



# LUND UNIVERSITY

## InterTran vs SysTran: Evaluation of Two Online Machine Translation Services

Uneson, Marcus

2005

[Link to publication](#)

*Citation for published version (APA):*

Uneson, M. (2005). InterTran vs SysTran: Evaluation of Two Online Machine Translation Services.

*Total number of authors:*

1

### General rights

Unless other specific re-use rights are stated the following general rights apply:

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Read more about Creative commons licenses: <https://creativecommons.org/licenses/>

### Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117  
221 00 Lund  
+46 46-222 00 00

# InterTran vs SysTran: Evaluation of Two Online Machine Translation Services

Marcus Uneson

Dept. of Linguistics, Lund University

May 10, 2005

[REVISED: May 28, 2005: a few typos corrected]

## Abstract

This report describes the results of some simple tests of machine translations between Swedish and German performed by (a free web version of) the InterTran<sup>1</sup> machine translation system from Translation Experts Limited<sup>2</sup>. The system claims to offer support for 30 languages<sup>3</sup>. For a comparison, Swedish-English and German-English translations by Systran<sup>4</sup> were also analysed.

The work was carried out in partial fulfillment of the GSLT course Natural Language Processing, Spring 2005<sup>5</sup> (Assignment 4<sup>6</sup>). The report and associated files are also available on the author's web page<sup>7</sup>.

## Background

### *Machine Translation research*

Machine translation is one of the largest challenges possible for Computational Linguistics (as well as one of the oldest). The ever-present ambiguities on all linguistic levels and the enormous difficulties in quantifying and formalizing background knowledge and message context in both source and target language are indeed daunting. As whether they are insurmountable or not, only time will tell. Hutchins (2003) argues that after substantial improvements from the 50's to the 80's, the improvements are much less obvious in the last 20 years (disregarding details

of pure convenience, such as speed and nicer interfaces). In some cases, Hutchins argues, progress can even be questioned.

### *Machine Translation on and for the Web*

Hutchins' article refer to state-of-the-art, or something close to it. There are niches which (at least so far) have demonstrated lesser needs. With the rise of the web, online translation services have grown popular. Such services need to be lightweight and reasonably fast. Similarly, automatized translation may be attractive for a large and fast changing commercial web site. Under such circumstances, precision will not have highest priority.

This point of view often conflicts with that of the research world, where time, memory, and processing capacity is often sacrificed for performance. Presently, there seems to be a vast space in performance between research and public systems.

## The present study

### *Purpose*

The purpose of this study was to get an idea of the current state of some freely available, web-based machine translation service involving Swedish as either source or target language. If possible, I wanted to avoid having English as the other half of the pair; the world's research in theoretical and computational linguistics are enough centered on English anyway. To this end, I chose German, which spots several interesting and challenging traits absent in English, with Swedish-English as a backup.

### *Method*

There are several free online translation services on the web. As expected, however, very few handle Swedish when paired with something else than English. In fact, the choice of InterTran was rather forced<sup>8</sup>. For a comparison, I tried Systran 5.0 on Swedish – English and German – English. Both offer copy-and-paste interfaces; Systran can also translate submitted URLs.

### *Test data*

For test data, I hand-crafted a number sentences (about 40, or 75 counting variations; see Appendices

1 <http://www.tranexp.com:2000/Translate/result.shtml>

2 <http://www.tranexp.com/>

3 It should be taken to the record that this and most other claims on behalf of InterTran are entirely unjustified; in fact, as we will see, the program seems completely useless for practical purposes.

4 <http://www.systransoft.com/index.html>

5 [http://www.ling.su.se/dali/education/courses/ngslt\\_nlp05/index.html](http://www.ling.su.se/dali/education/courses/ngslt_nlp05/index.html)

6 [http://www.ling.su.se/dali/education/courses/ngslt\\_nlp05/Pragmatic\\_sNLP12005.doc](http://www.ling.su.se/dali/education/courses/ngslt_nlp05/Pragmatic_sNLP12005.doc)

7 <http://www.ling.lu.se/persons/Marcusu/hlt/courses/gslt-nlp.html>

8 Judging from numerous links which no longer point to actual services, but rather to companies which sell related software, it might be that many free automatic translation services have disappeared relatively recently – if out of commercial instinct of self-preservation or much needed self-criticism, I cannot tell.

A and B) to reflect particular constructions that contrast in Swedish and German. Some of the most important differences may be mentioned: Swedish has two genders, two cases, and SVO as (unmarked) word order; no verbal agreement; adjectival agreement for number, definiteness, gender in both predicative and attributive position. German, on the other hand, has three genders; four cases; SVO in main clauses but SOV in subordinate clauses; verbal agreement; adjectival agreement in attributive but not in predicative position. I also included tests of some classical, less language-specific MT problems, such as anaphora resolution, nominal compounds, proper nouns, homonyms, non-compositional semantics, and puns.

The sentences were then translated into German (with some help from a native speaker), excepting some puns and idioms.

The original Swedish sentences were then submitted to InterTran (for translation into German) and SysTran (English), and the German ones similarly (for translation into Swedish and English, respectively).

### Results: InterTran

InterTran's translations are given in Appendix A. The columns are, from left to right: sentence ID; informal classification of construction; the Swedish original; the InterTran translation into German; a human translation into German; and the InterTran translation back into Swedish of that translation.

Even from a very brief inspection, it is clear that I should have picked another language pair, or another service provider, or (quite possibly) both. The translations, in both directions, are too inferior to be judged. Out of the Swedish translations, the following four sentences, albeit horribly ungrammatical, are close to making some sense.

- (8) min bror och jag har en Fahrradgeschäft.
- (10) klass kommer idag inte.
- (23b) jag skal i tre sekunden gå.
- (28) den här konstruktion er till jag okänd.

The remaining 68 sentences are incomprehensible, more in style of (5, 6):

- (5): i morgon köra med klampen i bann av oss inne om trä.
- (6): varken tenn stilla bristen jag till du den utställning!

The German equivalents are just as bad. It is clear that the test sentences miss the target by light years. Probing some more basic details reveals some amazing weaknesses (Table 1).

Jag ser dig.	Ich sehe sich.
Du ser mig.	Yous bin sehend mich.
Vi ser honom.	Wes bin sehend ihm.
Han ser oss.	Er bin sehend uns.
Ni ser henne.	Yous bin sehend ihres.
De ser den.	Sie bin sehend die.
Den ser det	Die bin sehend die.

Table 1. Illustrating InterTran's idea about Swedish-German pronominal system equivalents.

The left-hand columns have a suspiciously familiar ring of atrocious word-for-word translations from English to German (*er bin sehend uns* 'he is seeing us'). It turns out (see Table 2) that InterTran's idea about Machine Translation between language X and Y is to perform a word-for-word translation from X to English, and then another word-for-word translation from the resulting atrocity into Y. Non-English symbols (such as Swedish and German Äöä, Swedish Åå) are apparently approximated with their closest match in the English alphabet before doing any lookups.

Source	Via	Target
Alla vägar bär till Rom.	All scales bear to Roe.	Alle Waage ertragen zu Rogen.
Ich erlaube mir einen kleinen Ausflug.	self permits to me a peeweess excursion.	jag tillåtelsen till jag en peeweess utflykten.

Table 2. Illustrating the basic idea behind InterTran's revolutionary multilingual architecture. Note 'scales' which is a word-for-word translation of *vågar*, not of *vägar* 'roads/ways'. To some software authors, they look alike.

Given this, there is really no point in thinking about any laboriously produced test data. How can such completely useless products have a market? I understand that a company generally don't want to compete with itself by putting all the services that it wishes to sell freely available on the web; but it is not clear to me that putting a worthless service up will attract any buyers of the real thing. Maybe Intertran is better as independent product (priced from \$999) than as web service (presumably it is, the contrary would be rather scary). I don't know if it is, and after having tried the web version I certainly don't want to find out.<sup>9</sup>

<sup>9</sup> Quoting tranexps web site, [www.tranexp.com](http://www.tranexp.com), Intertran

Can save your company huge costs of continually translating pages that you might be updating in your native language on a daily, weekly or monthly basis. Each time your company makes a change to your web pages they might have to be translated again in all the languages that your pages are displayed in.

## Results: Systran

After this experience, it is only with moderate expectations I went on to the Swedish-English and German-English translations by Systran 5.0. They are given in Appendix B. The doubts were unfair, however. Systran certainly commits many mistakes; only two or three of the Swedish translations could be regarded as perfect (somewhat more for German). However, it outperforms Intertran by magnitudes, and most translations are understandable, at least partly.

The following error exposé is loosely based on Hutchins (2003). The division is rather arbitrarily made from a practical perspective motivated by the questions arising when translating between Swedish, English, and German (just like Hutchins' is for English, French, German, and Russian). The list certainly does not aim to be systematic, complete, or else to imply that all problems grouped together should be solved by one particular method.

### Nominal compounds

Systran apparently does some attempts of parsing compounds, extremely important for both Swedish and German. Where no parse can be found, the original word is output. *Toalettpappershållare* (s1<sup>10</sup>) could conceivably be included in a (very) large lexicon. However, *ståthållaren* (s3) must have been parsed (successfully, but incorrect, as it happens—had it been correct, we wouldn't have known if it was found in the lexicon or not) as a compound. Note also the reasonable 'cell friend' for *cellkamrat*.

Det fanns inga toalettpappershållare i toalettpappershållarlådan.	The existed no toilet paper fasteners in toalettpappershållarlådan.
Glassförsäljarkonsortiet hade värmeböljemöte.	Glassförsäljarkonsortiet had värmeböljemöte.
Ståthållaren tilldelade fången, som var en orakad, äldre man, en cellkamrat.	The pomp retainer allocated captive, that where an unshaved, older man, a cell friend.

### Proper nouns

- It will translate your web pages on-the-fly regardless of how many changes/updates have been made. This way you can keep all the different language versions of your web pages continuously updated and correct...
  - Supported languages: Albanian, Arabic, Bosnian, Brazilian Portuguese, Bulgarian, Chinese, Croatian, Czech, Danish, Dutch, English, European Portuguese, Filipino/Philippino/Tagalog, Finnish, Flemish, French, German, Greek, Hindi, Hungarian, Icelandic, Italian, Japanese, Korean, Latin, Latin American Spanish, Norwegian, Old Church Slavonic, Polish, Rumanian/Romanian, Russian, Serbian (Latin script), Serbian (Cyrillic script), Slovenian, Spanish, Swedish, Turkish, Ukrainian, Vietnamese and Welsh.
  - Price: starts at US\$ 995
- 10 Here and in the following, s1, s2 etc. refer to the first, second etc. sentence in the corresponding table of examples (usually below).

Systran has fits with proper nouns which happen to coincide with common nouns, such as *Anders* (also German 'differently') and *Sten* (also Swedish 'stone'). *Sten* is not a noun in German, however, and it is correctly identified as a proper noun in s2.

Truckförare Sten Persson har köpt ett lantställe.	Forklift driver stone Persson have bought a place in the country.
Gabelstaplerföhrer Sten Persson hat ein Ferienhaus gekauft.	Fork-lift truck driver Sten Persson bought a holiday house.
Anders hat sich um den Tisch gekümmert. Den hatten seinen Eltern bestellt.	Differently about the table worried. That its parents had arranged.

### Pronouns

Translating German, Systran finds it difficult to interpret pronouns to unspecified subjects, even when animate:

Ich kann seine Handschrift nicht lesen.	I cannot read its handwriting.
Sie nahm ihr Auto aus dem Garage und brachte es zur Werkstatt.	It took its car from that to garage and brought it to the workshop.

This seems to be a major challenge, warranting a somewhat wider context analysis.

For Swedish, on the other hand, pronouns are frequently and rather surprisingly translated into article without following noun. Even more surprisingly, that is true also for formal subjects to the common but few weather verbs (s2). Both of these deficiencies seem rather easy to remedy.

Anders tog hand om bordet. Det hade hans föräldrar köpt.	Anders took hand about the table. The had his parents bought.
Anders tog hand om bordet. Det hade regnat hela dagen.	Anders took hand about the table. The had rained the whole day.

### Articles

Systran can render easier instances of differing article usage fine. A typical example:

Er ist Doktor.	He is a doctor.
----------------	-----------------

### Case

German has four cases, governed mainly by syntactic function, by preposition, or by verb. Systran handles at least easier constructions perfectly, including word order manipulations:

Der Hund hat mir einen Knochen gebracht.	The dog brought me a bone.
Dem Hund habe ich einen Knochen gebracht.	I brought a bone to the dog.

### Word order: verb-final constructions

German word order is very different from both English and Swedish, in particular regarding verbs. In more complex clauses (and some not so complex —cf. s2), Systran has difficulties in rearranging it:

Um zur Hütte zu kommen mussten wir über ein weitgestrecktes Feld, durch einen dunklen Wald und entlang zweier schönen Wege.	Over to the hut to come we had over a far-stretched field, by a dark forest and along two beautiful way.
Lasst uns den alten Mann überfallen.	Let us the old man attack.

However, less involved constructions are dealt with fine:

Niemand wusste, dass sie schon gekommen waren.	Nobody knew that they had already come.
Ich kann seine Handschrift nicht lesen.	I cannot read its handwriting.

### Agreement

Agreement in the nominal phrase is more of an issue when translating from English to Swedish or German than the other way round. Agreement between subject and verb, however, is an obvious concern also when translating into English. The translations from German are mostly good in this respect (s4 is an exception), whereas those from Swedish (s1-3) may exhibit very strange errors:

Ingen visste att de redan hade kommit.	No knew that the already had come.
Har ni köpt ny bil?	Has you bought new car?
Jag tänker på dig, drömmer om dig, längtar efter dig.	I intend on yourself, dreams about yourself, longs for after yourself.
Habt ihr ein neues Auto gekauft?	Her a new car bought?

### Adverb formation

Adverb formation with -ly is a productive process in English; sometimes Systran is just to productive in using it:

Jag kommer att ha pratat klart om tre sekunder.	I have spoken clearly about three seconds.
---	--

This kind of error should be relatively easy to remedy.

### Prepositions

Prepositions are particularly difficult for second language learners. When used in non-literal sense, the choice between different candidate prepositions often seem arbitrary. For MT systems, a choice must often be made between either interpreting the preposition literally; or assuming that it is governed by some lexical head, which then perhaps must be identified by an (error-prone) parse. The result may be an incorrect choice (s1, s3), or an incorrect deletion, or an incorrect insertion, or an incorrect retaining (s4), or an incorrect non-insertion (s2) of a preposition. Still, I am surprised to find that an undivided, common, typical phrases such as Swedish *stolt över*, German *stolz auf* both are rendered incorrectly (s1, s3).

Jag är stolt över dig och gläds åt dina ord.	I am proud over you and is made happy to your words.
Ich erlaube mir einen kleinen Ausflug.	I take the liberty a small trip.
Ich bin stolz auf dich und freue mich auf deine Worte.	I am proud on you and look forward to your words.
Jag har bott här i 30 år nu.	I have lived here in 30 years now.

### Auxiliary verbs

Swedish and English mostly follow each other in the choice of auxiliary verbs. German typically uses *sein* rather than *haben* for building the perfect out of movement verbs. Systran catches this:

Niemand wusste, dass sie schon gekommen waren.	Nobody knew that they had already come.
--	---

### Tense and voice

Tenses mostly coincide in Swedish and English. German exhibits a few deviations; in particular, it often uses the perfect as just a colloquial variation of the preterite. Systran chooses 'bought' rather than 'has bought' in s2 under "Agreement" above (and let's pretend it has done so by successful rather than unsuccessful analysis). An uncaught exception is seen below:

Ich wohne schon 30 jahre hier.	I live already 30 years here
--------------------------------	------------------------------

Systran also recognizes active and passive constructions, even though the naturalness of the word order may suffer:

Jag tillåts kanske en mindre utvikning.	I am permitted perhaps a smaller utvikning.
Mir wird vielleicht einen kleinen Ausflug erlaubt.	Perhaps one permits to me a small trip.

### Complex clauses

It is very easy to confuse an MT system. Clauses with sufficiently complex structure will not be parsed correctly; if so, the system may easily lose track completely. The output will often be completely bogus:

Det med ett avlångt, gummiklätt handtag försedda verktyget upphittades på busstationen i morse.	The with an oblong, old lady dressed in handholds the provided tool found on the mischief station this morning.
---	---

Note the compound *busstationen* 'the bus station', which is interpreted as *bus-stationen* 'the mischief station' – incorrect, but again illustrating productive compound parsing.

### Systran on coherent text

I also tested Systran on a short piece of coherent text – an excerpt from the novel *En kakelsättares eftermiddag* by the Swedish author Lars Gustafsson, and the human-made German translation of the same book, *Nachmittag eines Fliesenlegers*. Both texts were translated into English by Systran. The results are given in Appendix C. I won't comment the translations further here; they contain few problems which have not already been exemplified. However, in a connected text, the impression that the translation from German is superior to that from Swedish grows even stronger.

### Summary

I found Systran rather impressing for German-English translation (especially in comparison to InterTran). It understands cases rather well and attempts boldly to reparse German word order. The unfortunate tendency to render animate subjects with 'it' could perhaps be attacked with WSD methods.

The Swedish system still lags behind, its performance being severely hampered by mistaking articles for pronouns and bad verbal agreement.

### Short note on MT evaluation measures

There is no accepted metric for overall evaluation of MT systems. The difficulty of the task varies enormously, and it is unclear (to say the least) how one type of error should be evaluated in comparison to another. Most evaluation will end up with something like cost-efficiency, which I think should not be confused with evaluation from a scientific perspective (for instance, today's translation helps are likely to be much more cost-efficient simply because they have more intuitive user interfaces and

run on faster computers. But that shouldn't influence the objective measure of the translation quality itself).

As an example of how badly some metric would be needed, one may mention Sigurd's (2002) suggestion that the following formula be used for quantifying the benefit of Machine Translation.

$$Q = 100 - E^2$$

Q is supposedly 'quality' as a percentage; E is number of errors per 100 words (definition of error to be provided). Unfortunately, this is rather contentless (even if we could define error in some sensible way). What would a negative value of Q mean, and why is E squared and not raised to ½ or 3? In my opinion is the formula an unfortunate attempt to place the statement "10 errors or more per 100 words make a translation useless" in a pseudo-mathematical context where it does not belong. In fact, the formula hurts more than it helps – the formula-less statement does not convey any false ideas about precision.

### Conclusion

It seems there are currently very few online systems offering translations between non-English languages. For Swedish, there is almost none. In this vacuum, there is apparently place for absolutely useless products such as (the web version of) InterTran, which is really too inferior to be evaluated.

By contrast, MT services between English and other languages are easier to find. The Systran system offers reasonably good translations between German and English. Swedish lags behind, but it does have a practical value.

### References

- Hutchins, J. 2003. "Has Machine Translation improved?" [Expanded version of a] Paper presented at MT Summit IX: Proceedings of the Ninth Machine Translation Summit, New Orleans, USA, September 23-27, 2003, 181-188
- Sigurd, Bengt. 2002. Machine Translation. In Strömquist, Sven (Ed.) *The diversity of languages and language learning*. Lund University, Centre for languages and literature.

## APPENDIX A. InterTran translations

ID	Construction	Swedish original	MT Swe -> Ger	Human Swe->Ger	MT Ger -> Swe
1a	anaphora: event-reference	Anders tog hand om bordet. Det hade hans föräldrar beordrat.	Anden sich befassen mit Arbeitskraft falls sollte. Die hatte sein Waisenkind Verordnung.	Anders hat sich om den Tisch gekümmert. Das hatten seinen Eltern veranlasst.	självaste har sig själv om den på bord gekümmert. den har dess förälder orsak.
1b	anaphora: object- reference	Anders tog hand om bordet. Det hade hans föräldrar köpt.	Anden sich befassen mit Arbeitskraft falls sollte. Die hatte sein Waisenkind gekauft.	Anders hat sich om den Tisch gekümmert. Den hatten seinen Eltern bestellt.	självaste har sig själv om den på bord gekümmert. den har dess förälder bespeaks.
1c	anaphora: no reference	Anders tog hand om bordet. Det hade regnat hela dagen.	Anden sich befassen mit Arbeitskraft falls sollte. Die hatte regnen heilen label.	Anders hat sich om den Tisch gekümmert. Es hatte den ganzen Tag geregnet.	självaste har sig själv om den på bord gekümmert. den har den helhet dag organisera.
2a	anaphora resolution	Hon hämtade sin bil ur garaget och lämnade in den på verkstad.	Sie war reizend sein Auto ab Autowerkstatt und war liefernd am fort Laden.	Sie nahm ihr Auto aus dem Garage und brachte es zur Werkstatt.	hon tog din bila - bil utrustningen den garage och brak den till verkstaden.
2b	anaphora resolution	Hon hämtade hennes bil ur garaget och lämnade in den på verkstad.	Sie war reizend ihres Auto ab Autowerkstatt und war liefernd am fort Laden.	Sie nahm ihr Auto aus dem Garage und brachte es zur Werkstatt.	hon tog din bila - bil utrustningen den garage och brak den till verkstaden.
3	word order: non-typical verb-initial	Är det långt mellan måltiderna så är det desto kortare mellan rasterna.	Ist die entfernt inmitten måltiderna so ist die desto kürzen inmitten rasterna.	Ist es lang zwischen den Mahlzeiten, so ist es ja um so kürzer zwischen den Pausen.	er den lång bland den målen , så er den ja så mycket den bättre kortfattade bland brytarna.
4	word order, subordinate clause	Ingen visste att de redan hade kommit.	Kein allerdings jene Sie bereits hatte Ausschluß.	Niemand wusste, dass sie schon gekommen waren.	ingen wusste , den samma hon redan komma varor.
5	word order, V2	Imorgon far vi alla ut i skogen.	Imorgon Patres wir alle hinein Forst.	Morgen fahren wir alle in den Wald.	i morgon köra med klampen i bann av oss inne om trä.
6	word order: coordination	Jag varken kan eller vill visa dig det!	Selbst keiner fähig ors werden bekunden sich die!	Weder kann noch will ich dir das zeigen!	varken tenn stilla bristen jag till du den utställning!
7	word order: inversed predicative	Intimt förknippad med hans framgångar hos kvinnor är hans omätliga förmögenhet.	Andeuten förknippad mit sein Erfolg mit Frau ist sein unerzählt Vermögen.	Eng verbunden mit seinem Erfolg bei Frauen ist sein enormes Vermögen.	smal ledsagaren dess framgång omkring signoras er enorm rikedom.
8	word order: non-typical modifier placement	Bror min och jag hade en cykelaffär.	Bruder abbauen und Selbst hatte ein cykelaffär.	Mein Bruder und ich hatten ein Fahrradgeschäft.	min bror och jag har en Fahrradgeschäft.
9	word order: negation	Jag kan inte läsa hans handstil.	Selbst fähig nots liest sein Handschrift.	Ich kann seine Handschrift nicht lesen.	jag tenn hans handstil inte läsande.

ID	Construction	Swedish original	MT Swe -> Ger	Human Swe->Ger	MT Ger -> Swe
10	word order: negation	Klas kommer inte idag.	Anhäufen bin nicht eintreffend noch heute.	Klas kommt heute nicht.	klass kommer idag inte.
11	word order: complex prenominal modifiers	Det med ett avlångt, gummiklätt handtag förseddade verktyget upphittades på busstationen i morse.	Die am ein avlångt gummiklätt Butte Hochstapelei Rüstzeug upphittades fort busstationen in morse.		
12	agreement: noun phrase	För att komma fram till stugan var vi tvungna att vandra över ett vidsträckt fält, genom en mörk skog och längs två vackra vägar.	Danach ausdünsten zu Bauernhäuser jeden wes zwang jene abwandern über man riesig Acker , pro ein dunkel Forst und einher zwei ansehnlich Waage.	Um zur Hütte zu kommen mussten wir über ein weitgestrecktes Feld, durch einen dunklen Wald und entlang zweier schönen Wege.	omkring till hytt till komme muslin vi över en weitgestrecktes fält , vid en mörker trä och längs två slagen av ringklocka smal väg.
13a	agreement: subject; article	Har du köpt ny bil?	Bekommen Sie gekauft dreist Auto?	Hast du ein neues Auto gekauft?	vill du har en ny bila - bil köpa?
13b	agreement: subject; article	Har hon köpt ny bil?	Hat Sie gekauft dreist Auto?	Hat sie ein neues Auto gekauft?	har hon en ny bila - bil köpa?
13c	agreement: subject; article	Har ni köpt ny bil?	Hatte yous gekauft dreist Auto?	Habt ihr ein neues Auto gekauft?	har din en ny bila - bil köpa?
14	preposition	Vi har levt i och av skogen hela vårt liv.	Wir haben levt in und über Forst heilen Warze Leben.	Wir haben unser ganzes Leben vom und im Wald gelebt.	vi har vår helhet liv från och inne om trä gelé.
15	preposition	Jag tänker på dig, drömmer om dig, längtar efter dig.	Selbst bin erachtend sich , Traum falls sich , sich sehnen dahinter sich.	Ich denke an dich, träume von dir, sehne mich nach dir.	jag tänka på thee , drömmarna av till du sinew jag efter till du.
16	preposition	Jag är stolt över dig och gläds åt dina ord.	Selbst ist stolz sich und bin erfreulich aß dina Text.	Ich bin stolz auf dich und freue mich auf deine Worte.	JAG er stolthet på thee och er glad på din orden.
17	preposition vs particle	Vi gick ut ur huset, nedför trappan och in i skogen därborta.	Wes war erlöschend ab anpassen , nach unten und hinein Forst därborta.	Wir sind aus dem Haus, die Treppe hinunter und in den Wald dort drüben gegangen.	vi er utrustningen husen , trappan ned och inne om trä över där bort.
18a	preposition vs particle	Vad talade du om med henne?	Welches sprichst yous falls mit ihres?	Worüber hast du mit ihr gesprochen?	över vilken vill du har på din talat?
18b	preposition vs particle	Vad talade du om för henne?	Welches sprichst yous falls als ihres?	Was hast du ihr erzählt?	vad vill du göra har din talat?
19a	voice/deponentia	Låt oss hoppa på den gamle mannen.	Weise uns Hoffe jene die alt Menschen.	Lasst uns den alten Mann überfallen.	låta oss den forntida besätta anfalla.
19b	voice/deponentia	Låt oss hoppas på den gamle mannen.	Weise uns Hoffe zur alt Menschen.	Lasst uns auf den alten Mann hoffen.	låta oss på det forntida besätta hoppas.
20a	voice/deponentia	Jag tillåter mig en mindre utvikning.	Selbst bin zugebend mich ein geringer utvikning.	Ich erlaube mir einen kleinen Ausflug.	jag tillåtelsen till jag en peewees utflykten.



ID	Construction	Swedish original	MT Swe -> Ger	Human Swe->Ger	MT Ger -> Swe
20b	voice/deponentia	Jag tillåts kanske en mindre utvikning.	Selbst erlaubt vielleicht ein geringer utvikning.	Mir wird vielleicht einen kleinen Ausflug erlaubt.	till jag blir kanske en peeweess utflykten tillåten.
20c	voice/deponentia	Må jag tillåtas en mindre utvikning.	Sein begrenzen zu Selbst einräumen ein geringer utvikning.	Man erlaube mir einen kleinen Ausflug.	en tillåtelsen till jag en peeweess utflykten.
21	nominal compounds	Det fanns inga toalettpappershållare i toalettpappershållarlådan.	Die fädelte inga toalettpappershållare in toalettpappershållarlådan.		
22	nominal compounds	Glassförsäljarkonsortiet hade värmeböljemöte.	Glassförsäljarkonsortiet hatte värmeböljemöte.		
23a	tense	Jag kommer att ha pratat klart om tre sekunder.	Selbst Wille hatte Geplauder deutlich falls drei sec.	Ich werde in drei Sekunden gefahren sein.	jag skal i tre sekunder fara varelse.
23b	tense	Jag kommer att sluta prata om tre sekunder.	Selbst Wille aufhören Geplauder falls drei sec.	Ich werde in drei Sekunden fahren.	jag skal i tre sekunder gå.
23c	tense	Jag ska sluta prata om tre sekunder.	Selbst ska aufhören Geplauder falls drei sec.	Ich will in drei Sekunden fahren.	jag bristen i tre sekunder gå.
23d	tense	Jag slutar prata om tre sekunder.	Selbst einstellen Geplauder falls drei sec.	Ich fahre in drei Sekunden.	jag resa inne tre sekunder.
24	tense	Jag har bott här i 30 år nu.	Ich habe Boden hier in 30 Jahreszahl nun jetzt.	Ich wohne schon 30 jahre hier.	jag levande redan 30 åren här.
25a	proper nouns	Truckförare Sten Persson har köpt ett lantställe.	Truckförare Steinigen Persisch hatte gekauft man Grundbesitz.	Gabelstaplerfahrer Sten Persson hat ein Ferienhaus gekauft.	Gabelstaplerfahrer skrida Per har en Ferienhaus köpa.
25b	proper nouns	Sten Persson har köpt ett lantställe.	Steinigen Persisch hatte gekauft man Grundbesitz.	Sten Persson hat ein Ferienhaus gekauft.	skrida Per har en Ferienhaus köpa.
25c	proper nouns	Sten har köpt ett lantställe.	Steinigen hatte gekauft man Grundbesitz.	Sten hat ein Ferienhaus gekauft.	skrida har en Ferienhaus köpa.
26a	case	Ståthållaren, en orakad, äldre man, tilldelade fången en cellkamrat.	Ståthållaren , ein Orakel , greisenhaft Ehemann , war zuteilend Verhaftete ein cellkamrat.	Der Statthalter, ein unrasierter, älterer Mann, hat dem Gefangenen einen Mitinsassen zugeteilt.	den guvernör , en unshaved , äldre besätta , har den fånge en Mitinsassen fördelat.
26b	case	Ståthållaren tilldelade fången, en orakad, äldre man, en cellkamrat.	Ståthållaren war zuteilend Verhaftete , ein Orakel , greisenhaft Ehemann , ein cellkamrat.	Der Statthalter hat dem Gefangenen, einem unrasierten, älteren Mann, einen Mitinsassen zugeteilt.	den guvernör har den fånge , en unshaved , äldre besätta , en Mitinsassen fördelat.
26c	case	Ståthållaren tilldelade fången en cellkamrat, en orakad, äldre man.	Ståthållaren war zuteilend Verhaftete ein cellkamrat, ein Orakel , greisenhaft Ehemann.	Der Statthalter hat dem Gefangenen einen Mitinsassen, einen unrasierten, älteren Mann, zugeteilt.	den guvernör har den fånge en Mitinsassen , en unshaved , äldre besätta , fördelat.
26d	case	Ståthållaren, som var en orakad, äldre man, tilldelade fången en cellkamrat.	Ståthållaren , als jeden ein Orakel , greisenhaft Ehemann , war zuteilend Verhaftete ein cellkamrat.	Der Statthalter, der ein unrasierter, älterer Mann war, hat dem Gefangenen einen Mitinsassen zugeteilt.	den guvernör , den en unshaved , äldre besätta var , har den fånge en Mitinsassen fördelat.

ID	Construction	Swedish original	MT Swe -> Ger	Human Swe->Ger	MT Ger -> Swe
26e	case	Ståthållaren tilldelade fången, som var en orakad, äldre man, en cellkamrat.	Ståthållaren war zuteilend Verhaftete , als jeden ein Orakel , greisenhaft Ehemann , ein cellkamrat.	Der Statthalter hat dem Gefangenen, der ein unrasierter, älterer Mann war, einen Mitinsassen zugeteilt.	den guvernör har den fånge , den en unshaved , äldre besätta var , en Mitinsassen fördelat.
26f	case	Ståthållaren tilldelade fången en cellkamrat, som var en orakad, äldre man.	Ståthållaren war zuteilend Verhaftete ein cellkamrat , als jeden ein Orakel , greisenhaft Ehemann.	Der Statthalter hat dem Gefangenen einen Mitinsassen, der ein unrasierter, älterer Mann war, zugeteilt.	den guvernör har den fånge en Mitinsassen , den en unshaved , äldre besätta var , fördelat.
27a	case	Hunden gav mig ett ben.	Hund gab mich man Bein.	Der Hund hat mir einen Knochen gebracht.	hunden har till jag en bena brak.
27b	case	Hunden gav jag ett ben.	Hund gab Selbst man Bein.	Dem Hund habe ich einen Knochen gebracht.	hunden egendom jag en bena brak.
27c	case	Hunden gav Martin ett ben.	Hund gab Martini man Bein.	Der Hund hat Martin einen Knochen gebracht.	hunden har martini en bena brak.
27d	case	Hunden gav Martin ett bett.	Hund gab Martini man besser.	Dem Hund hat Martin einen Knochen gebracht.	hunden har martini en bena brak.
28	case	Denna konstruktion är mig obekant.	Jene Bau ist mich sonderbar.	Diese Konstruktion ist mir unbekannt.	den här konstruktion er till jag okänd.
29a	case	Mina vänner vill jag gärna bjuda!	Sich erinnern Freunde werden Selbst Tat Bieter!	Meine Freunde will ich gern einladen!	min pojkvän bristen jag villigt inbjuda!
29b	case	Mina vänner följer jag gärna!	Sich erinnern Freunde bin das Folgende Selbst Tat!	Meinen Freunden folge ich gern!	tänka pojkvän serie jag villigt!
30a	time	På lördag åker vi till Sydpolen.	Fort Sonnabend Acker wes zu Antarktis.	Am Samstag fahren wir zum Südpol.	på det Lördagen gå vi till Söder Påle.
30b	time	I lördags var vi i Schweiz.	IN Sonnabend jeden wes in Schweiz.	Am Samstag waren wir in der Schweiz.	på det Lördagen varor vi nära vid Schweiz.
30c	time	Ikväll ska vi åka till USA.	Ikväll ska wes reisen zu Amerika.	Heute abend fahren wir in die USA.	den här kväll gå vi inne om USA.
31a	time	Till julen åker han ändå hem, för barnens skull.	Zu Christfest Acker er noch Heim , als Kinder seinetwegen.	An Weihnachten fährt er sowieso nach Hause, wegen der Kinder.	i julen kärren han på något sätt hem , på grund av barnen.
31b	time	I julas åkte han ändå hem, för barnens skull.	IN Weihnachtsabend åkte er noch Heim , als Kinder seinetwegen.	An Weihnachten ist er sowieso nach Hause gefahren, wegen der Kinder.	i julen er han på något sätt hem fara , på grund av barnen.
32a	non-compositional semantics: idioms	Sören tog hem spelet.	Sören sich befassen mit Heim beherzt.		

ID	Construction	Swedish original	MT Swe -> Ger	Human Swe->Ger	MT Ger -> Swe
32b	non-compositional semantics: idioms	Östen tog hem igelkotten.	Ost sich befassen mit Heim igelkotten.		
33	homonymy, polysemy	Kan man trappa upp en visa, eller visa ut en trappa?	Fähig Ehemann eskalieren ein bekunden ors bekunden raus ein Stufe?		
34	homonymy, polysemy	Eva satt på en spann och spann.	Eva saßt fort ein Kübel und Kübel.		
35a	homonymy, polysemy	Han kastade upp bollen på trappan.	Er war ablegen rauf Barkasse fort Treppenhaus.		
35b	homonymy, polysemy	Han kastade upp på trappan.	Er war ablegen rauf fort Treppenhaus.		
36	homonymy, polysemy	Han har spelat sax hela sitt liv.	Er hat Akt Schere heilen sitzt Leben.		
37	garden path sentences	När pappa fiskar stör piper Putte.	Wenn Papsttümer Angler bin beunruhigend Röhren Wattieren.		
38	homonymy, polysemy	Bokens blad gulnar mot hösten.	Buche Blatt gulnar Anti- Herbst.		
39	homonymy, polysemy	Var var det var?	Jeden ist jene alle jeden?		
40	garden path sentences	Få kor får får; många får kalvar.	Umfrage Chor Schaf Schaf ; manche Schaf Kalb.		
41	non-compositional semantics: puns	Bättre en ryggsäck på magen än en magsäck på ryggen.	Besser ein rücken schwimmen fort Leib denn ein Magen fort Rücken.		
42	non-compositional semantics: puns	En person som sjunger så att han blir blå kallar vi blåsångare.	Einer als bin singend so daß er bin kleidsam blau bin Namensvegebung wes blåsångare.		
43	non-compositional semantics (sentence level): puns	Från kanslist till kantlist är det en bit.	Ab kanslist zu kantlist ist die ein verschrotten.		

## APPENDIX B. SysTran sentence translations

ID	Construction	Swedish	Systran 5.0 MT Swe -> Eng	Human Swe -> Ger	Systran MT Ger -> Eng
1a	anaphora: event-reference	Anders tog hand om bordet. Det hade hans föräldrar beordrat.	Anders took hand about the table. The had his parents instructed.	Anders hat sich um den Tisch gekümmert. Das hatten seinen Eltern veranlasst.	Differently about the table worried. That its parents had arranged.
1b	anaphora: object-reference	Anders tog hand om bordet. Det hade hans föräldrar köpt.	Anders took hand about the table. The had his parents bought.	Anders hat sich um den Tisch gekümmert. Den hatten seinen Eltern bestellt.	Differently about the table worried. That its parents had ordered.
1c	anaphora: no reference	Anders tog hand om bordet. Det hade regnat hela dagen.	Anders took hand about the table. The had rained the whole day.	Anders hat sich um den Tisch gekümmert. Es hatte den ganzen Tag geregnet.	Differently about the table worried. It had rained all day long.
2a	anaphora resolution	Hon hämtade sin bil ur garaget och lämnade in den på verkstad.	She retrieved her automotive from the garage and left in the on workshop.	Sie nahm ihr Auto aus dem Garage und brachte es zur Werkstatt.	It took its car from that to garage and brought it to the workshop.
2b	anaphora resolution	Hon hämtade hennes bil ur garaget och lämnade in den på verkstad.	She retrieved her car from the garage and left in the on workshop.	Sie nahm ihr Auto aus dem Garage und brachte es zur Werkstatt.	It took its car from that to garage and brought it to the workshop.
3	word order: non-typical verb-initial	Är det långt mellan måltiderna så är det desto kortare mellan rasterna.	Is the far the average meal times so is the the shorter average breaks.	Ist es lang zwischen den Mahlzeiten, so ist es ja um so kürzer zwischen den Pausen.	If it is long between the meals, then it is the shorter between tracing.
4	word order, subordinate clause	Ingen visste att de redan hade kommit.	No knew that the already had come.	Niemand wusste, dass sie schon gekommen waren.	Nobody knew that they had already come.
5	word order, V2	Imorgon far vi alla ut i skogen.	Tomorrow, we travel all out in the forest.	Morgen fahren wir alle in den Wald.	Tomorrow we drive all into the forest.
6	word order: coordination	Jag varken kan eller vill visa dig det!	I neither can or wants to sensible you the!	Weder kann noch will ich dir das zeigen!	Neither nor want I can show you that!
7	word order: inversed predicative	Intimt förknippad med hans framgångar hos kvinnor är hans omätliga förmögenhet.	Intimate associated with his successes at women is his omätliga fortune.	Eng verbunden mit seinem Erfolg bei Frauen ist sein enormes Vermögen.	With its success with women its enormous fortune is closely connected.
8	word order: non-typical modifier placement	Bror min och jag hade en cykelaffär.	Brother my and I had a bike business.	Mein Bruder und ich hatten ein Fahrradgeschäft.	My brother and I had a bicycle business.
9	word order: negation	Jag kan inte läsa hans handstil.	I cannot read his script.	Ich kann seine Handschrift nicht lesen.	I cannot read its handwriting.
10	word order: negation	Klas kommer inte idag.	Klas does not come today.	Klas kommt heute nicht.	Klas does not come today.

ID	Construction	Swedish	Systran 5.0 MT Swe -> Eng	Human Swe -> Ger	Systran MT Ger -> Eng
11	word order: complex prenominal modifiers	Det med ett avlångt, gummiklätt handtag försedda verktyget upphittades på busstationen i morse.	The with an oblong, old lady dressed in handholds the provided tool found on the mischief station this morning.		
12	agreement: noun phrase	För att komma fram till stugan var vi tvungna att vandra över ett vidsträckt fält, genom en mörk skog och längs två vackra vägar.	In order to come until the cottage each we forced that habit drawing over an extensive field, through a dark forest and along two beautiful roads.	Um zur Hütte zu kommen mussten wir über ein weitgestrecktes Feld, durch einen dunklen Wald und entlang zweier schönen Wege.	Over to the hut to come we had over a far-stretched field, by a dark forest and along two beautiful way.
13a	agreement: subject; article	Har du köpt ny bil?	Has you bought new car?	Hast du ein neues Auto gekauft?	Did you buy a new car?
13b	agreement: subject; article	Har hon köpt ny bil?	Has she bought new car?	Hat sie ein neues Auto gekauft?	Did she buy a new car?
13c	agreement: subject; article	Har ni köpt ny bil?	Has you bought new car?	Habt ihr ein neues Auto gekauft?	Her a new car bought?
14	preposition	Vi har levt i och av skogen hela vårt liv.	We have lived in and of the forest the whole our life.	Wir haben unser ganzes Leben vom und im Wald gelebt.	We lived our whole life of and in the forest.
15	preposition	Jag tänker på dig, drömmer om dig, längtar efter dig.	I intend on yourself, dreams about yourself, longs for after yourself.	Ich denke an dich, träume von dir, sehne mich nach dir.	I think me of you, dream about you, long for you.
16	preposition	Jag är stolt över dig och gläds åt dina ord.	I am proud over you and is made happy to your words.	Ich bin stolz auf dich und freue mich auf deine Worte.	I am proud on you and look forward to your words.
17	preposition vs particle	Vi gick ut ur huset, nedför trappan och in i skogen därborta.	We exited from the house, nedför the stair and in in the forest over there.	Wir sind aus dem Haus, die Treppe hinunter und in den Wald dort drüben gegangen.	We went over there out of the house, the stairs down and into the forest there.
18a	preposition vs particle	Vad talade du om med henne?	What spoken you about with her?	Worüber hast du mit ihr gesprochen?	About what did you speak with it?
18b	preposition vs particle	Vad talade du om för henne?	What spoke you about for her?	Was hast du ihr erzählt?	To what did you tell it?
19a	voice/deponentia	Låt oss hoppa på den gamle mannen.	Tune us jump on the old man.	Lasst uns den alten Mann überfallen.	Let us the old man attack.
19b	voice/deponentia	Låt oss hoppas på den gamle mannen.	Tune ourselves hopes on the old man.	Lasst uns auf den alten Mann hoffen.	Let us for the old man hope.
20a	voice/deponentia	Jag tillåter mig en mindre utvikning.	I permit myself a smaller utvikning.	Ich erlaube mir einen kleinen Ausflug.	I take the liberty a small trip.
20b	voice/deponentia	Jag tillåts kanske en mindre utvikning.	I am permitted perhaps a smaller utvikning.	Mir wird vielleicht einen kleinen Ausflug erlaubt.	Perhaps one permits to me a small trip.
20c	voice/deponentia	Må jag tillåtas en mindre utvikning.	Feel I to be permitted a smaller utvikning.	Man erlaube mir einen kleinen Ausflug.	One permits me a small trip.

ID	Construction	Swedish	Systran 5.0 MT Swe -> Eng	Human Swe -> Ger	Systran MT Ger -> Eng
21	nominal compounds	Det fanns inga toalettpappershållare i toalettpappershållarlådan.	The existed no toilet paper fasteners in toalettpappershållarlådan.		
22	nominal compounds	Glassförsäljarkonsortiet hade värmeböljemöte.	Glassförsäljarkonsortiet had värmeböljemöte.		
23a	tense	Jag kommer att ha pratat klart om tre sekunder.	I have spoken clearly about three seconds.	Ich werde in drei Sekunden gefahren sein.	I will have driven into three seconds.
23b	tense	Jag kommer att sluta prata om tre sekunder.	I will stop to speak about three seconds.	Ich werde in drei Sekunden fahren.	I will drive into three seconds.
23c	tense	Jag ska sluta prata om tre sekunder.	I will stop to speak about three seconds.	Ich will in drei Sekunden fahren.	I want to drive in three seconds
23d	tense	Jag slutar prata om tre sekunder.	I end to speak about three seconds.	Ich fahre in drei Sekunden.	I drive into three seconds
24	tense	Jag har bott här i 30 år nu.	I have lived here in 30 years now.	Ich wohne schon 30 Jahre hier.	I live already 30 years here
25a	proper nouns	Truckförare Sten Persson har köpt ett lantställe.	Forklift driver stone Persson have bought a place in the country.	Gabelstaplerfahrer Sten Persson hat ein Ferienhaus gekauft.	Fork-lift truck driver Sten Persson bought a holiday house.
25b	proper nouns	Sten Persson har köpt ett lantställe.	Stone Persson have bought a place in the country.	Sten Persson hat ein Ferienhaus gekauft.	Sten Persson bought a holiday house.
25c	proper nouns	Sten har köpt ett lantställe.	Stone has bought a place in the country.	Sten hat ein Ferienhaus gekauft.	Sten bought a holiday house.
26a	case	Ståthållaren, en orakad, äldre man, tilldelade fången en cellkamrat.	Pomp holding clean, an unshaved, older man, the allocated bundles a cell friend.	Der Statthalter, ein unrasierter, älterer Mann, hat dem Gefangenen einen Mitinsassen zugeteilt.	The governor, a unrasierter, older man, assigned a Mitinsassen to the prisoner.
26b	case	Ståthållaren tilldelade fången, en orakad, äldre man, en cellkamrat.	Pomp holding clean the allocated bundles, an unshaved, older man, a cell friend.	Der Statthalter hat dem Gefangenen, einem unrasierten, älteren Mann, einen Mitinsassen zugeteilt.	The governor assigned older man, a Mitinsassen to the prisoner, a unrasierten.
26c	case	Ståthållaren tilldelade fången en cellkamrat, en orakad, äldre man.	Pomp holding clean the allocated bundles a cell friend, an unshaved, older man.	Der Statthalter hat dem Gefangenen einen Mitinsassen, einen unrasierten, älteren Mann, zugeteilt.	The governor assigned a Mitinsassen, a unrasierten, to the prisoner older man.
26d	case	Ståthållaren, som var en orakad, äldre man, tilldelade fången en cellkamrat.	Pomp holding clean, that each an unshaved, older man, the allocated bundles a cell friend.	Der Statthalter, der ein unrasierter, älterer Mann war, hat dem Gefangenen einen Mitinsassen zugeteilt.	The governor, who was a unrasierter, older man, assigned a Mitinsassen to the prisoner.
26e	case	Ståthållaren tilldelade fången, som var en orakad, äldre man, en cellkamrat.	The pomp retainer allocated captive, that where an unshaved, older man, a cell friend.	Der Statthalter hat dem Gefangenen, der ein unrasierter, älterer Mann war, einen Mitinsassen zugeteilt.	The governor assigned a Mitinsassen to the prisoner, who was a unrasierter, older man.
26f	case	Ståthållaren tilldelade fången en cellkamrat, som var en orakad, äldre man.	The pomp retainer allocated captive a cell friend, that where an unshaved, older man.	Der Statthalter hat dem Gefangenen einen Mitinsassen, der ein unrasierter, älterer Mann war, zugeteilt.	The governor assigned a Mitinsassen, which was a unrasierter, older man, to the prisoner.

ID	Construction	Swedish	Systran 5.0 MT Swe -> Eng	Human Swe -> Ger	Systran MT Ger -> Eng
27a	case	Hunden gav mig ett ben.	The dog gave me a leg.	Der Hund hat mir einen Knochen gebracht.	The dog brought me a bone.
27b	case	Hunden gav jag ett ben.	The dog gave I a leg.	Dem Hund habe ich einen Knochen gebracht.	I brought a bone to the dog.
27c	case	Hunden gav Martin ett ben.	The dog gave Martin a leg.	Der Hund hat Martin einen Knochen gebracht.	The dog brought a bone to Martin.
27d	case	Hunden gav Martin ett bett.	The dog gave Martin a bit.	Dem Hund hat Martin einen Knochen gebracht.	Martin brought a bone to the dog.
28	case	Denna konstruktion är mig obekant.	This structure is me unfamiliar.	Diese Konstruktion ist mir unbekannt.	This construction is unknown to me.
29a	case	Mina vänner vill jag gärna bjuda!	My friends want to I gladly to invite!	Meine Freunde will ich gern einladen!	I want to invite my friends gladly!
29b	case	Mina vänner följer jag gärna!	My friends follow I gladly!	Meinen Freunden folge ich gern!	I follow my friends gladly!
30a	time	På lördag åker vi till Sydpolen.	On Saturday, we go to Sydpolen.	Am Samstag fahren wir zum Südpol.	On Saturday we drive to the South Pole.
30b	time	I lördags var vi i Schweiz.	Last Saturday each we in Switzerland.	Am Samstag waren wir in der Schweiz.	On Saturday we were in Switzerland.
30c	time	Ikväll ska vi åka till USA.	Tonight, we will go to USA.	Heute abend fahren wir in die USA.	This evening we drive into the USA.
31a	time	Till julen åker han ändå hem, för barnens skull.	To the Christma, he goes nevertheless home, for the children's sake.	An Weihnachten fährt er sowieso nach Hause, wegen der Kinder.	At Christmas it drives anyway home, because of the children.
31b	time	I julas åkte han ändå hem, för barnens skull.	Last Christmas, he went nevertheless home, for the children's sake.	An Weihnachten ist er sowieso nach Hause gefahren, wegen der Kinder.	At Christmas it drove anyway home, because of the children.
32a	non-compositional semantics: idioms	Sören tog hem spelet.	Sören took home the playing.		
32b	non-compositional semantics: idioms	Östen tog hem igelkotten.	Östen took home the hedge-hog.		
33	homonymy, polysemy	Kan man trappa upp en visa, eller visa ut en trappa?	Can one stair up a song, or sensible out a stair?		
34	homonymy, polysemy	Eva satt på en spann och spann.	Eva sat on a range and range.		
35a	homonymy, polysemy	Han kastade upp bollen på trappan.	He threw up the ball on the stair.		

ID	Construction	Swedish	Systran 5.0 MT Swe -> Eng	Human Swe -> Ger	Systran MT Ger -> Eng
35b	homonymy, polysemy	Han kastade upp på trappan.	He threw up on the stair.		
36	homonymy, polysemy	Han har spelat sax hela sitt liv.	He has played scissors the whole his life.		
37	garden path sentences	När pappa fiskar stör piper Putte.	When father goes fishing disturbs squeaks Putte.		
38	homonymy, polysemy	Bokens blad gulnar mot hösten.	The beech's blades gulnar against the autumn.		
39	homonymy, polysemy	Var var det var?	Was was the each?		
40	garden path sentences	Få kor får får; många får kalvar.	Few choirs get sheep; many gets calves.		
41	non-compositional semantics: puns	Bättre en ryggsäck på magen än en magsäck på ryggen.	A better knapsack on the MAG than a MAG bag on the spine.		
42	non-compositional semantics: puns	En person som sjunger så att han blir blå kallar vi blåsångare.	A person that sings so that he becomes blue calls we blåsångare.		
43	non-compositional semantics (sentence level): puns	Från kanslist till kantlist är det en bit.	From secretariat pcs to edge cunning is the a piece.		



## APPENDIX C. SysTran translations of coherent text

Swedish original	Systran 5.0 Swe -> Eng	Human translation Swe -> Ger	Systran 5.0 Ger -> Eng
<p>Torsten Bergman hette en man, vithårig och tunn. Han var kakelsättare, född 1917. Och alltså den grå novembermorgon år 1982 då denna berättelse utspelas, i Uppsala, redan 65 år gammal. Han sov i en säng, som en gång varit äktenskaplig och dubbel. Nu var den ensam och med lakanen föga tvättade. Gamla tidningar och ett par tomflaskor låg utströdda litet här och var över golvet, och borta i hörnet var den nedhårade gamla svarta matta där hunden brukade sova.</p>	<p>Torsten Bergman was called a man, white hairy and thin. He each kakelsättare, born 1917. And therefore the gray November morning years 1982 then this statement initiative carcasses, in Uppsala, already 65 years old. He sov in a bed, as once been äktenskaplig and double. Now each the single-handed and with the sheets little cleaned. Old newspapers and a pair empty bottles low utströdda small here and each over the floor, and out in the corner where the nedhårade old black carpet where the dog farmed sova.</p>	<p>Torsten Bergman hiess der Mann, war weisshaarig und dünn. Fliesenleger, geboren 1917. Und also an dem grauen Novembermorgen des Jahres 1982, mit dem diese Erzählung in Uppsala beginnt, bereits 65 Jahre alt. Er schlief in einem Bett, das einst ehelich gewesen war und doppelt. Jetzt war es ein Einzelbett, mit schmutzigen Laken. Alte Zeitungen und ein paar leere Flaschen lagen hier und da auf dem Fussboden verstreut, und hinten in der Ecke ein eingehaarter alter schwarzer Teppich, auf dem gewöhnlich der Hund schlief.</p>	<p>Torsten Bergman was called the man, was weisshaarig and thin. Fliesenleger, born 1917. And thus on the grey November morning of the yearly 1982, with which this narration in Uppsala begins, already 65 years old. It slept in a bed, which had been once conjugal and doubles. Now it was a single bed, with schmutzigen sheets. Old newspapers and a few empty bottles lay here and there on the floor scattered, and in the back in the corner a in-shed old black carpet, on which usually the dog slept.</p>
<p>Dagen började på det enda sätt den kunde: Gräset redan stunget av den första frosten, hunden sedan dagar bortsprungnen, allt liv oklart, och hans eget mest. Trädgården skräpig, landskapet skevt. Villan var gammal, av en gång grönmålat trä, nu nästan gråblått och flagnande. Trötta grenar från tunga gamla äppelträd hängde hotfullt in över den ruttnande verandan. Trädgården ett nedskräpat, bökiigt monument över hans livs alla samlade arbeten. Och någon skulle kanske ha sagt: misslyckanden.</p>	<p>The day began on that only ways that could: The grass already stunget of the first frost, the dog since days bortsprungnen, all life unclear, and his own most. The garden skräpig, the landscape lopsided. The illusion each old, of once green painted wood, now almost gray blue and flaking. Tired areas from heavy former apple fallow hang threat fullily in over the rotting verandan. The garden a nedskräpat, troublesome monument over all his lives' overall works. And some willed perhaps have said: the misfortune.</p>	<p>Der Tag begann auf die einzig möglich Art: das Gras schon vom ersten Frost gebissen, der Hund seit Tagen entlaufen, jegliches Leben unklar, und am meisten sein eigenes. Der Garten verwildert, die Landschaft schief. Das Einfamilienhaus war alt, aus früher einmal grün gestrichenem Holz, jetzt fast graublau, mit abblätternder Farbe. Müde Äste von schweren alten Apfelbäumen neigten sich bedrohlich über die morsche Veranda. Der Garten war ein wüstes, unordentliches Monument von Torsten Bergmans gesammelten Arbeiten. Und, wie jemand vielleicht gesagt hätte: seiner Misserfolge.</p>	<p>The day began kind on those only possible: the grass already of the first frost bite, which runs away from dog for days, any life unclearly, and at most its own. The garden verwildert, the landscape inclined. The single family house was old, from in former times once green painted wood, now nearly grey blue, with peeling color. Tired branches of heavy old apple trees leaned threateningly over the rotten Veranda. The garden was a wild, untidy Monument of Torsten Bergmans collected work. And, as someone would have said maybe: its failures.</p>

Excerpt from

Gustafsson, Lars. 1991. *En kakelsättares eftermiddag*. Natur och kultur, Stockholm. German translation (1993) by Verena Reichel: *Nachmittag einers Fliesenlegers*. Deutscher Taschenbuch Verlag, München.