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Professional vs. Non-Professional Translation: A Think-Aloud Protocol Study

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1. Introduction

In a concurrent protocol study of translation, the subject 'thinks aloud' whatever goes on in her head when she translates. Only parts of the translation process are verbalizable, and therefore the subject is allowed to have pauses in the verbalization, when these are necessary. The experiment conditions can be made fairly natural by allowing access to dictionaries and other reference material and by allowing the subject to make notes, to produce a written draft, and to change the manuscript whenever necessary. The subject is not specifically asked to justify what she is doing; she is only asked to verbalize what she is thinking when she performs the task. Her behaviour is recorded on tape or videotape, and the protocols are transcribed from the tape.

Protocol studies have a much longer tradition in the study of some other cognitive tasks, such as the solving of mathematical problems or the writing of academic pieces of work (cf. Hayes and Flower 1980; Cohen and Hosenfeld 1981). It is only in translation studies that this method is still a novelty. Translation is, however, quite well suited for protocol study, because it is a relatively controlled process. The behaviours of various subjects can be compared in respect of particular stages or aspects of the process, and the products of the process are also reasonably well comparable.

Earlier protocol studies of translation have been confined to non-professional translation. Of these, Gerloff (1986) and Krings (1986) will be briefly discussed here. Pamela Gerloff is working on a protocol study for a doctoral dissertation at Harvard University. Her pilot study, reported in House and Blum-Kulka (1986), is mainly concerned with developing a way of coding the data in such a way as to make inter-subject and

intra-subject comparisons possible. Gerloff has developed two systems of coding. One system is for categorising the verbalizations into 'processing strategies' and the other for identifying the units for analysis used in translation. The pilot study covers two protocols.

One important finding is that a better translation was produced by the subject who relied more heavily on inferences based on world-knowledge, carried out more intensive processing, and showed a steady and continual effort at accurate comprehension.

The most comprehensive work that has come out of the protocol studies of translation is that of Hans P. Krings. It is a doctoral thesis published in the summer of 1986. To describe the verbalizations recorded in the protocols, Krings uses the concept of translation problem. A translation problem is identified by means of specific indicators in the protocols:

1. an item is pointed out as a problem
2. a dictionary is consulted
3. a gap is left in the translation
4. there is a pause of 3 seconds or more
5. there are paralinguistic indicators (laughs, sighs, mumblings)
6. competitive tentative translation variants are produced
7. the source text is underlined
8. translation principles are discussed
9. immediate equivalent is reported missing
10. negative evaluation is given of produced translation
11. changes are made in the translation manuscript

Krings classifies translation problems into comprehension problems, combined comprehension and production problems, and pure production problems. The translation process is divided into three stages: the preparatory stage, which is before the subject produces the written translation; the writing stage, when the written translation is produced; and the editing stage, when the written product is finalized.

Krings' subjects were university students of French, but their proficiency in French turned out to be inadequate for the task at hand. Moreover, they had no experience in translation into German. In translation from French into German, a great majority of their translation problems were comprehension problems, and more precisely, problems caused by unknown lexical items or idioms in the source text. The subjects' first and foremost strategy in solving comprehension as well as production problems was the use of a bilingual dictionary rather than contextual or extratextual information. Most problems were solved in block, at one time and in one stage of the process. The instructions did not contain a description of the translation assignment, and therefore it was made impossible from the outset for any such problems to emerge which relate to aspects of the translation assignment. Largely because of the experimental design, Krings' study had to confine itself to the description of typically non-professional translation. His method, however, can well be used in professional vs. non-professional comparisons as well. It was used in earlier stages of the present study (see Tirkkonen-Condit 1987), and it is also used, with slight modifications, by Jääskeläinen (1987).

2. The aim and experimental design of the present study

The aim of the present study is to identify the major differences in the processes of translation between professional and non-professional translators, and to identify processes which correlate with successful products. The subjects are students of translation. Of these, the first-year students represent the non-professional group and the fifth-year students the professional group. The pilot study reported here covers three protocols: two first-year protocols and one fifth-year protocol. The translation in the experiment is from English into Finnish. The translation assignment and the source text are given in (1) below:

(1) Translation assignment and source text

Dr. Richard Dawkins' lecture on evolution is introduced on the attached page of the *New Scientist*. The lecture took place on November 2, 1985, in Bloomsbury Science Lecture Theatre, London. It was filmed for TV, and the film was bought by the Finnish Television Company to be shown in a TV series on science during 1986. It is your task to write

an introduction of this programme for the Radio and TV pages of *Helsingin Sanomat*, using the attached introduction as a source text. The maximum length of your introduction may be roughly the same as in the source text.

The subjects had access to dictionaries and they were told that other reference material would be provided if necessary. The time of the experiment was not limited. The three subjects whose protocols were analysed for this pilot study soon got used to talking to the tape, and their performance did not seem to be disturbed by the necessity to think aloud.

In a protocol produced in this way there is a wealth of material, and the analyst must face a choice as to what is included in the analysis. The present study does not classify all the verbalizations as Gerloff (1986) did. It focusses on particular passages in the verbalizations, namely on those passages which suggest that the process is at a decision point, i.e. at a point where a choice is made between alternative ways to carry on the process (cf. Enkvist 1982). The choice may be, for instance, whether to leave a gap or whether to search for an equivalent; whether to omit or include an item; whether to change the linear order or not, etc. Whereas Krings (1986) focusses on what are identified as translation problems in the verbalizations, the present study aims at identifying all the decisions made by the subjects in the course of carrying out the translation assignment, whether they appear as problems in Krings' sense or not. The aim is to look at the number of particular types of decisions as well as their distribution on particular stages of the process. Special attention is paid to decisions relating to the planning of the task. Decision criteria are also looked at, paying attention to whether the decision criteria verbalized by the subjects are mainly linguistic or non-linguistic.

The aim is to test the hypothesis that the professional and non-professional processes might differ most significantly in terms of the decision criteria they use. On the basis of Krings' study it seems that non-professional translators approach the task mainly as a linguistic exercise. As to professional translators, this hypothesis does not get support from existing empirical research. Although Gerloff's subjects were non-professional, the one who produced a better translation was found to rely heavily on inferences based on world-knowledge. In a research project reported by Gibb (1985), professional translators' work was observed and analysed for two

MOLECULE DISCUSSIONS

Evolution Step by Step, or Why we Exist

Richard Dawkins

Bloomsbury Science Lecture Theatre



Discussion
Saturday,
2
November,
at 3.00 pm

We are the most complicated things in the known Universe. We could not possibly have just suddenly sprung into being as the Bible says. Complicated things have to be put together in stages, by slow, gradual degrees. We cannot know what the first creatures looked like, 4000 million years ago. All we can be sure about is that they must have been far simpler than us, simple enough to have arisen by random luck. Then they changed into something a tiny bit different, which changed into something a tiny bit different again, which changed... and so on until they finally changed into us. In his discussion, Dr Dawkins will illustrate the principle of lots of small changes adding up to one big change and this he will do by making weird computer creatures evolve into even weirder computer creatures.

Dr Dawkins teaches zoology at New College, Oxford University. He is the author of *The Selfish Gene* (the subject of a "Horizon" programme on BBC television) and *The Extended Phenotype*. His new book, called *The Blind Watchmaker*, published by Longmans, is coming out next year.

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years to find out what exactly professional translators do and the extent to which their work could be computerized. Only 35% of their work turned out to be such that it could be in principle speeded up by computerization. This work related directly to language and physical text production. The remaining 65% was typically human work which involves human decision-making, i.e. research, planning, evaluation, reviewing, editing. On the basis of this research it would seem that professional translation is a process not very different from an academic writing process as this is described in Hayes and Flower (1980). Professionals bring to the task their world-knowledge and concentrate on those aspects which require a typically human contribution. Moreover, professional translators' proficiency in the working languages is normally so good that the linguistic decisions are made automatically and might not surface in the protocols. According to Ericsson and Simon (1980: 235), automatized processes are not available to conscious analysis and therefore cannot be captured by the protocol. It would seem justified, therefore, to hypothesize that the professional vs. non-professional difference would show in the conscious decision-making in that professionals turn out more 'non-linguistic' decisions, i.e. decisions which are based primarily on other knowledge than the knowledge of the two language systems or the immediate context of the source text. In principle, of course, even those decisions which are based primarily on extralinguistic criteria can become automatic. This will probably be the case if a translator specializes in a particular type of assignment. However, the assignment in the present experiment cannot be expected to be a mere routine task even for the 'professional' subjects.

3. The method

The decisions identified in the protocols are divided into three categories which are labelled planning, monitoring and interpretation. These categories are defined in Table 1, in which some of their main markers are listed as well.

To find out the proportion of non-linguistic decisions in the protocols, each decision is classified on the basis of its decision criteria, in so far as these show in the protocols. If non-linguistic decision criteria can be identified in the protocol, a decision is classified as non-linguistic; if not, it is classified as linguistic. A decision about the placement of an adverb, for instance, may have primarily linguistic criteria, as in example

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1, in which case it is categorised as a linguistic decision. In some instances, such as in example 2, it is not possible to tell on what grounds a decision is made, i.e. whether it is made on linguistic or non-linguistic criteria; these decisions are also classified as linguistic decisions.

Table 1. Decision categories and their markers

Category	Definition	Markers
Planning	Decisions concerning the translation assignment as a whole: decisions as to what the assignment requires, what can be omitted, how the translation will be linearly organised and what stylistic solutions are appropriate.	Reference to the assignment or parallel texts or to some principle which affects the performance.
Monitoring	Decisions concerning the translation of a particular item: choices between competing translation variants; decisions to opt for a temporary solution until a better one comes to mind.	Competitive variants produced; dictionary checks; expressions of uncertainty or a negative evaluation about a variant; a gap in translation; a positive evaluation of a chosen translation variant.
Interpretation	Decisions concerning the interpretation of a particular item or passage in the source text.	Looking up word meanings in a dictionary; wondering if a variant 'makes sense'; negative evaluation of a previous interpretation; verbalisation of eureka.

The extracts from the protocols given in the examples are translated into English. They are originally spoken in Finnish, because Finnish is the mother tongue of the subjects. The Finnish translations produced by the subjects which appear in the extracts have been back-translated as literally as possible. The back-translated passages are in block letters to distinguish them from the rest of the verbalizations. The → in the examples point to the markers of decision. The length of pauses, in seconds, is given in brackets. Underlined pauses are those during which the subject writes the manuscript.

Example 1. A linguistic decision; monitoring; linguistic criteria

WE CANNOT JUST HAVE RISEN (8.0) IN THE BIBLICAL (10.0)
 SORT (5.0) MMM (2.0) OF WAY (5.0) SUDDENLY (2.0)
 → there I must still think about the word order but (2.0)
 roughly the sentence (2.0) hh (1.0) the idea is there

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but the wording is not yet (1.0) necessarily perfect (1.0)

Example 2. A linguistic decision; monitoring; unidentifiable criteria

and then this end which is here == simple enough to have
risen (2.0) by random luck (6.0)
MUST HAVE BEEN MUCH MORE SIMPLE SO THAT (2.0) THEY CAN
HAVE
ARISEN (1.0)
then this (3.0) to have risen (.) arisen by (.) random luck
(3.0)
random means BY CHANCE (.) luck (1.0)
BY CHANCE WITH LUCK (3.0)
→ a dreadful (way to put it) (()) COULD HAVE ARISEN
BY CHANCE no (.) WITH LUCK (10.0)
THAT THEY CAN HAVE ARISEN BY CHANCE (5.0)
perhaps I'll just put it like that (2.0) hh (4.0)

Examples 1 and 2 relate to monitoring, and they are both coded as linguistic decisions. Non-linguistic monitoring decisions are illustrated by example 3; non-linguistic interpretation by example 4, linguistic interpretation by example 5, and non-linguistic planning by examples 6 and 7. All planning decisions in the material are based on non-linguistic criteria.

Example 3. A non-linguistic decision; monitoring

FAR (4.0) SIMPLER (6.0) THAN US (1.0)
yes it is all right to put there HUMAN BEING instead
of here (.)
→ but here I should also put HUMAN BEING because if
one put- says (.) SIMPLER THAN US then perhaps it
er sounds er intellectually and it does not mean
that == it simply refers to their structure (3.0)

Example 4. A non-linguistic decision; interpretation

BY MAKING(.) making (.) by making weird computer
(4.0) DE:VELOPING perhaps (10.0) BY MEANS OF A
COMPUTER (3.0) perhaps (.) no but those (.)
computer creatures (2.0) evolve into (2.0)
→ BY DEVELOPING (2.0) BY MEANS OF A COMPUTER (3.0)
what on earth are computer creatures (.) that
kind of thing does not exist (6.0)
perhaps it means those little creatures that they
now have in all those (4.0) games (1.0) but what
could one call them (2.0) (()) (6.0)
mm (3.0) hh I'm still pondering about those
computer creatures (8.0)
mm (9.0) what about that weird (5.0) STRANGE (.) WEIRD
(36.0)
→ well(.) one does not know of course if it means those
(4.0) or if it means (1.0) computer creatures, in other
words (.) creatures which are computers == no: it

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cannot mean that (4.0) well let's put == COMPUTER
CREATURE creature there (2.0)

Example 5. A linguistic decision ; interpretation; unidentifiable criteria

and this he will do by making weird computer creatures
(1.0) evolve (2.0) into even weirder (.) computer
creatures(2.0)
evolve (4.0) this must be checked (1.0) its meaning
(12.0) (looks up in a dictionary)
cause to unfold, develop (1.0) be developed naturally
and (1.0) gradually (7.0)
yes (.) develop (1.0) a synonym (3.0)

Example 6. A non-linguistic decision; planning

we are the most complicated things in (15.0)
this text is terribly (2.0) terribly spoken-like (2.0)
and in general in hels- hesari (.) on the radio and tv
pages (.) pages they are as if (.) in some way more
personal those texts (.) hh one immediately looks at
the bottom who has written it and (.) then it sounds
(2.0) as if (2.0) he had said it =
= in a way there should in fact be (.) some name (2.0)
(laugh) (7.0) mm (5.0)

Example 7. A non-linguistic decision; planning

I will not mention this publisher at all because it
will probably anyhow, when translated in Finland, be
published by a completely different company so that
it is not important probably (1.0)

In order to follow up the distribution of decisions on the various stages of the translation process, the process is divided into three stages along the lines suggested by Krings (1986). As was mentioned above in section 1, these are the preparatory stage, the writing stage and the editing stage. Each subject's performance is timed so that the use of time can also be included in the comparison. The results of the study are reported in what follows.

4. The results

On the basis of the finalized translations alone it would seem justified to classify the three subjects of the experiment into three categories: professional, semi-professional and non-

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professional.¹ The fifth-year student is, as expected, the professional; one of the first-year students the semi-professional, whereas the other first-year student is the non-professional. As will be shown shortly, some aspects of the processes, as revealed by the protocols, seem to make this cursory division justified.

The distribution of decisions to the various categories is given in Table 2, which shows each of the three subjects' performance separately. The overall number of decisions is highest, 70, in the professional protocol; the semi-professional turns out 53 and the non-professional 58 decisions. The time spent by the professional to carry out the task is 77 minutes, by the semi-professional 86 minutes and by the non-professional 94.5 minutes. The 'intensity' of the process is greatest in the professional, who needs one minute and 6 seconds to make a decision, whereas the semi-professional and the non-professional need one minute and 36 seconds to make a decision. The professional and semi-professional spend about one half of the total time on the writing stage, as against the non-professional, who spends less than one third of the time on the writing stage but more than half of her time on the editing stage. These comparisons reveal some tendencies which may point to systematic differences in professional versus non-professional practices.

The fact that the professional translator makes more decisions in a shorter time, for instance, may be indicative of the professional translators' greater consciousness of the range of choices available in translation. While they are more sensitized to potential problems, they have also developed routines to solve them. More interesting than looking into the global results, however, will be to look at the distribution of decisions to various categories.

¹ It will not be possible to discuss the translations and their evaluation within the scope of this paper. The labels professional, semi-professional and non-professional will be used in the following discussion for convenience of reference rather than as official categorisation of proficiency.

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Table 2. Distribution of decisions to categories and translation stages: professional, semi-professional and non-professional performances

<u>Professional subject</u>					
	Stage	Preparatory	Writing	Editing	Total
Time		6:34	37:34	32:52	77:00
Plan	N	3	4	-	7
	L	-	-	-	-
Mon	N	-	6	9	15
	L	2	20	20	42
Int	N	-	5	1	6
	L	-	-	-	-
Total		5	35	30	70
<u>Semi-professional subject</u>					
	Stage	Preparatory	Writing	Editing	Total
Time		14:12	47:26	24:20	85:58
Plan	N	2	5	5	12
	L	-	-	-	-
Mon	N	-	6	4	10
	L	6	11	6	23
Int	N	-	2	-	2
	L	6	-	-	6
Total		14	24	15	53
<u>Non-professional subject</u>					
	Stage	Preparatory	Writing	Editing	Total
Time		11:07	30:27	52:52	94:26
Plan	N	3	2	3	8
	L	-	-	-	-
Mon	N	1	-	3	4
	L	1	13	21	35
Int	N	-	-	1	1
	L	1	5	4	10
Total		6	20	32	58

Table 2 shows that there are only seven planning decisions in the professional protocol. These appear in the preparatory stage and in the writing stage. Planning for the professional seems to be relatively automatised so that it surfaces in the protocol relatively seldom: it accounts for only 10% of all decisions. In the semi-professional protocol the proportion of planning decisions is quite high, about 22%; in the non-professional protocol the figure is 8 and the proportion 14%. It is perhaps even more significant, however, that whereas in the professional protocol planning appears in the preparatory and writing stages, it appears throughout the semi-professional and non-professional protocols. This indicates a lack of economy in the latter. If, for instance, the omission of a particular item from the translation is decided at the beginning of the process, this saves time and effort at the later stages. In this particular assignment, for instance, a lot of effort was spent by the non-professional subject on the translation of book titles at the early stages, although towards the end she decided not to translate the titles at all.

Another striking difference is in the share of non-linguistic decisions in the category of monitoring. The professional translator has 15 of these as against 10 and 4 for the semi-professional and non-professional translators respectively. This shows that awareness of extralinguistic factors as determinants of specific linguistic choices grows with professionalism.

There is another difference worth mentioning in the distribution of non-linguistic decisions, namely in the interpretation category. The professional subject has 6 instances of non-linguistic interpretation and no instances of linguistic interpretation. For the semi-professional these figures are 2 and 6, and for the non-professional 1 and 10. The professional relies on her encyclopaedic knowledge in solving problems of interpretation, whereas the non-professional tends to approach interpretation as a linguistic task. In the protocols this approach shows in verbalizations such as "this does not sound quite right" or "I must check in the dictionary what this means".

The original hypothesis of this study, i.e. that the role of non-linguistic decisions might grow with professionalism, seems to get support from the results of the pilot study. The overall figure of non-linguistic decisions for the professional is 28 (40%), for the semi-professional 24 (45%) and for the non-professional 13 (22%).

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Translation Assignment in Professional vs. Non-Professional Translation: A Think-Aloud Protocol Study

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In recent years second language research as well as translation theory have started to employ introspective methods in studying language phenomena. Translation as a form of language use has frequently been involved in this type of research, either as the object of study or as the means of eliciting data. The introspective method most often employed in research has been *the method of thinking aloud* where "the subject just lets the thoughts flow verbally without trying to control, direct, or observe them (beyond certain instructions which an outside investigator may have given). Thus think-aloud data are, by their very nature, unanalyzed and without abstraction" (Cohen and Hosenfeld 1981: 286). "The data collected by this method are then transcribed into *protocols* which are a description of the activities, ordered in time, which a subject engages in while performing a task" (Hayes and Flower 1980: 4).

Even though using introspective methods in research is rather a controversial issue, particularly as regards the question of which mental processes are accessible to verbal reports (the arguments put forward by various schools of psychology are briefly summarized in Börsch 1986: 195-200), it is generally agreed that thinking aloud does yield data about the mental processes underlying, for instance, language usage, and that it is particularly suitable for pilot studies and for generating hypotheses (Börsch 1986: 201-202). Now that translation theory is beginning to show interest in what goes on in a translator's mind while he or she is translating, the method of thinking aloud is practically the only way of gaining access to the actual translation process.

The present paper is based on a series of experiments which were carried out at the Savonlinna School of Translation Studies in 1985-1986. In the experiments four students of