwards, they had to listen to their own comments, cross-analyse them with the pause and segmentation patterns visualized through *Translog* representation files and compare them with the target texts they had rendered. They were also instructed to observe differences between their performance during the drafting and revision stages of the translation process. Group discussions alternated with tasks between the three phases. Discussions focused mostly on performance features and, as such, incorporated subjective and intersubjective traits in the reflections about cognitive aspects of the student's performances. A graphic illustration of the proposed designed is given in picture 2 below.

Picture 2 – The three phases of the pilot study
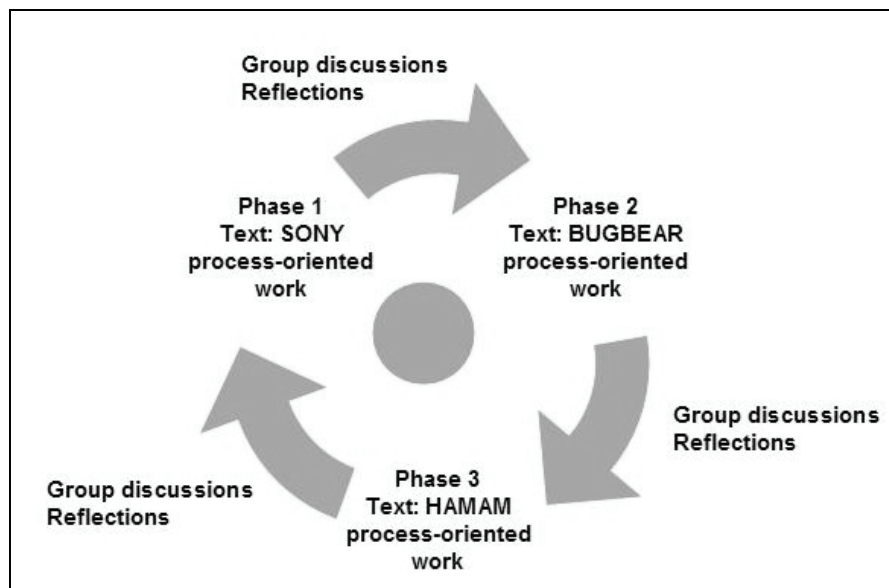
3.2 Phases of a Process-Oriented Approach to Translator's Training

Initially, students were made familiar with data elicitation procedures. They learnt how to use the *Translog* software, how to generate the representation files used to identify segmentation patterns, how to use the software's replay function to record the retrospective protocols and how to save their target texts in txt format. They were also instructed to look for correlations in the material which consolidated procedural and declarative aspects of their performance. Additionally, they worked on samples from previous experiments (cf. Alves 2003) before they began to look into their own data. Approximately 10 credit hours were spent on these activities.

In phase 1, students translated a text entitled Sony, part of a manual addressed to consumers of an electronic product, from English, German, and Spanish into Brazilian Portuguese. They carried out the tasks described above and each one of them wrote a protocol discussing process and textual aspects of their performance. The translation works were followed by a series of group discussions which took about 10 credit hours. During this stage, students discussed problems they had while translating from English, German, and Spanish into Brazilian Portuguese. It was our intention to move away from a traditional language pair approach to translator's training. Therefore, students were placed in the same classroom setting and worked together throughout the period of the pilot study. Since the 18 target texts were renditions into Brazilian Portuguese of comparable source texts, students found it amusing and enlightening to discuss problems stemming from languages other than the ones they usually worked with.

In phase 2, students translated a news text entitled Bugbear from English, German, and Spanish into Brazilian Portuguese. The source texts were collected from web pages of electronic newspapers and dealt with the attack of an e-virus worldwide. Once again, the translation works were followed by a series of group discussions which took about 10 credit hours. In phase 3, using the same methodology, students translated a text from a tourist brochure entitled *Hamam* which described architectural, functional, and cultural aspects of the Turkish bath. Likewise, the translation works were followed by a series of group discussions which took about 10 credit hours.

The three phases were conceived so as to constitute a series of gradual input designed to promote changes in the cognitive apparatus of the 18 students. We built on evidence offered by connectionist approaches to language and cognition to design activities which would enable students to become more aware of their own processes and strategies. By doing so, we hoped to increase their levels of meta-reflection and, through deliberate practice, generate and increment in their levels of attained performance.

During group sessions work revolved around the identification of translation problems, such as instances of internal and external support identified through pauses and recursive features of text production processes, and the strategies used for problem-solving and decision-making. Some declarative knowledge about translation was introduced in conjunction with discussions about procedural aspects of the students' performances. Awareness of textual and discursive features was fostered in conjunction with observations of cognitive aspects of text processing. By doing that, we aimed at raising the students' awareness about the following aspects: (i) segmentation patterns; (ii) phases of orientation, drafting, and revision in the translation process; (iii) the importance of functionally oriented factors such as the translation brief, and text internal and external factors. In the next section, the analysis of an example of phase 3 is used to illustrate some of the points raised before.

4. Justifying a Process-Oriented Approach to Translator's Training

In this section, we intend to justify, by means of examples stemming from the pilot study, the relevance of a process-oriented approach to translator's training. Due to space constraints, we'll restrict our analysis to only one example of the third set of source texts, namely passages in the English and Spanish source texts as displayed below (see Appendix 1 for the complete versions of the source texts):

> Externally, they [*hamam*s] have a distinctive domed structure with bottle glass refracting beams of light inwards.

> Por el exterior los baños turcos tienen un perfil de cúpula distintiva con cristales de botella que orientan los rayos de luz solar por dentro.

The reasons why we decided to concentrate the analysis on these particular passages are manifold. We assume that in order to translate any of the passages, a translator needs to create a mental representation of the architecture of a *hamam* which includes a special kind of roof and ceiling corresponding roughly to picture 3 below. Mistaken representations could lead to the idea of a roof

made entirely of bottles; a representation actually produced by some of the novice translators. In our opinion, the construction of an adequate representation would require, besides procedural knowledge about the parsing and transfer of the passage into Brazilian Portuguese, a reasonable amount of declarative knowledge with respect to the traditions of the Turkish bath and we assumed that neither novice nor expert translators had that kind of knowledge.

Picture 3 – A bottle glass domed structure

It is relevant to note that this was the third translation task performed by the novice translators in the pilot study. In the two first tasks, segmentation patterns of all 18 novice translators were scrutinized and cross-analysed in relation to the matching retrospective verbalizations. The data on the two first tasks confirmed evidence that (i) segmentation was concentrated mainly at word level due to lack of awareness of discursive features (Alves, Magalhães & Pagano 2004), (ii) there was poor allocation of effort to orientation, drafting and revision phases with erratic cognitive rhythms on the part of novice translators (Jakobsen 2002); (iii) subjects showed inability to deal with revision as an independent phase of the translation process (Lorenzo 2002); (iv) lack of declarative knowledge and poor levels of meta-reflection led to problems in inferential processing and accounted for inadequate renderings of the target texts which conveyed subjective assumptions on the part of the novice translators (Alves & Gonçalves 2003).

However, as students moved into the third task, a slightly different picture emerged. Tables 1 (see Appendix 2) displays data from six novice translators, three working from English into Brazilian Portuguese and three working on Spanish into Brazilian Portuguese. If we look at the performance of the six novice translators considering the degree of cognitive implication based on the scale propose by PACTE (2005: 616), we notice that the six subjects used strategies based on simple internal support or in which internal support was dominant. Their translation processes evolved in a linear fashion with very little or no evidence of the recursive features which are typical of text production. In comparison with data from phases 1 and 2, segmentation patterns were not significantly altered in phase 3 but knowledge of the phases of the translation process seems to have made students pay more attention to orientation, drafting and revision. Although their translation patterns were not significantly altered, it seems that awareness-raising of both procedural and declarative aspects of the translation process contributed to viewing the task of translation from a different perspective. The following verbalizations, translated into English[4], are indicative of such a tendency:

> [...] I didn't know how to qualify the crystals. Checked the internet and found a website about crystals. Went back to the text and replaced crystal, don't know of what kind, by stained glass. – TN01

> Bottle glass was my biggest problem and I didn't quite solve it. Thought bottle glass was bad; didn't know about bottle glass as an expression or a term for a certain kind of glass. Maybe it's a kind of stained glass; didn't find anything on the internet. – TN05

Retrospective protocols combined with the students' *Translog* representations show that their lack of declarative knowledge about the architectural and cultural characteristics of a Turkish bath led them to draw heavily on their contextual assumptions to build a mental picture of the source text. Similar evidence has been found in Alves & Gonçalves (2003) and Alves, Magalhães & Pagano (2004). One interesting rendering is the choice of stained glass as an attempt to illustrate the idea of bottle glass refracting beams of light inwards from a distinctive domed structure. One could speculate that the subjects' declarative knowledge about the architecture of western churches was used to lead them to their choice of stained glass. In fact, there is clear evidence of such a link when TN01 states "I thought of all those Muslim temples and tried to think of something similar". Apparently, all novice translators which took part in the pilot study showed patterns of meta-reflection similar to the ones discussed above. Their verbalizations revealed that they had become aware of some of their shortcomings but still lacked the ability to counteract them. One striking intersubjective characteristic of their performance is a tendency to draw heavily on internal support on the basis of poor contextual assumptions and show little or no awareness of what they do.

A rather different picture emerges when we compare the performance of our subjects with data from expert translators stemming from another experiment which used the same source texts. Lack of declarative knowledge can also be observed in the data displayed in Table 2. Expert translators also showed little or no declarative knowledge concerning the traditions of the Turkish bath. However, verbalizations such as TE03's below show that higher levels of meta-reflection seems to provide a stronger basis for and inferential processing and the construction of adequate contextual assumptions.

> [...] This text is more difficult because. Although it's not technical, it's full of descriptions of a place I've never been to, a country I've never visited, a culture I don't know. Many times I had to adjust the meaning half-blindly because I don't know the kind of environment which was being described. – TE03

The relevance to studying expert behaviour as a clue to understanding complex cognitive processes can be inferred from TE03's verbalization. The expert translator didn't have enough declarative knowledge to create an immediate representation of a Turkish bath. However, by stating that he didn't he activated strategies to deal explicitly with the lack of conceptual knowledge with respect to the source text. In fact, when we look at the performance of four expert translators who also translated the same source texts and consider the degree of cognitive implication of their renderings based on the scale propose by PACTE (2005), we notice that they also used strategies based on simple internal support or in which internal support was dominant. Their renderings, *Translog* representations, and retrospective verbalizations, however, showed a different kind of output. They were a lot more critical of their own performance, acknowledged lack of declarative knowledge about the topic of the text and commented on the strategies they used to counteract the shortcomings they had identified. Therefore, we might argue that translation strategies alone are no indicators of competence in translation. It needs to be coupled with some subjective or intersubjective parameter of meta-reflection to consubstantiate any kind of evidence.

An analysis of the data stemming from the pilot study is inconclusive but highlights the importance of meta-reflection in the performance of translators. In the scope of the pilot study, we could say that students' inability to improve the management of their own processes may be due to time constraints. After all, they only had about four months of training. In connectionist terms, they simply didn't have enough time to change their cognitive patterns and corresponding strategies. However, the data shows that the students were eager to come forward and debate their own problems. The students' engagement in the learning process clearly made them aware of cognitive and discursive features involved in translation. It may not have changed procedural aspects of their performance but it definitely had an impact on their patterns of meta-reflection. On the basis of our provisional results, we may argue that the combined acquisition of declarative and procedural knowledge about their translation processes seems to have raised the level of awareness of the 18 novice translators and paved the way for the learning and consolidation of translation strategies.

This certainly adds to the relevance of incorporating the conscious monitoring of the translation process for translator's training purposes.

5. Concluding Remarks

As observed in Alves & Gonçalves (2003) and Alves & Gonçalves (forthcoming), our observations of the performance of novice and expert translators suggests, in connectionist and relevance-theoretic terms, that higher levels of meta-reflection are a fundamental characteristic of the behaviour of expert translators. In this respect, we may say that the movement from a "narrow-band" to a "wide-band" translator can be coupled with the ability to reflect critically about one's own performance; a feature we may also associate with the concept of deliberate practice. Therefore, it is our contention that a dynamic view of translator's training should try to bridge the gap between declarative and procedural aspects of training by focusing on the increment of levels of meta-reflection. We argue that a process-oriented approach to translator's training may offer the possibility to do so.

With respect to this paper's contribution to research in translation training we insist on the need to investigate further the implications of this approach on longitudinal studies among subjects with different levels of translation competence. The concept of a "narrow-band" and a "wide-band" translator can be applied to a group of individuals but also to the same individual as the task, context, and conditions of text production change. As stated in Alves & Gonçalves (forthcoming), it varies among and within the same translator in their dynamic view of translator's competence. Finally, we reinstate that, in agreement with Alves, Magalhães & Pagano (2004), our view of translator's training clearly favours meta-cognitive, conscious processes and advocates the concomitant integration between procedural and declarative types of knowledge. Meta-reflection, as stated from the very beginning of this paper, appears as an alternative on which to improve and qualify translator's training.

NOTES

1. In this article we do not follow a clear-cut distinction between learning and acquisition. Both terms are used interchangeably throughout the article.
2. Since they seem to appear indiscriminately in the literature, the terms translation competence and translator's competence shall be understood as synonymous throughout the article with the latter applying to the individual translator and the former referring to an abstract competence.
3. For a detailed explanation of the band system, the reader is referred to Alves & Gonçalves (forthcoming).
4. The readers should refer to Tables 1 and 2 for the original verbalizations in Portuguese.

REFERENCES

ANDERSON, J.R. (1983): *The architecture of cognition*, Cambridge, Harvard University Press.
ALVES, F. (2005): "Esforço cognitivo e efeito contextual em tradução: relevância no desempenho de tradutores novatos e expertos", *Linguagem em (Dis)curso* 5,
<http://www3.unisul.br/paginas/ensino/pos/linguagem/revista/revista.htm>.
ALVES, F. (2003): "Tradução, cognição e contextualização: triangulando a interface processo-produto no desempenho de tradutores novatos", *D.E.L.T.A* 19, p.71-108.
ALVES, F. and J. L. GONÇALVES (2003): "A relevance theory approach to the investigation of inferential processes in translation", in ALVES, F. (ed.): *Triangulating translation: perspectives in process oriented research*, Amsterdam, John Benjamins, p.11-34.
ALVES, F and J. L. V. R. GONÇALVES (forthcoming): "Modelling translator's competence: relevance and expertise under scrutiny", submitted to publication in GAMBIER, Y., M. SCHLESINGER and R. STOLZE (eds.): *Translation Studies: doubts and directions,* IV EST Congress.

DRAGSTED, B. (2004): *Segmentation in translation and in translation memory systems. An empirical investigation of cognitive segmentation and effects of integrating a TM system into the translation process*, Copenhagen, CBS – Copenhagen Business School, (unpublished PhD thesis).

ELMAN, J. and al. (1996): *Rethinking innateness: a connectionist perspective on development,* Cambridge, MIT Press.

ERICSSON, K. A. (2002): "Expertise in interpreting: an expert-performance perspective", *Interpreting* 5-2, p.187-220.

GONÇALVES, J. L. (2003): *O desenvolvimento da competência do tradutor: investigando o processo através de um estudo exploratório-experimental* [The development of translator competence: investigating the process through and exploratory-experimental study], Belo Horizonte, FALE/UFMG, (unpublished PhD thesis).

GUTT, E.-A. (2000): *Translation and relevance: cognition and context*, Manchester, St. Jerome.

HURTADO ALBIR, A. (2005): "A aquisição da competência tradutória. Aspectos teóricos e metodológicos", in PAGANO, A., C. MAGALHÃES and F. ALVES (eds.): *Competência em tradução. cognição e discurso*, Belo Horizonte, Editora UFMG, p.10-42.

JAKOBSEN, A. L. (2002): "Orientation, segmentation, and revision in translation", in HANSEN, G. (ed.): *Empirical translation studies: process and product,* Copenhagen Studies in Language Series 27, Copenhagen, Samfundslitteratur, p.191-204.

KIRALY, D. (2000): *A social constructivist approach to translator education. Empowerment from theory to practice*, Manchester, St. Jerome.

LORENZO, M. P. (2002): "Seguimiento del proceso de traducción en la enseñanza", *Revista Brasileira de Linguistica Aplicada* 2-2, p. 47-64.

PACTE (2005): "Investigating translation competence: conceptual and methodological issues", *Meta* 50-2, p.609-619.

PACTE (2003): "Building a Translation Competence Model", in ALVES, F. (ed.): *Triangulating Translation: perspectives in process oriented research*, Amsterdam, John Benjamins, p. 43-66.

ROBINSON, D. (2003): *Becoming a translator: an accelerated course,* London, Routledge.

SCHÄFFNER, C. and B. ADAB (eds.) (2000): *Developing translation competence*, Amsterdam, John Benjamins.

SPERBER, D. and D. WILSON (1986): *Relevance: communication and cognition*, Oxford, Blackwell.

SUN, R. and P. SLUSARZ (2001): "The interaction of explicit and implicit learning: an integrated model", <http://www.hcrc.ed.ac.uk/cogsci2001/pdf-files/0952.pdf>.

APPENDIX 1

SOURCE TEXTS

The Turkish Bath

The tradition of the Turkish bath - or "hamam" - extends far back in time. Upon arrival in Anatolia, the Turks brought with them a bathing tradition which converged with that of the Romans and Byzantines. However, with the addition of the Moslem concern for cleanliness and respect for the use of water, an entirely new concept in bathing emerged. The Turkish bath has thus become an institution, and much more than just a place to cleanse the skin. It is intimately bound up with everyday life: a place where people of every rank and station, young or old, rich or poor, townsman or villager, can freely enter. Traditionally, a whole range of paraphernalia is associated with the "hamam". The "pestamal", a colourful, chequered cloth, which is wrapped around the waist, is still in use. However, the "takunyalar", wooden clogs often inlaid or carved, have generally been replaced by plastic flip-flops. Many "hamams" were built during the Ottoman Era. **Externally, they have a distinctive domed structure with bottle glass refracting beams of light inwards.** The first room is the "camekan", a square court with a fountain surrounded by small individual changing cubicles. This leads into the "sogukluk", a small cooling off section which opens into the "hararet", the hot and steamy marble lined baths. A raised marble platform, known as "gobek tasi" - the navel stone, graces the centre of the "hararet". One lies here for a vigorous massage or a "kese" which consists of removing dead skin with a rough cloth glove. After leaving the "hararet", one may enjoy a cold drink in the "camekan" or simply stretch out on the reclining couch in a private changing cubicle. "Hamams" have largely gone out of fashion in Turkey. However, many historical buildings survive and a visit is highly recommended. In Istanbul the most popular places are the historic "Galatasaray Hamami", in Beyoglu and the "Cagaloglu Hamami", in Sultanahmet.

Los baños turcos

Antes de los turcos, los romanos, los Bizantinos y las gentes nómadas de la región de Anatolia tenían ya sus propios rituales de baño. Aquellas tradiciones crearon juntas un nuevo concepto que los europeos llamaron "El Baño Turco". Los hamams, como dice la gente local, no solamente sirvieron para limpiar el cuerpo o la piel, sino que eran también el sitio de encuentro social. Un baño turco combina cuatro elementos básicos: el calor seco, el calor húmedo, el frío y el masaje. Con el "pestemal", una tela que cubre el cuerpo, y las "takunyalar", zapatillas de madera que hoy han sido sustituidas por las zapatillas de plástico, el bañista entra en una sala caliente y su cuerpo empezará a sudar hasta que la acción del vapor mantenga el nivel de sudoración. Estos elementos estimulan y limpian el cuerpo además de mejorar la salud. **Por el exterior los baños turcos tienen un perfil de cúpula distintiva con cristales de botella que orientan los rayos de luz solar por dentro.** En el interior, la primera sala se llama "camekan", una sala cuadrada con fuentecitas y pequeños camerinos individuales para cambiarse la ropa. Después del "camekan" se pasa a la sala pequeña de "sogukluk", que es la parte fría como los antiguos firigidarios de los baños romanos. La última parte es la sala más grande, vaporosa y caliente, el "hararet", que está cubierta de mármol. En el centro de esta sala hay una plataforma elevada de mármol, el "gobek tasi" - en castellano la piedra de panza. El bañista se tumba aquí para recibir un masaje fortísimo o para que le froten con un guante duro, el "kese". A pesar de que muchos baños han desaparecido aún se pueden encontrar en Estambul algunos edifícios históricos como "Galatasaray Hamami" en la parte moderna y "Cagaloglu Hamami" en la parte antigua de la ciudad.

APPENDIX 2

Table 1 – Pause values, type of support, verbalization and target text of novice translators

Subject	Pause	Type of support	Verbalization	Translation
TN01	[03:13:00]	external/internal	*[…] não sabia como qualificar os cristais. Pensei naqueles templos muçulmanos e tentei pensar em alguma coisa parecida. Fui na internet e encontrei uma página que falava de vitrais. Voltei no texto e substituí cristais por vitrais.*	Vistos pelo lado de fora, os banhos turcos têm um perfil de cúpula com vitrais que orientam s raios de luz solar por dentro.
TN02	[01:40:75]	internal	No verbalization	Vistos pelo lado externo, os banheiros turcos têm um perfil de cúpula distintiva com vitrais que direcionam os raios solares que entram.

TN03	[00:10:00]	internal	No verbalization	Em seu exterior os banhos turcos têm uma forma de abóboda diferente, com vidros de garrafa que direcionam os raios solares por dentro.
TN04	[03:55:99]	internal	*Pensei em traduzir [bottle glass] literalmente como vidros de garrafa, e depois com inward, que apesar de saber que está relacionado ao interior do prédio, literalmente seria no interior, Fiquei um pouco confuso.*	uma cúpula bem característica, estruturada com frascos de vidro que refratam feixes de luz para o interior do prédio.
TN05	[09:30:06]	internal/external	*Bottle glass foi meu maior problema que, inclusive, não resolvi a contento. Achei vidro de garrafa ruim, não conhecia bottle glass como expressão ou termo designando certo tipo de vidro. Talvez seja uma variação de vitral, stained glass. Não encontrei nada válido na Internet.*	Externamente, eles têm um típico domo com vidro colorido que ilumina seu interior.
TN06	[01:15:18]	internal	*Aqui o problema foi o bottle glass. Fiquei pensando se era realmente necessário especificar que o vidro da abóboda era de garrafa. Mantive a tradução, mas na fase de revisão resolvi simplificar o sintagma e manter somente o vidro, sem especificar que era de garrafa.*	Externamente, eles têm uma estrutura abobadada de vidro que refrata os raios de luz para o interior.

Table 2 – Pause values, type of support, verbalization and target text of expert translators

Subject	Pause	Type of support	Verbalization	Translation
TE01	[01:02:47]	internal	*Pela proximidade das línguas acaba às vezes se perdendo se é uma palavra da sua língua ou da outra e essa palavra nesse sentido foi uma palavra também que deixou...* *Você veja que eu me detive nesse momento porque tem uma estrutura em Espanhol que não ficou clara, não ficou clara e eu dei uma saída que me pareceu viável, mas me parece que no próprio Espanhol ela também não é muito clara.* *Também nesse momento onde diz que "vidros de garrafa que direcionam os raios de luz solar para dentro" em Espanhol diz que "são que orientam os raios de luz solar por dentro"* *Isso não me é muito claro em Espanhol não, "orientam por dentro", deve ter outra coisa que não, que não [...]*	Exteriormente os banhos turcos se distinguem por um perfil de cúpula com cristais de garrafa, que os raios de luz solar orientam por dentro.
TE02	no pause	internal	*Essa frase aqui é meio complicada em espanhol, isso eu vou mudar depois, porque normalmente aqui quando tem essa relativa em espanhol eles colocam [...] normalmente o sujeito vai depois, então assim, "com cristais de [...] de garrafa [...] que orienta os raios[...] . Isso aqui tá, isso aqui ficou mal traduzido, eu teria que pensar direito procurar algo de arquitetura [...] e aqui pode ser tanto cristais na sintaxe espanhola, tanto cristais como raios[...] que orienta. Mas o normal em relativa é que o[...] que o*	Exteriormente, os banhos turcos apresentam um perfil de cúpula distinta, com vidros de garrafa que direcionam os raios de luz solar para dentro.

			sujeito seja raios, e não cristais. Isso aí é uma coisa que demandaria tempo, eu teria que dar uma olhada em alguma coisa de arquitetura.	
TE03	no pause	internal	*[…] Este texto é mais difícil porque, embora não seja um texto técnico, ele é cheio de descrições de um local onde eu nunca estive, um país que eu jamais visitei, uma cultura que eu desconheço. Então, em vários momentos eu tive que fazer umas aproximações de sentido mais ou menos no escuro, porque eu não conheço o tipo de ambiente que estava sendo descrito*	Vistos de fora, são prédios com uma cúpula característica, feita com vidro de garrafa, através do qual a luz do dia é refratada .
TE04	[01:01:89]	internal	*Os hamans são caracterizados por uma abóbada", ou qualquer coisa assim. […] Talvez eu pudesse colocar em seu topo, ou no telhado, e revestida de vidro por onde a luz externa é refratada.*	Em sua fachada externa, apresentam uma estrutura em forma de abóboda, revestida de vidro, por onde a luz externa é refratada.