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RESULTS OF THE VALIDATION OF THE PACTE TRANSLATION COMPETENCE MODEL: TRANSLATION PROJECT AND DYNAMIC TRANSLATION INDEX

PACTE GROUP

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Introduction

The PACTE Group (Process of Acquisition of Translation Competence and Evaluation) has been carrying out holistic, empirical-experimental research into translation competence and its acquisition in written translation. Data have been collected on both the translation process and the translation product in inverse and direct translations involving six language combinations: English, French and German - Spanish and Catalan. The decision to include data on both inverse and direct translation was made in order to determine the characteristics of translation competence in relation to directionality.

The aim of this article is to present the results obtained relating to expert translators' dynamic concept of translation, and their dynamic approach to the translation of specific texts. We understand a 'dynamic' concept and approach to translation to be textual, communicative, and functional as opposed to a

'static' concept and approach which may be defined as linguistic and literal. Several theoretical models that have been proposed support this concept in Translation Studies, e.g. dynamic equivalence (Nida 1964,); equivalence of meaning in the interpretive theory of translation (Seleskovitch 1968, Seleskovitch and Lederer 1984); functional equivalence (Reiss and Vermeer 1984, Nord 1991); communicative translation (Hatim and Mason 1990); etc.

Data have been obtained from two variables in our experiment on Translation Competence: (a) 'Translation Project', i.e. the way in which subjects approach the translation of a specific text and the units it comprises (procedural knowledge); and (b) 'Knowledge about Translation', i.e. subjects' implicit knowledge of the principles governing translation and other aspects of professional translation practice (declarative knowledge).

The methods used and the findings obtained for the variables 'Knowledge about Translation', 'Efficacy of the Process', 'Decision-making' and 'Acceptability' in our experiment on translation competence have been published in PACTE (2007a, 2007b, 2008, 2009).

In this article we present the results obtained for the variable 'Translation Project' and their triangulation with those obtained for the variable 'Knowledge about Translation'. The resulting Dynamic Translation Index is then triangulated with the indicator 'Acceptability' to determine the relationship between both.

Following a brief overview of the conceptual framework and methodology used in PACTE's research on translation competence, a description is given of the variable 'Translation Project' and the results obtained from the indicators 'Dynamic Index' and 'Coefficient of Coherence'. Finally, data obtained for the

variable 'Translation Project' is triangulated with those of the variable 'Knowledge of Translation' to obtain the *Dynamic Translation Index*.

PACTE'S Experimental Research On Translation Competence

The PACTE Group's empirical-experimental research project is divided into two phases:

- Phase 1(to be completed by the end of 2009): the investigation of translation competence in expert translators with the aim of developing a holistic model of translation competence which may subsequently be validated in a hypothetic-deductive study of professional translators.
- Phase 2 (which will run from 2010): the investigation of the process of acquisition of translation competence in trainee translators with the aim of developing a holistic model of the acquisition of translation competence - based on the PACTE model of translation competence (PACTE 2003) - which may then be validated by a hypothetic-deductive study of trainee translators.

In the first phase of our research expertise in translation was studied in an experiment comparing two groups of subjects pertaining to the same experimental universe (language professionals): 24 foreign-language teachers with no experience in translation, and 35 professional translators. Exploratory tests and a pilot study (PACTE 2002, 2005a, 2005b) preceded the final experiment.

It was necessary to carry out these studies since no holistic research had previously been carried out into what constitutes translation competence.

Proposals related to the functioning of translation competence had been made by authors such as Wilss (1976), Bell (1991), Pym (1992), Kiraly (1995), Hurtado Albir (1996, 1999), Hansen (1997), etc. Other proposals made after the beginning of the PACTE project are: Risku (1998), Neubert (2000), Kelly (2005), Gonçalves (2005), Shreve (2006), Alves & Gonçalves (2007), etc. Some proposals are concerned with the specific functioning of translation competence in inverse translation (Beeby, 1996; Campbell, 1998). All of these models focus attention on the various components of translation competence but few attempts have been made to validate them from an empirical-experimental perspective (Gonçalves 2005, Alves & Gonçalves 2007, etc.).

The results obtained in the exploratory tests, pilot study and final experiment evidence the competences specific to the professional profile of translators and serve as a basis for the second phase of our study: the process of acquisition of translation competence. This will be a longitudinal study involving repeated measurement.

Translation competence: definitions and theoretical model

The PACTE Group defines translation competence as the underlying system of knowledge required to translate. We believe that translation competence: (a) is expert knowledge; (b) is predominantly procedural knowledge, i.e. non-declarative; (c) comprises different inter-related sub-competences; and (d) includes a strategic component which is of particular importance.

In our model (cf. PACTE 2003), translation competence comprises five sub-competences as well as psycho-physiological components:

- **Bilingual sub-competence.** Predominantly procedural knowledge required to communicate in two languages. It comprises pragmatic, socio-linguistic, textual, grammatical and lexical knowledge.
- **Extra-linguistic sub-competence.** Predominantly declarative knowledge, both implicit and explicit. It comprises general world knowledge, domain-specific knowledge, bicultural and encyclopaedic knowledge.
- **Knowledge about translation.** Predominantly declarative knowledge, both implicit and explicit, about translation and aspects of the profession. It comprises knowledge about how translation functions and knowledge about professional translation practice.
- **Instrumental sub-competence.** Predominantly procedural knowledge related to the use of documentation resources and information and communication technologies applied to translation (dictionaries of all kinds, encyclopaedias, grammars, style books, parallel texts, electronic corpora, search engines, etc.).
- **Strategic sub-competence.** Procedural knowledge to guarantee the efficiency of the translation process and solve problems encountered. This sub-competence serves to control the translation process. Its function is to plan the process and carry out the translation project (selecting the most appropriate method); evaluate the process and the partial results obtained in relation to the final purpose; activate the different sub-competences and compensate for any shortcomings; identify translation problems and apply procedures to solve them.

- **Psycho-physiological components.** Different types of cognitive and attitudinal components and psycho-motor mechanisms, including cognitive components such as memory, perception, attention and emotion; attitudinal aspects such as intellectual curiosity, perseverance, rigour, the ability to think critically, etc.; abilities such as creativity, logical reasoning, analysis and synthesis, etc.

Translation competence, like all expert knowledge, is applicable to problem-solving. The solution of translation problems involves different cognitive operations within the translation process and requires constant decision-making on the part of the translator.¹ The expert translator thus possesses the ability to solve problems, which forms part of translation competence. We believe strategic competence to be the most important of all the sub-competences that interact during the translation process since it serves to make decisions and to solve problems.

Since all bilinguals possess knowledge of two languages and may also possess extra-linguistic knowledge, we consider the sub-competences that are specific to translation competence to be: strategic competence; instrumental competence and knowledge of translation. Our research, therefore, focuses on these three competences.

Designing PACTE Group's research on translation competence

Our general hypothesis is that the degree of expertise in translation (i.e. translation competence) is reflected in both the process and the product of

¹ As Krings (1986) reports that when analysing the translation process these problems may be detected through subjects' behaviour : pauses; use of strategies; omissions; corrections, etc.

translation. Given that a high degree of expertise in translation may be expected in experienced translators, the definition of expertise for the purposes of our study is based on: (a) years of experience as a translator; (b) translation as a main source of income; and (c) experience in translating a wide range of texts. Our empirical and working hypotheses are based on the PACTE translation competence model (PACTE 2003).

The universe from which our sample is taken is that of professionals working with foreign languages. From this universe, two experimental groups were selected: expert translators and foreign-language teachers. Thirty-five professional translators and twenty-four foreign-language teachers participated in the experiment on translation competence. A questionnaire was used to select subjects who fulfilled the criteria established. To ensure the absence of confounding variables, translators were not specialists in any particular field of translation (since specialisation in any specific field - literary, legal, audiovisual etc. - could distort results) and the period of their professional activity as translators was equivalent. Foreign-language teachers all had a minimum of five years' experience of teaching in the Spanish Ministry of Education's Modern Language School (*Escuela Oficial de Idiomas*). All subjects were required to be native speakers of Spanish and/or Catalan and to work in a professional capacity with German, French or English as their foreign language. Translators included in the study had an average of seven and a half (7.51) years of experience in translating; the average percentage of their income from translating was 86.43 %; and their experience included translating a wide range of texts into their native language. Subjects were paid for their translations at market rates, simulating a real-life translation task.

Subjects performed the following tasks: (1) direct translation; (2) completion of a questionnaire about the problems encountered in the translation; (3) inverse translation; (4) completion of a questionnaire about the problems encountered in the translation; (5) completion of a questionnaire about translation knowledge; (6) participation in a retrospective interview.

Each of these tasks provided data for analysis. Further data were obtained from real-time recordings of subjects' actions during the translation process using the software programs PROXY and Camtasia², and direct observation.

Variables

One independent variable and five dependent variables were selected for our study. The independent variable established was the degree of expertise in translation, defined in terms of years of experience in translating as the subject's main professional activity.

The dependent variables were: (a) 'Knowledge about Translation'; (b) 'Efficacy of the Translation Process'; (c) 'Decision-making'; (d) 'Translation Project'; and (e) 'Identification and Solution of Translation Problems'. During the experiment a further variable 'Use of Instrumental Resources' was added.³ Based on data obtained in the exploratory and pilot tests, a total of 18 indicators of the variables selected were identified (see Table 1). Of these, the most notable is the acceptability of subjects' translations given that it reflects the quality of their translations (an important aspect of their translation

² PROXY is a program (compatible with Windows) designed for the remote control of computers and users connected to a network. Camtasia records the subject's actions on the computer in real time and stores these recordings for subsequent study and data collection.

³ This was done because a large amount of data was collected on the use of instrumental resources by translators, and the indicators of the variables associated with the instrumental sub-competence ("Decision- Making" and "Identification and Solution of Translation Problems") could not provide a sufficiently detailed analysis of the data obtained.

competence). The indicator 'Acceptability' is used as a transversal indicator in conjunction with indicators of all the variables under study in order to determine the relationship that exists between the results obtained in these indicators and the quality of subjects' translations.

Table 1 summarises the most important information relating to the dependent variables selected: conceptual definitions, indicators, data-collection instruments and data sources.

KNOWLEDGE ABOUT TRANSLATION	
Related to the knowledge about translation sub-competence	
CONCEPTUAL DEFINITION	The subject's implicit knowledge about the principles of translation and aspects of the translation profession
INDICATORS	Dynamic index and coherence coefficient
INSTRUMENTS	Questionnaire on knowledge about translation
DATA SOURCE	Subjects' answers to the questionnaire
EFFICACY OF THE TRANSLATION PROCESS	
Related to the strategic sub-competence	
CONCEPTUAL DEFINITION	Optimum relationship between time taken to complete a translation task and the acceptability of the solution
INDICATORS	Total time taken; time taken at each stage of the translation process (orientation, development, revision ⁴); acceptability
INSTRUMENTS	Translations, direct observation chart, PROXY and Camtasia recordings.
DATA SOURCE	Total time taken and time taken at each stage of the translation process in relation to the acceptable and partially acceptable results obtained
DECISION-MAKING	
This is the most complex variable. It provides data on subjects' procedural behaviour	
Related to strategic and instrumental sub-competences	
CONCEPTUAL DEFINITION	Decisions made during the translation process which involve the use of automatic and non-automatic cognitive resources (internal support) and the use of different sources of documentation (external support) (Alves, 1995, 1997)
INDICATORS	Sequences of actions; acceptability
INSTRUMENTS	Translations, direct observation charts, PROXY and Camtasia recordings
DATA SOURCE	Sequences of actions leading to results that are acceptable, partially acceptable and unacceptable in relation to Rich Points (specific source-text segments that contained translation problems; see Data Analysis below)

⁴ Based on the distinction made by Jakobsen 2002.

TRANSLATION PROJECT Related to the strategic sub-competence	
CONCEPTUAL DEFINITION	The subject's approach to the translation of a specific text and of the units it comprises
INDICATORS	Dynamic index in the overall translation project and that of each Rich Point; coherence between the overall translation project and that of each Rich Point
INSTRUMENTS	Translation problems questionnaire and retrospective interview
DATA SOURCE	Elements taken into account by the subject in relation to the translation brief
IDENTIFICATION AND SOLUTION OF TRANSLATION PROBLEMS Related to the strategic sub-competence	
CONCEPTUAL DEFINITION	Difficulties encountered by the subjects when carrying out a translation task
INDICATORS	Degree of difficulty of the text; nature of the difficulty of the text; Rich Points identified as translation problems; nature of the problem posed by each Rich Point; problem-solving procedure explained by the subject; subject's degree of satisfaction with the solution found
INSTRUMENTS	Translation problems questionnaire and retrospective interview
DATA SOURCE	Problems identified and subjects' comments
USE OF INSTRUMENTAL RESOURCES Related to the instrumental competence	
CONCEPTUAL DEFINITION	Strategies used when consulting documentary resources in electronic format (webs, dictionaries and encyclopaedias in CD-ROM)
INDICATORS	Variety of resources, number of searches, time spent on searches (total and for each phase)
INSTRUMENTS	PROXY/Camtasia recordings, Catalogue of searches
DATA SOURCE	Phase(s) of the search/es; Time spent (initial/final); Categories of resources (type, sub-type); Number of resources (variety of searches); Number of searches (quantity of searches)

Table 1 Dependent variables (adapted from PACTE 2005a, 2005b)

Data Analysis

Triangulation of data

Data obtained have been triangulated as follows: i) comparing results for the different indicators of study variables; ii) comparing translators' and teachers'

performance; iii) comparing their performance in direct and inverse translation;
iv) comparing results for indicators of all variables and for 'Acceptability'.

Analysis of data obtained for each Rich Point

Given that we consider translation to be a problem-solving process, the decision was made to focus data collection and analysis on specific source-text segments that contained translation problems. These we refer to as Rich Points. It should be noted that the decision to focus data collection on the selected Rich Points was also taken to facilitate the collection following Giegler's concept of 'scientific economy' (Giegler 1994) and triangulation of data (cf. PACTE 2007b, 2008, 2009).

The Rich Points selected were determined as a result of exploratory studies and pilot tests carried out prior to the final experiment (PACTE 2002, 2005a, 2005b). When identifying the Rich Points in each text, the following types of translation problems were taken into account:

- Linguistic problems: lexical (non-specialised) and morphosyntactic
- Textual problems: coherence, cohesion, text type and genre, and style
- Extralinguistic problems: cultural, encyclopaedic and subject-domain knowledge
- Problems of intentionality: difficulty in understanding information in the source text (speech acts, presuppositions, implicature, intertextual references)
- Problems relating to the translation brief and/or the target-text reader (affecting reformulation) which, from a functionalist point of view, would

affect all Rich Points.

The texts selected for use in the experiment, together with five Rich Points identified in each, were trialled in the pilot study carried out in 2004 (reported in PACTE 2005a, 2005b). The Spanish source text used for inverse translation and the English source text used for direct translation are included in Appendix 1. The Rich Points selected are marked in each text.

'Acceptability' as a transversal indicator

'Acceptability' is related to the quality of the translation product. The quantitative and qualitative analysis of the data collected in our exploratory tests (PACTE 2002) and pilot study (PACTE 2005a, 2005b) confirmed the importance of this indicator in measuring subjects' expertise in translation. It is the only indicator that is used in conjunction with the specific indicators of each variable (see Table 1). In our research project, 'Acceptability' is defined in terms of whether or not the solution effectively communicates (a) the meaning of the source text; (b) the function of the translation (within the context of the translation brief, the readers' expectations, genre conventions in the target culture); and (c) makes use of appropriate language.

Results (PACTE 2008, 2009) showed that the group of translators obtained more acceptable results in their translations than the group of foreign-language teachers, both in direct and inverse translation. The difference in the acceptability of the results obtained in both groups is much greater in direct translation (see Table 2).

'Acceptability' in direct and inverse translation (PACTE 2008,2009)		Translators	Teachers
Direct translation	Mean	0.73	0.49
	Median	0.80	0.45

Inverse translation	Mean	0.52	0.48
	Median	0.50	0.40

Table 2: Acceptability scores for direct and inverse translation

'Translation Project'

As already mentioned, one of the study variables established in the PACTE Group's research on translation competence is 'Translation Project', defined as: 'Approach to the translation of a specific text and of the units it comprises'. According to PACTE, a subject's translation project forms part of his/her strategic sub-competence and may therefore be considered to be procedural knowledge.

Instruments and indicators

The data obtained for this variable were collected using the translation problems questionnaire and the retrospective interview which focuses on the Rich Points selected in each of the source texts for translation (cf. Appendix 2). The translation problems questionnaire includes a question concerning the subjects' overall translation project and another concerning the subjects' translation project for each of the Rich Points selected, i.e.:

- What were your priorities when translating the text? ('Translation Project' - overall)
- What were your priorities when solving it? ('Translation Project' - for each Rich Point)

When classifying subjects' responses to these two questions, two categories were established (the same two categories were used in our study of the variable 'Knowledge of Translation'): (a) *dynamic*: communicative, functionalist,

textual approach to translation; (b) *static*: linguistic and literal approach to translation.⁵

The following categories are used to define the indicators of the variable 'Translation Project':

- 'Dynamic Index' of 'Translation Project' overall: the subjects' approach to the translation of a specific text.
- 'Dynamic Index' of the 'Translation Project' for Rich Points: how subjects approach the translation of the units of the text.
- 'Coefficient of coherence' between the Translation Project overall and that of the Translation Project for Rich Points: consistency between the overall approach to the translation project and subjects' approach to the translation of each unit.

A scale of -1 to +1 was used to measure the 'Dynamic Index' for both the 'Translation Project' overall and the 'Translation Project' for Rich Points: -1 (totally static); +1 (totally dynamic).

A scale of 0 to 1 was used to measure the 'Coefficient of coherence': 1 (totally consistent), whether or not the subject's approach to translation was static or dynamic; and 0 (totally inconsistent)

'Dynamic Index' of 'Translation Project' overall

'Translation Project' overall: Dynamic responses

No significant differences were found in the responses obtained for the group of translators (85.71 per cent) and that of the foreign-language teachers

⁵ For example, "so that the reader can understand it"; "so that it sounds natural" (*dynamic*); "it's the way they say it in French", "leave it as it is" (*static*).

(87.50%) classified as *dynamic* in their approach to direct translation. In inverse translation, however, a slight difference is found between the percentage of translators (85.71%) and foreign-language teachers (75%) classified as *dynamic*.

'Translation Project' overall: 'Dynamic Index'

This index was calculated taking into account the responses to the 'Translation Project' overall in both direct and inverse translation: -1 (all subjects whose translation project overall was *static* in both direct and inverse translation) ; 1 (all subjects whose translation projects overall was *dynamic* in both direct and inverse translation); and 0 (those subjects whose translation project overall differed between direct and inverse translation).

Regarding the 'Dynamic Index' of the 'Translation Project' overall (direct and inverse translation), no significant differences were found between translators and foreign-language teachers as regards their overall approach to the translation of a text, i.e. both groups' approach to their translation was *dynamic*. This may be attributed to the fact that both groups were language professionals and their aim, by default, was to communicate (see Table 3)⁶.

'Dynamic Index' of 'Translation Project' overall	Translators	Teachers
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⁶ Although both groups showed the same dynamic approach to their overall translation project, this was not necessarily reflected in the solutions they found to specific translation problems. Taking into account the 'Acceptability' of results obtained (cf. Table 2), the results obtained by translators were much more acceptable than those obtained by the foreign-language teachers in direct translation. The acceptability of the solutions provided by translators was 0.73 (on a scale of 0-1) and that of the foreign-language teachers 0.49. In inverse translation, the acceptability of the solutions found by translators was 0.52 while that of the group of foreign-language teachers was 0.48. Thus, although the foreign-language teachers' approach to translation overall was dynamic, their solutions to specific translation problems were not as acceptable as those of translators. The explanation for this lies in the teachers' lack of expertise in converting this dynamic approach to translation into acceptable translation solutions.

Mean	0.714	0.625
Median	1.000	1.000
Minimum	-1.000	-1.000
Maximum	1.000	1.000
Std Dev	0.572	0.576

Table 3: ‘Dynamic Index’ of translation scores for translators and teachers

‘Dynamic Index’ of ‘Translation Project’ for Rich Points

Translation Project’ for Rich Points: Dynamic responses

The percentage of dynamic responses to ‘Translation Project’ was calculated for each Rich Point (RP) . The results for direct translation were as follows:

- RP1. The title, which has a metaphoric aspect in all three texts (problem type: intentionality): translators 74.29% and foreign-language teachers 50%.
- RP2. A technical term: *keylogger // Download-Verzeichnis // édition de logiciels antivirus* (problem type: extralinguistic): translators 68.57% and foreign-language teachers 54.17%.
- RP3. Reference: *doubled ... surge // Schädling ... E-mail- Würmer ... Vorgängervariante // Le ver ... résurgence ... ses congénères* (problem type: textual): translators 54.29% and foreign-language teachers 45.83%.
- RP4. Elements in apposition present in all three texts, from which certain elements could be omitted: *a ‘Trojan horse’ program which could allow a hacker to take remote control of infected machines // Dateien-Tauchbörse Kazaa // Soumissions, des communications du virus* (problem type: textual and intentionality): translators 74.29% and foreign-language teachers 50%.
- RP5. A particularly rich point, presenting problems of comprehension and reformulation: *Cheltenham-based virus filtering firm // Tastatureingaben*

von PC-Nutzern nach Kreditkartennummern und Ähnlichem überwacht // Enregistrer les caractères tapés sur le clavier (problem type: linguistic and intentionality): translators 85.71% and foreign-language teachers 62.50%.

It should be noted that:

1. The Rich Points that reflect the greatest difference between translators and teachers (i.e. where the translators' Dynamic Index was higher) are those which involve problems of intentionality (RP1,RP4,RP5), problems that cannot be solved only by applying linguistic competence.
2. The Rich Point that reflects the smallest difference in the Dynamic Index obtained for both groups is RP3, a textual problem of reference which requires linguistic-textual knowledge for its solution.
3. RP3 (a textual problem) is the Rich Point for which the 'Dynamic Index' in both groups is lowest.

If we consider the mean percentages obtained for the translation of all the Rich Points, it can be seen that the translators' approach to translation is clearly more dynamic than that of the foreign-language teachers (Table 4):

Dynamic responses for 'Translation Project' for Rich Points, in direct translation (%)	Translators	Teachers
Mean	71.43	52.50
Minimum	54.29	45.83
Maximum	85.71	62.50
Std Dev	11.43	6.32

Table 4: Dynamic responses for 'Translation Project' for Rich Points in direct translation task

As for inverse translation, the results obtained for each Rich Point were as follows:

- RP1. *El Indiano ... la fortuna del Americano* (problem type: extra-linguistic and textual): translators 74.29% and foreign-language teachers 58.33%.
- RP2. *gobierno alfonsino* (problem type: extra-linguistic): translators 80.00% and foreign-language teachers 58.33%.
- RP3. *desenfreno y dilapidación* (problem type: linguistic): translators 48.57% and foreign-language teachers 45.83%.
- RP4. *la geografía comarcal de Cataluña* (problem type: intentionality): translators 65.71% and foreign-language teachers 45.83%.
- RP5. *común ... trona* (problem type: intentionality, textual and extra-linguistic): translators 74.29% and foreign-language teachers 50.00%.

We note that:

1. The Rich Points that reflect the greatest difference between translators and teachers (where the translators' 'Dynamic Index' was higher) are those which involve extra-linguistic problems and problems of intentionality (RP2, RP5)
2. The Rich Point that reflects the smallest difference in the Dynamic Index obtained for both groups (RP3) is a linguistic problem
3. RP3 is also the Rich Point for which the 'Dynamic Index' in both groups is lowest.

As regards the mean percentages obtained for inverse translation, as in direct translation, the group of translators shows a more dynamic approach to translation than the group of foreign-language teachers (Table 5):

Dynamic responses for 'Translation Project' for Rich Points, in inverse translation (%)	Translators	Teachers
Mean	68.57	51.67
Minimum	48.57	45.83
Maximum	80.00	58.33
Std Dev	12.29	6.32

Table 5: Dynamic responses for 'Translation Project' for Rich Points in inverse translation task

It may thus be concluded that there are significant differences between translators and teachers. Translators have a more dynamic Translation Project in both inverse and direct translation. The Rich Points for which results reflect the greatest difference between translators and teachers are those that present extra-linguistic problems and problems of intentionality, that is, those that cannot be solved by only using linguistic competence. On the other hand, those that present similar results in both groups of subjects are textual and linguistic problems; this may be explained by the fact that both groups share a common characteristic: they belong to the experimental universe of language specialists. Finally, the Rich Points for which subjects' Translation Project is least dynamic are those that present problems that are linguistic and textual; this may be due to the fact that this type of problem requires a more static approach to translation since solutions tend to be more fixed.

'Translation Project' for Rich Points: 'Dynamic Index'

This index was calculated taking into account the number of subjects' dynamic responses to the 'Translation Project' for each Rich Point, in both direct and inverse translation: 1 (more the 75% were dynamic); 0 (26%-74% were dynamic); and -1 (25% or less were dynamic).

The results obtained show that translators' approach to translation is more dynamic than that of foreign language teachers. (Table 6):

Dynamic Index of 'Translation Project' for Rich Points	Translators	Teachers
Mean	0.571	0.208
Minimum	-1.000	-1.000
Maximum	1.000	1.000
Std Dev	0.608	0.588

Table 6: Dynamic Index of 'Translation Project' for Rich Points

The Kruskal-Wallis Test shows that the difference in approach between translators and foreign language teachers is significant

Kruskal-Wallis Test	
Chi-Square	5.6581
DF	1
Pr>Chi-Square	0.0174

Table 7: Krusal-Wallis Test Results

'Coherence Coefficient'

When the coherence between subjects' approach to their translation project overall and their approach to the translation of each of the Rich Points established was examined, both experimental groups were found to be coherent in their approach to translation (Table 8):

'Coherence Coefficient' of 'Translation Project'		Translators	Teachers
Direct translation	Mean	0.786	0.563
	Median	1.000	0.500
	Minimum	0.000	0.000
	Maximum	1.000	1.000
	Std Dev	0.389	0.425
Inverse translation	Mean	0.814	0.688
	Median	1.000	0.750

	Minimum	0.000	0.000
	Maximum	1.000	1.000
	Std Dev	0.345	0.355

Table 8: Coherence Coefficient of ‘Translation Project’

Table 8 shows that foreign-language teachers are coherent in both direct and inverse translation. The group of translators is, however, more coherent than the group of teachers in both direct and inverse translation. Neither group behaves differently when translating into or out of the foreign language – they are equally coherent independent of directionality.

The ‘Coherence Coefficient’ calculated for each group confirms (as evidenced in the variable ‘Knowledge about Translation’) that all subjects are coherent in their approach to translation. This would suggest that the selection of subjects in the experimental groups was appropriate.

Dynamic Translation Index and Expertise

Data obtained for the indicators of the variable ‘Translation Project’ are related to those obtained for the variable ‘Knowledge about Translation’ (PACTE 2008).

The variable ‘Translation Project’ provides data concerning subjects’ procedural knowledge and the variable ‘Knowledge about Translation’ provides information about subjects’ declarative knowledge. As mentioned, these two variables are defined as follows:

- ‘Translation Project’: The subject’s approach to the translation of a specific text and the units it comprises; it forms part of the strategic sub-competence.

- ‘Knowledge about Translation’: The subject’s implicit knowledge about the principles of translation and aspects of professional translation practice.

The categories *dynamic* and *static* were used to classify data from both variables, and the ‘Dynamic Index’ and ‘Coherence Coefficient’ calculated for each.

Data for the variable ‘Knowledge about Translation’ was obtained from twenty-seven questions in the questionnaire administered to subjects (cf. PACTE 2008). Results show clear differences between the two experimental groups with a significantly higher ‘Dynamic Index’ for translators than for foreign-language teachers (Table 9):

‘Dynamic Index’ of ‘Knowledge about Translation’	Translators	Teachers
Mean	0.273	0.088
Median	0.200	0.150
Minimum	-0.200	-0.400
Maximum	0.900	0.625
Std Dev	0.204	0.261

Table 9: ‘Dynamic Index’ of ‘Knowledge about Translation’

In the PACTE Group’s research on Translation Competence, three different types of ‘Dynamic Index’ were calculated:

- 1) ‘Dynamic Index’ of ‘Knowledge about Translation
- 2) ‘Dynamic Index’ of ‘Translation Project’ overall (discussed above)
- 3) ‘Dynamic Index’ of ‘Translation Project’ for Rich Points (also discussed above)

These three indices together reflect subjects’ consistency with regard to their concept of translation as a whole, and their approach to specific translation problems. This consistency is reflected in the *Dynamic Translation Index* which

may then be triangulated with other indicators such as 'Acceptability', 'Sequence of Actions', etc.

'Dynamic Index' of 'Translation Project' overall and 'Knowledge of Translation'

In order to integrate these two indices, subjects were divided into three categories:

- *Static*: subjects whose dynamic index for 'Translation Project' overall was classified as *static*, and whose dynamic index for 'Knowledge about Translation' was also classified as *static*.
- *Inconsistent*: subjects whose dynamic index for 'Translation Project' overall was classified as *static* and whose index for 'Knowledge of Translation' was classified as *dynamic* or subjects whose dynamic index for Translation Project overall was classified as *dynamic* and whose index for 'Knowledge about Translation' was classified as *static*.
- *Dynamic*: subjects whose dynamic index for 'Translation Project' overall was classified as *dynamic* and whose index for 'Knowledge about Translation' was also classified as *dynamic* (Table 10).

'Translation Project' overall and 'Knowledge of Translation'		Translators	Teachers
<i>Static</i>	Mean	0.100	-0.125
	Median	0.100	-0.125
	Minimum	0.000	-0.125
	Maximum	0.200	-0.125
	Std Dev	0.141	.
	N	2	1
	<i>Inconsistent</i>	Mean	0.188
Median		0.200	-0.100
Minimum		0.000	-0.300
Maximum		0.400	0.400
Std Dev		0.130	0.261
N		6	7

<i>Dynamic</i>	Mean	0.305	0.145
	Median	0.300	0.200
	Minimum	-0.200	-0.400
	Maximum	0.900	0.625
	Std Dev	0.213	0.256
	N	27	16

Table 10: ‘Translation Project’ overall and ‘Knowledge of Translation’

While it was not possible to carry out a statistical test (Chi-square) of the results obtained for the categories *static* and *inconsistent*, given the very small number of subjects in each (fewer than eight), significant differences were, however, found between translators and foreign-language teachers in the third category (*dynamic*). The translators classified as *dynamic* both for ‘Translation Project’ overall and ‘Knowledge about Translation’ were⁷ more ‘dynamic’ than the foreign-language teachers who were also classified as *dynamic* for both (see Table 11).

Kruskal-Wallis Test	
Chi-Square	3.3156
DF	1
Pr>Chi-Square	0.0686

Table 11: Krusal-Wallis Test Results

‘Dynamic Index’ of ‘Translation Project’ for Rich Points and ‘Knowledge of Translation’

Significant differences are found in the second (*inconsistent*) and third (*dynamic*) categories (Table 12):

‘Translation Project’ for Rich Points and ‘Knowledge about Translation’		Translators	Teachers
<i>Static</i>	Mean	0.200	-0.200
	Median	0.200	-0.200
	Minimum	0.200	-0.300
	Maximum	0.200	-0.100
	Std Dev	0.000	0.141
	N	2	2

⁷ A probability level of 0.1 may be interpreted in this type of study to be within the limits of significance.

<i>Inconsistent</i>	Mean	0.245	0.153
	Median	0.200	0.200
	Minimum	0.000	-0.400
	Maximum	0.600	0.625
	Std Dev	0.207	0.285
	N	11	15
<i>Dynamic</i>	Mean	0.293	0.032
	Median	0.300	0.000
	Minimum	-0.200	-0.200
	Maximum	0.900	0.250
	Std Dev	0.214	0.164
	N	22	7

Table 12 : ‘Translation Project’ for Rich Points and ‘Knowledge about Translation’ scores

Translators classified as *dynamic* both for ‘Translation Project’ for Rich Points and ‘Knowledge about Translation’ were significantly more dynamic (see Table 13) than the foreign-language teachers who were also classified as *dynamic* for both. More foreign-language teachers were inconsistent than translators:

Kruskal-Wallis Test	
Chi-Square	7.6992
DF	1
Pr>Chi-Square	0.0055

Table 13: Kruskal-Wallis Test Results

Dynamic Translation Index

The *Dynamic Translation Index* is the sum of three indices: the ‘Dynamic Index’ of ‘Knowledge of Translation’ + the ‘Dynamic Index’ of ‘Translation Project’ overall + the ‘Dynamic Index’ of ‘Translation Project’ for Rich Points. It is not the average of these three indices, but the sum all three (i.e. it can be greater than +1).

Table 14 shows the results obtained for each of the experimental groups:

Dynamic Translation Index	Translators	Teachers
Mean	1.559	0.921
Median	2.100	1.200
Minimum	-1.800	-1.300
Maximum	2.900	2.250

Std Dev	1.087	0.968
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Table 14: Dynamic Translation Index Scores

The group of translators is significantly more dynamic (see Table 15) than that of the foreign-language teachers both in their approach to and their concept of translation (procedural and declarative knowledge):

Kruskal-Wallis Test	
Chi-Square	8.5309
DF	1
Pr>Chi-Square	0.0035

Table 15: Krusal-Wallis Test Results

Dynamic Translation Index and ‘Acceptability’

As a result of the descriptive analysis of the relation between the *Dynamic Translation Index* and the ‘Acceptability’ of subjects’ translations in both experimental groups, an overall tendency was observed: both the *Dynamic Translation Index* and ‘Acceptability’ were seen to move in the same direction, i.e. as one increased so did the other. There is thus a correlation between the *Dynamic Translation Index* and ‘Acceptability’. Although the Pearson-r correlation is low (0.44 for the foreign-language teachers and 0.34 for the translators), these figures do not detract from the interest of this finding. Only some of the acceptable solutions to translation problems are ‘dynamic’ in origin (in concept and approach); others must be accounted for in terms of use of documentary resources, linguistic and extra-linguistic knowledge, etc. The fact that the percentage of translators’ acceptable solutions of ‘dynamic’ origin is lower than that of foreign-language teachers may be due to the fact that

translators activate other sub-competences (strategic and instrumental) more often (see results for the variable 'Decision-making' in PACTE 2009).

Conclusions

We believe that the results obtained in our study show that a 'dynamic' concept of, and approach to, translation is a characteristic of translation competence and determines the acceptability of translations.

A close relationship has been found between a dynamic concept of translation, a dynamic approach to the translation of a specific text, and a dynamic approach to the translation problems posed in the text (a relationship we refer to as the *Dynamic Translation Index*), and the acceptability of the solutions found to these problems. We believe that this relationship is one of the most important characteristics of expertise in translation.

Our experiment has shown that both language teachers and translators have an overall dynamic approach to the translation of a text. The reason for this lies, no doubt, in the fact that both groups are specialists in the use of language and are therefore aware of its communicative function. Results obtained to date, however, have shown that only expertise in translation enables subjects to convert this overall dynamic approach to the translation of a specific text into a dynamic approach to translation problems in a text and acceptable solutions within a given context.

This finding corroborates theoretical models that have been proposed in the field of Translation Studies such as that of Nida's dynamic equivalence (Nida 1964); Seleskovitch and Lederer's equivalence of meaning (Seleskovitch 1968, Seleskovitch and Lederer 1984); Reiss, Vermeer and Nord's functional

equivalence (Reiss and Vermeer 1984, Nord 1991); Hatim and Mason's communicative translation (Hatim and Mason 1990), etc.

PACTE is currently triangulating the results obtained for the variable 'Translation Project', described in this article, with results obtained for the indicators of the variables 'Identification and Resolution of Problems' and 'Use of Instrumental Resources'. Our aim is to determine whether a dynamic concept and approach to translation affects subjects' identification and conceptualisation of the nature of translation problems, and their use of instrumental resources. This will be the last step in the validation of our translation competence model.

How and when translator trainees acquire a dynamic concept of, and approach to, translation will be an important aspect of our future investigation of the process of acquisition of translation competence. Our hypothesis is that progression from a *static* to a *dynamic* concept of translation is a key element in the move from 'novice' knowledge (pre-translation competence) to expertise in translation (translation competence).

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APPENDIX 1: TEXTS

DIRECT TRANSLATION TEXT⁸

1Email virus strikes in new form

Computer users were warned last night to be on the lookout for an email virus that can steal confidential information and allow hackers to take control of infected machines. The virus, a new variant of the BugBear email worm that infected tens of thousands of computers around the world last October, began to spread rapidly from Australia to Europe and the USA at around 8am yesterday. According to MessageLabs, a **5Cheltenham-based virus filtering firm** which reported about 30,000 infected messages in 115 countries, the **3propagation rate** of BugBear.B almost **3doubled** every hour throughout the morning. There was also a huge **3surge** as US users came online. Like its predecessor, the variant spreads by sending itself as an attachment to every address in an infected machine's email address book. To disguise where it came from, it uses different subject headings. As well as searching for anti-virus software and disabling it, BugBear.B installs a **2keylogger** to record what the user types, which may allow hackers to record confidential information such as credit card details and passwords. It also installs a **4"Trojan horse" program which could allow a hacker to take remote control of infected machines.** [...]

The Guardian - Friday, June 6, 2003

RP1: The title (problem type: intentionality)

- *Wurm in der Leitung*

- *Bugbear.b, le virus informatique qui lit par-dessus l'épaule de ses victimes*

RP2: A technical term (problem type: extralinguistic)

- *Download-Verzeichnis*

- *Édition de logiciels antivirus*

RP3: Reference (problem type: textual)

- *Schädling / E-Mail Würmer / Vorgängervariante*

- *Le ver / résurgence / ses congénères*

RP3: Elements in apposition (problem type: textual and intentionality)

- *Dateien-Tauchbörse Kazaa*

- *Soumissions, des communications du virus*

RP3: A particularly rich point (problem type: linguistic and intentionality)

- *Tastatureingaben von PC-Nutzern nach Kreditkartennummern und Ähnlichem überwacht*

- *Enregistrer les caractères tapés sur le clavier*

INVERSE TRANSLATION TEXT

La Plana Novella

La Plana Novella es una antigua heredad por el **1Indiano** Pere Domenech i Grau en 1885 encuentra en una pequeña planicie en el centro Natural del Garraf y pertenece al municipio de Finca fue declarada colonia agrícola 10 años por el **2gobierno alfonsino**, pero de aquella época perdura una leyenda de **3desenfreno y dilapidación** que hizo desaparecer la **1fortuna del americano**. El estilo arquitectónico del Palacete es ecléctico, es decir que mezcla diferentes estilos. **4La geografía comarcal de Cataluña** lo califica de "Castillo de Bambalinas" como si fuese un decorado de teatro. Sin ningún tipo de duda la construcción estilísticamente más original de Palau Novella es el lavadero gaudiniano, pero una de las piezas más características y llamativas del Palau es el **5común**, conocido como **5"la trona"**.



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⁸ For the purposes of direct translation, parallel texts in English, French and German on the subject of computer viruses were used: "E-mail virus strikes in new form" (*The Guardian*, June 6, 2003), "Wurm in der Leitung" (*Frankfurter Allgemeine Zeitung*, June 14, 2003) and "Bugbear.B, le virus informatique qui lit par-dessus l'épaule de ses victimes" (*Le Monde*, June 13, 2003).

