# Translating Conceptual Metaphor: The Processes of Managing Interlingual Asymmetry

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**Abstract**
Encountered at all levels of language, conceptual asymmetries between source and target languages present translators with fundamental challenges that require problem awareness, problem identification and problem solving. A case in point is conceptual metaphor in translation. Versions of conceptual metaphor theory have been applied in various product-oriented studies of how translators deal with the challenge of metaphor in translation. However, there is potential in combining product-oriented approaches with techniques used to access translators' cognitive processes, although process-oriented studies on how conceptual metaphor is re-conceptualised or re-mapped in translation are still rare. Building on an exploratory study carried out at our institute, in which findings from translation process data suggest that experience and/or training appears to be a main factor in handling conceptual metaphor, we present some salient features of re-mapping metaphor. Triangulating data from target-text products, keystroke logs and retrospective verbal commentaries collected under very similar conditions in a laboratory setting, we analyse how translators at different levels of experience handle two complex conceptual metaphors. The results appear to suggest that complex metaphor might indeed be culture-specific. They also potentially indicate that re-mapping practices are a function of experience and that re-mapping to a source-language target domain could create more uncertainty than generic-level re-mapping. Both findings hold pedagogical implications, which are discussed together with some methodological issues.

**Keywords**: conceptual metaphor, metaphor translation, cognitive translatology, translation process research

# 1. Introduction

Encountered at all levels of language, conceptual asymmetries between source and target languages present translators with fundamental challenges that require higher-order receptive, transfer and productive skills. These involve source-text comprehension, problem awareness, problem identification, problem solving and the formulation of target-text concepts functionally analogous to those of the source text. Lewandowska-Tomaszczyk (2010), for instance, contends that interlingual translation involves a series of "re-conceptualisations" of an original message in the source language until it is expressed in the target language, where it continues to be re-conceptualised by the target-language audience itself.

A major case in point is the translation of conceptual metaphor. To recap briefly, conceptual metaphor theory treats metaphors as a matter of thought rather than language, as "basic resources for thought processes in human society" rather than decorative elements (Schäffner, 2004: 1258). In the words of an originator and leading proponent, George Lakoff (1993: 203), "the locus of metaphor is not in language at all, but in the way we conceptualize one mental domain in terms of another". Metaphor is a process of mapping from one domain of human experience (the source domain) to another (the target domain) in order to understand and convey understanding of abstract concepts in the target domain. This "cross-domain mapping in the conceptual system" is realised by means of surface "metaphorical expressions", which represent metaphors in the classic sense. Thus conceptual metaphor theory is a general theory that seeks to account for both everyday and novel, "poetic" manifestations of metaphorical thought, the latter being just "an extension of our everyday, conventional system" (Lakoff, 1993: 246). Mapping is not arbitrary: it draws on our experiences of the world and how it works, and it is determined by structural, ontological correspondences and inferential, epistemic correspondences between conceptual source and target domains. Mapping between domains is partial and asymmetrical (Lakoff, 1993: 245) as the focus will fall only on those features needed to establish functional analogy (Göpferich, 2003: 34). Depending on the particular version of conceptual metaphor theory, meaning construction has been accounted for by, among other things, attributive categorisation (e.g. Glucksberg and Keysar, 1993), neural mapping circuitry and binding mechanisms (e.g. Lakoff, 2014), conceptual integration of the source and target domains in a blended space (e.g. Fauconnier and Turner, 2002) or the emergence of a meaning focus associated with the source domain based on central, relevant knowledge in a given speech community (e.g. Kövecses, 2011).

Mapping involves two distinct metaphor types, primary and complex. Lakoff and Johnson (1980/2003: 142) maintain that "the meaning a metaphor will have for me will be partly culturally determined and partly tied to my past experiences". Primary metaphors are therefore "grounded in the everyday experience that links our sensory-motor experience to the domain of our subjective judgements" (Lakoff and Johnson, 1980/2003: 255) whereas complex

metaphors have been described and defined as combinations of primary conceptual metaphors, often subject to culturally specific variation (Lakoff and Johnson, 1980/2003: 257; Muñoz Martín, 2013: 85; Rydning and Lauchaud, 2011: 173; Schäffner, 2005: 65). As such, it is primarily, though not exclusively, complex conceptual metaphors that promise a potentially fruitful avenue of research into the processes and products of conceptual transfer during interlingual, intercultural translation. Yet, Shuttleworth (2014: 60) and Samaniego Fernández (2011: 268) sound a justified note of caution. The extent to which translators' production of target texts can be said to be generalisable and to reflect target-language and target-culture norms and conceptualisations might be questioned, given the essential situatedness of translation (cf. Risku 2002) and the multiple actors and factors influencing translators' decision-making processes at any given time. Those addressing translated conceptual metaphor need to bear this in mind when collecting and analysing their data and when interpreting results.

Investigating conceptual metaphor in translation requires researchers to examine metaphors that have been asymmetrically and/or partially mapped across conceptual domains in a given source language and then transferred into a target language for a target-culture audience. It is this complexity that prompts Shuttleworth (2014: 53) to observe that "anyone unwise enough to write about metaphor in translation has to think simultaneously in terms of two separate types of meaning transfer" – that is to say, they have to consider not only the products and processes of cross-domain mapping in one language's conceptual system (Lakoff 1993), but also the translation of that mapping into a target language, a process which Massey (2016) refers to as *re-mapping*.

Notwithstanding Shuttleworth's wry misgivings, the current paper expands on previous exploratory research into the feasibility of a combined product and process-oriented approach to investigating the interlingual transfer of conceptual metaphor (Massey, 2016). In doing so, it seeks to tap into the rich potential of describing the cognitive processes and resource-related factors behind translators' choice of translation solutions at the cross-disciplinary interface of metaphor studies, cognitive linguistics and Translation Studies, in particular Cognitive Translatology. As Muñoz Martín (2013), Schäffner and Shuttleworth (2013) and Shuttleworth (2014) all point out, the process-oriented study of conceptual metaphor in translation could provide data and insights to test the theories, models and claims of conceptual metaphor and cognitive linguistics.

Conceptual metaphor scholars have seldom considered translation; Shuttleworth (2014: 57), for example, identifies only two. Translation Studies presents a different picture, with many researchers devoting attention to the translation of metaphor *per se*. Yet, the explicit investigation of *conceptual* metaphor in translation is a recent phenomenon. This appears in large part due to "persistent fallacies" about the nature of metaphor (Lakoff and Johnson, 1980/2003: 244-245): that metaphor is a matter of words, that it is based on

similarities rather than *perceived* similarities based on cross-domain correlations with our experience, that concepts are literal and that rational thought is not embodied.

Of these four, it is the first that led much of early research into metaphor translation being devoted to the surface manifestations of metaphorical expressions, with little purposeful or overt consideration of the conceptual level. Thus, early contributions in Translation Studies addressed the translatability of lexical metaphors (e.g. Dagut 1976) while later ones using heuristic methods to establish "laws" and predominantly prescriptive procedures for their transfer (e.g. Newmark 1981; van den Broeck 1981). Schäffner (2004, 2005, 2012) have since attempted to summarise and synthesise these categorisations to develop minimalist typologies for handling metaphor translation. She identifies three recurring procedures: metaphor into same metaphor, metaphor into different metaphor and metaphor into sense, which correspond to van den Broeck's (1981: 78) three modes of *sensu stricto*, substitution and paraphrase. Toury (1995: 82-83; see also Schäffner 2005: 56) had previously proposed the same three categories, but added complete omission ("metaphor into 0") as well as two further "inverted alternatives" at what he refers to as the target pole of translation: "non-metaphor into metaphor" and "0 into metaphor".

Toury's and van den Broeck's categories reappear in the two-phase metaphor translation process model proposed by Göpferich (2003), a problem-solution model specifically tailored to metaphor translation. The model is divided into an analysis phase, in which source-text metaphors are first identified, interpreted and their textual function determined, and a transfer phase, which envisages the translator verbalising a target-text solution after first selecting from four basic translation procedures: literal translation (that is, *sensu stricto* or 'metaphor into same metaphor'), change of the "object of comparison" ('metaphor into different metaphor'), paraphrase ('metaphor into sense') and, combining Toury's two target-pole procedures, the introduction or re-introduction of a metaphor where none exists in the source text.

Göpferich's (2003) approach reflects a fundamental shift in the study of metaphor translation from initial prescriptive and heuristic approaches to more empirical, descriptive investigations that attempt to consider products together with the assumed strategic cognitive processes that have generated them. This has been accompanied by a broadening interest in cognitive linguistics, which has seen some translation scholars more consistently applying contemporary conceptual metaphor theory to their work. Increasingly, bilingual corpora of textual products have been used to explore the procedures and parameters of metaphor in translation from the conceptual perspective (e.g. Manfredi, 2014; Nicaise, 2011; Schäffner, 2004, 2005, 2012; Shuttleworth, 2011). Especially interesting in the context of the current paper is Schäffner and Shuttleworth (2013). They point out that, while most of the work on metaphor in translation has been text-based and therefore product-oriented (2013: 97-98), there are abundant possibilities of combining more traditional product-oriented

approaches to metaphor translation with techniques used to access translation processes. They conclude that "[b]ecause of its emphasis on the psychological rather than textual aspects of metaphor and the insights it offers into the brain's cognitive processes the conceptual metaphor approach's applicability within process research is clear" (2013: 94).

Researching observable processes of re-mapping interlingual conceptual metaphor translation may still be a nascent field, but some closely related work has been done. There have been process-oriented studies on creativity procedures using figurative language and metaphorical expressions as indicators (e.g. Bayer-Hohenwarter, 2009). Process-oriented methods have also been used to investigate comprehension, difficulty and cognitive effort in translating grammatical metaphor (e.g. Alves et al. 2014), metaphorical expressions (e.g. Sjørup, 2013) and conceptual metaphor (e.g. Rydning and Lachaud, 2011; Tirkkonen-Condit, 2002). Key results indicate that "higher monitoring skills […] are activated when (de)metaphorization operates…" in grammatical metaphor translation (Alves et al. 2014: 48). Tirkkonen-Condit's (2002) think-aloud study shows evidence that degree of difficulty increases with domain conflict, i.e. re-mapping conceptual metaphor translations to a different cognitive domain from that of the source text and language, which can lead to translators becoming "stagnated to" the source-language domain. The results suggest that translation does not take place through word association but at the conceptual level. Finally, using psycholinguistic methods to probe the distinction between the reception of primary and complex metaphor, Rydning and Lachaud (2011) find that conceptual clarity (i.e. comprehension) is greater with primary metaphors.

So, while the actual procedures of translating metaphor, and often only by implicit extension conceptual metaphor, have been the object of both prescriptive heuristic and descriptive corpus-based product-oriented studies, empirical process research has so far tended to concentrate on aspects of source-text reception, difficulty and cognitive effort. Our study seeks to break the mould by investigating re-mapping practices in combined product and process data. In doing this, we build on previous work undertaken at our institute (Massey 2016), where we have looked at how professionals, MA students and BA beginners handle two complex conceptual metaphors in the same German source text as they translate directly (i.e. into their first language, English or French, in the case of the professionals) or inversely (i.e. into their second language, English or French, in the case of the students).

In that exploratory study, which drew on data from our institute's *Capturing Translation Processes* (CTP)[1] project, the comparison of results by experience group, target language and translation direction revealed potentially important distinctions in the target-text products, the participants' behaviour observable in

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[1]     The CTP corpus comprises translation processes and products from translators working with various language combinations on different source texts in workplace and/or lab settings, collected between 2007 and 2012. For more information, see www.zhaw.ch/linguistik/ctp.

their translation processes and their retrospective spoken commentaries on those processes (retrospective verbal protocols or RVPs). The results suggested certain tendencies between and amongst the groups of participants concerning the two variables of L2 target language and experience level, where relationships were indicated in the product-oriented results for metaphor translation procedures and in the process-oriented results for problem awareness and resource-use behaviour. On the product side, the advanced MA students and the professionals showed distinct similarities when re-mapping complex metaphors from and to conceptual domains across source and target languages, which sets both groups apart from the BA beginners. The results from the process RVPs and resource-use analyses also revealed salient differences. Thus, while the vast majority of BA beginners, MA students and professionals alike indicated that a complex (topographical personification) metaphor was a problem by referring to it in their RVPs, it was only the beginners who had a comparable RVP pattern for the other (causative orientational) metaphor examined. The professionals, however, appeared untroubled by this second expression and its underlying concept, as did half the MA students. Similarly, the MA students' internal and external resource behaviour seemed to stand between that of the professionals, who predominantly used internal resources to re-map both the metaphors, and the beginners, who displayed predominant use of external resources. The MA student group, therefore, appeared to be in the upper half of a behavioural cline of problem identification and solving between the beginners and the professionals, indicating that experience and/or training seems to play a key role in handling conceptual metaphor, at least on the evidence of the inverse translation processes and products of the participants studying at our institute.

Despite Shuttleworth's (2014) and Samaniego Fernández's (2011) reservations mentioned above, to which we can add the difficulty of isolating attentional data specific to a source-text expression (cf. Massey 2016), our initial study demonstrated the fundamental feasibility of combining product- and process-oriented methods of data collection and analysis to track aspects of conceptual metaphor re-mapping in translation. We therefore decided to continue our investigation by triangulating data from keystroke logs, RVPs and target texts produced by professionals translating into their L1 from German into English and English into German. To address potential issues related to experience, we then compared the L1 German professionals to advanced MA students and beginner BA students translating the same text, also into their L1.

## 2. Study design and analytical method

The subset of processes and products analysed comprises translations of a German source text into English and an English source text into German; the genre, degree of difficulty and topic of both texts are comparable. The processes were recorded in our usability lab under similar conditions. The study

participants translated the text at a computer equipped with an eye-tracking monitor and software[2] in addition to keystroke-logging[3] and screen-recording[4] programs. The recording of their translation processes started as soon as they hit the space bar to indicate that they were ready. The BA beginners and MA students were asked to work as usual at their own pace and told that they would be recorded for approximately 20 minutes; the professionals were simply asked to translate the text and to indicate when they were done. The participants were then shown the recordings of their processes and asked to verbalise what they saw. The .avi files that were played back to them presented visualisations of their screen activities as well as of their eye movements in the form of fixation circles and saccade lines, which served as additional visual cues to stimulate recall and verbalisation. The screen activities and commentaries were then transcribed using XML-markup according to the TEI P5 guidelines[5] to produce the RVPs.

The German source text translated by one group of professional participants is a title and opening of a news report on the use of naval sonar equipment allegedly causing whales to beach (96 words long). It appeared in the quality Swiss German-language newspaper *Neue Zürcher Zeitung* in April 2009 and was selected both for typical stylistic features and for its various "rich points" (cf. PACTE 2009: 212-216), potential problem areas for the translator. Chosen for the same reasons, the 95-word English source text translated by the other three groups comprised the title and abridged opening paragraph of an article on a similar topic (the risk of naval sonar systems to whales) published in the British Sunday newspaper *The Observer* in August 2004. The task briefs instructed the participants to translate the text for publication in an equivalent target-language newspaper. The briefs and source texts can be found in the appendix.

In the current study, we examine how a group of native English-speaking professional translators translate a complex conceptual metaphor in the first sentence of their German source text, "Hang" (i.e. "inclination", used here in its psychological sense and collocated with "zum Selbstmord", meaning "to[wards] suicide"). Aspects of these products and processes have already been discussed in Massey (2016). We then compare this to data from three groups of native German-speaking professionals and students translating a complex metaphor in the second sentence of the English source text, "race" (pre-modified in the

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[2]   A Tobii T60 screen-based eye-tracker and Tobii Studio 2 software were used (http://www.tobii.com). The gaze path recordings were used to stimulate recall for the retrospections in order to obtain richer verbal data.

[3]   Inputlog 2.0 was used, which was the most recent version of this logger at the time. For further information, see Leijten & Van Waes (2006) or http://webh01.ua.ac.be/mleijten/inputlog/.

[4]   Camtasia Studio; see http://de.techsmith.com/camtasia.asp.

[5]   The Text Encoding Initiative (TEI) *Guidelines for Electronic Text Encoding and Interchange* specifies methods for marking up machine-readable texts. More information is available at http://www.tei-c.org/Guidelines/.

source text by "low-frequency"). The groups comprise, for the translation of the German source-text metaphor, nine professionals translating into L1 English (ProE), and for the English source-text metaphor, twelve professionals (ProG), ten MA students (MAG) and eleven BA beginners (BAG) translating into L1 German. The process data consist of pauses identified in the keystroke logs and comments in the RVPs.

"Hang [zum Selbstmord]" represents a personification, endowing whales with human psychological attributes to help us understand the phenomenon of mass beaching. The German term "Hang" is itself an ontological metaphor relating to topography, i.e. a downward slope, defined by the standard German dictionary resource *Duden Online*[6] in the first entry for the term as a downward sloping side of a mountain (the meaning intended in our source text is contained in the second definition):

1.  schräg abfallende Seite eines Bergs; Abhang
2.  Neigung zu einer bestimmten [negativ bewerteten] Verhaltensweise, besondere Vorliebe für etwas Bestimmtes […]

This conceptual metaphor is complex because it brings together the primary ontological metaphors of topography and personification with the orientational metaphor of the *downward* ("abfallend") slope (LACK OF CONTROL IS DOWN; UNCONSCIOUS IS DOWN). The complex metaphor "race" combines the primary metaphors of ACTION IS MOTION and PURPOSES ARE DESTINATIONS (implicit in the notion of the winning line that will be crossed) with the general-to-specific mapping of A COMPETITION IS A RACE.

Our analysis of the data took place in three stages. Firstly, the translation products were categorised according to the scheme of four procedures proposed by Toury (1995): metaphor into same metaphor (M:M), metaphor into different metaphor (M1:M2), metaphor into non-metaphor, or sense paraphrase (M:P), and omission of the metaphor (M:0). As the present study focuses on source-text conceptual metaphors, Toury's (1995) and Göpferich's (2003) procedures for creating metaphors from non-metaphors were deemed irrelevant. Every metaphorical realisation was classified independently by the two authors and then compared. Divergences occurred in a total of six instances; in each case, a single classification was mutually agreed.

Second, the process data from the keystroke logs and the RVPs were analysed for problem indicators. For the keystroke data, a deliberately distinct pause of five seconds (>5 s.) or more was taken to be a problem indicator, in line with PACTE (2005) and Alves and Vale (2009).[7] A distinction was drawn between pre-pausing, i.e. pauses made after completion of a previous text

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[6]  http://www.duden.de/rechtschreibung/Hang
[7]  See Kumpulainen (2015) for a detailed consideration of the operationalisation of pausing data in translation process research.

segment and before production of the target-text segment corresponding to the source-text metaphor, and peri-pausing, i.e. pausing during the production of the corresponding target-text segment. Pausing is assumed to indicate both that a problem exists and that it is being processed with internal cognitive resources, either with or without external resource consultation. In the RVPs, it was assumed that any participant mentioning either of the rich points indicated their awareness that the conceptual metaphors represent a translation issue to be addressed.

Third, the RVPs were analysed in greater depth to ascertain comprehension, that is to say the conceptual clarity (Rydning and Lachaud 2011; see above) of the source-text metaphors for the participant groups. To do so, we applied Angelone's (2010) uncertainty-management model, which offers a more finely grained problem-processing model than that proposed by Göpferich (2003; see above), albeit a generic one. Centred on "the application of conscious, deliberate strategies for overcoming comprehension, transfer, or production indecision" (Angelone 2010: 19), the model conceptualises translation as a chain of decision-making activities relying on multiple, interconnected sequences of problem-solving behaviour. Activated when problems – such a metaphors – occur, these sequences are segmented into source-text comprehension uncertainty (Comp), mediation-based transfer uncertainty (Trans), when translators "cannot match language structures (lexemes, collocations, standard phrases) in the source text to appropriate equivalents to use in the target text", and target-language production (Prod) uncertainty (Angelone 2010: 21).

Our results are presented in the next section. This is followed by a synthesis and discussion of the findings, after which some implications of the study will be drawn.


## 3. Results and discussion

The product analysis of the ProE translations of "Hang [zum Selbstmord]" (see Table 1) reveals that eight (89%) translated the metaphor into a different metaphor (M1:M2) and one (11%) paraphrased its sense (M:P); there were no omissions (M:0) or translations using the same metaphor (M:M). On the process side, the keystroke pausing data show that two participants paused for more than five seconds (22%), with one pre-pausing (11%), and the other peri-pausing (11%). The metaphor was mentioned in the RVPs by five of the group (56%): one in relation to comprehension (11%), one to transfer (11%) and three to target-text production (33%).

The ProG translations of "[low-frequency] race" were a little less homogenous, with 8 translating M:M (67%), one M1:M2 (8%), one M:P (8%) and two M:0 (17%). There was a sizeable difference from the ProE group in pausing behaviour: ten participants paused for five seconds or more (83%),

seven pre-pausing (58%), two pre- and peri-pausing (17%) and one peri-pausing (8%). In the RVP data, ten of the group referred to "race" (83%): five in relation to comprehension (42%), two to transfer (17%) and three to production (25).

The pattern of MAG products was broadly similar to that of the professionals: seven translated M:M (70%), two M1:M2 (20%) and one M:0 (10%). Pausing is a little less pronounced, though comparable, with seven interrupting their processes for five seconds or more (70%), three pre-pausing (30%), one pre- and peri-pausing (10%) and three peri-pausing (30%). In the RVPs, all 10 MA students mention the metaphor (100%): five in relation to comprehension (50%), three to transfer (30%) and two to production (20%).

The BAG products present a slightly different picture, with nine participants translating M:M (82%) and the remaining two M1:M2 (18%). Moreover, the group's pausing behaviour differed noticeably from either of the other two groups: only four paused five seconds or more (36%): three before target-text production (27%) and one during it (9%). There was also a difference in the RVP data: while a comparably high total of ten participants mentioned "race" (91%), seven of them did so in relation to comprehension (63%), two to transfer (18%) and only one to production (9%).

**Table 1.** Overview of results of the product and process analyses

| TT realisation | % procedures | | | |
|---|---|---|---|---|
| *"Hang"* | M:M | M1:M2 | M:P | M:0 |
| ProE (n=9) | - | 89 | 11 | - |
| *"race"* | | | | |
| ProG (n=12) | 67 | 8 | 8 | 17 |
| MAG (n=10) | 70 | 20 | - | 10 |
| BAG (n=11) | 82 | 18 | - | - |
| Pauses >5s. | % participants | | | |
| *"Hang"* | Pre- | Peri- | Both | Σ |
| ProE (n=9) | *11* | *11* | - | 22 |
| *"race"* | | | | |
| ProG (n=12) | *58* | *8* | *17* | 83 |
| MAG (n=10) | *30* | *30* | *10* | 70 |
| BAG (n=11) | *27* | *9* | - | 36 |
| RVP mentions | % participants | | | |
| *"Hang"* | Comp | Trans | Prod | Σ |
| ProE (n=9) | *11* | *11* | *33* | 56 |
| *"race"* | | | | |
| ProG (n=12) | *42* | *17* | *25* | 83 |
| MAG (n=10) | *50* | *30* | *20* | 100 |
| BAG (n=11) | *63* | *18* | *9* | 91 |

What could the results be indicating? From a purely product-oriented perspective, all but one of the ProE group chose to re-map "Hang" to other metaphorical realisations such as "[suicidal] tendencies", "propensity [to

suicide]" or "[death] wish", with one resorting to the paraphrase "commit [suicide]". Perhaps tellingly, a German L1 speaker erroneously included in the initial data analysis of this group, and subsequently excluded, was the only one to produce an M:M solution (i.e. "inclination"). We might plausibly argue that the complex of primary metaphors combined in "Hang" is indeed a culture-specific realisation, partially and asymmetrically re-mapped by these L1 English speakers without source-culture topographical and orientational elements but with the "generic-level structure" of personification (cf. Lakoff, 1993: 231-233) left intact.

That the process of re-mapping seems to have been a comparatively smooth operation is revealed in the ProE pausing and RVP analyses. Only two participants paused for five seconds or more, one of whom stated in the RVP that this was for reasons of target-text production:

> looking for something instead of a tendency to commit suicide because i think a tendency, that sounds a bit strange… i think i went for propensity (Pro211)

Two further RVPs also contained references to production or formulation issues, and one indicated transfer as a problem:

> i wasn't sure what to put for ein hang… i decided to just ten, tendency and then to… check it later (Pro0516)

Only one RVP referred explicitly to comprehension issues:

> i didn't really understand what that meant… so, i think i had to look that up (Pro209)

Conceptual clarity therefore seems to have existed in all but one group participant.

The product analyses of the German L1 translations show that "race" was handled rather differently from "Hang". Two-thirds of the ProG group re-mapped it with the identical corresponding metaphor in the target language (either "Wettrennen" or "Rennen"), a figure closely matched by the MAG realisations (either "Wettlauf" or "Rennen"). The BAG group's M:M realisations (either "Wettrennen" or "Rennen") are even higher, at four fifths. A close examination of the M1:M2 tokens reveals that two MAG participants and the remaining two BAG members re-map "race" partially, with an asymmetrical focus on the superordinate concept of "competition" (either "Wettkampf", "Wettstreit" or "Wettrüsten"). Thus the M1:M2 translations in these student groups can be seen to realise at least partially the metaphorical components of the original source-language mapping. When these M1:M2 solutions are aggregated with the M:M results, 90% of the MA students and 100% of the BA beginners can be said to re-map at least one metaphorical component to the source-language target domain. By comparison, relatively fewer professionals re-mapped as closely to the source-language target domain (67%), with the

single ProG professional who offered the M1:M2 solution opting for the metaphor "drive forward [a development]" ("[eine Entwicklung] vorantreiben"), a realisation of the primary metaphor ACTION IS MOTION, but with no direct relation to the complex culture-specific conceptual metaphor of competition and/or race.

An explanation for this difference between the professional and student re-mappings might be found in the process data. Compared to the ProE results for "Hang" (22%), pausing for the translation of "race" was substantially higher among the ProG and MAG groups, at 83% and 70% respectively. Yet, among the BAG beginners, pausing was markedly lower than in the ProG and MAG groups, at 36%. As already mentioned, pausing is taken to indicate internal cognitive resource use. The German L1 professionals therefore appear to do more of this, especially before beginning to write (75% in total), and the MA students also seem to reflect more than the beginners (70%), though fewer do so before target text production (40% in total). Turning to the RVPs, we see that the proportion of mentions for "race" among all three German L1 groups lay between 83% and 100%, notably higher than for "Hang" (56%). The uncertainty management analysis of the BAG group shows that seven beginners remarked on conceptual clarity problems in the RVPs (63%), with comments such as:

> I had trouble with low-frequency race because... what that really means. i understood every word but in the context somehow... i didn't grasp how it's meant. (BA0925)[8]

Despite this, only one of those who did so actually paused before, and none paused during, corresponding target-text production. In other words, the professionals seem to proceed in an altogether more reflective, circumspect manner than the beginners, which is likely to be a function of their more advanced textual and cultural problem awareness. For their part, the MA students exhibit behaviour that is again situated towards the professional end of a spectrum between beginners to professionals, as previously witnessed in the precursor study of conceptual metaphor re-mapping during inverse translation (Massey, 2016). We intend to follow-up the current study with the analysis of other source-text metaphors from our corpora to see if they support the initial indications.

Finally, let us step back from the more detailed inter-group comparisons to re-focus on the wood rather than the trees. What overall insights might be gleaned from the results for the L1 English and German professionals? When we align the product and process analyses, two tentative conclusions are suggested. The first is that, on the product side, all but one of the ProE translators re-mapped only partially, but maintained the generic metaphor structure of personification, which is even faintly recognisable in the paraphrase offered by the remaining ProE translator ("commit [suicide]"). This seems to be

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[8]    Authors' translation of the original German.

accompanied by a very low degree of pausing and few conceptual clarity issues, as well as moderate transfer or formulation difficulties expressed in the RVPs. The other is that two-thirds of the ProG translators re-mapped directly to the source-language target domain, but that this was accompanied by high levels of pausing and RVP mentions – which are commonly assumed by process researchers to indicate non-routine problem identification and cognitive processing.

So could it be that re-mapping to source-language target domains, rather than cross-domain re-mapping, demands more attention, causes greater transfer and production uncertainty and, therefore, requires increased cognitive effort? This seems to be a concrete hypothesis worth testing in future research. That research, however, would have to be more specifically targeted on conceptual metaphor, and deploy more direct elicitation methods such as structured retrospective interviews to eliminate as much as possible of the noise emanating from what Samaniego Fernández (2011: 268) calls "individual or *ad hoc*" factors. It would also need to include rigorous data analysis of the extent to which translators' choices are influenced by their external resources and the environment in which the act of translation is situated. Only then can we get a clearer picture of how translators approach conceptual metaphor as they attempt to manage the uncertainties and asymmetries of interlingual transfer.

## 4. Conclusion

Gibbs (1999: 29) aptly points out that "scholars wishing to understand something about how metaphor is created, understood and applied often find their heads spinning".[9] This is doubly true of scholars investigating the way primary and complex conceptual metaphors pass along the chain of translation from domain mapping in a source language and culture to re-mapping in a target language and culture.

Conceptual metaphor theory posits that complex conceptual metaphors combine and integrate primary conceptual metaphors in culture-specific metaphorical realisations. The same assumption underlies the study reported here, and, within the limited scope of the current study, seems to be reflected in the broad consistency of the product data amongst the native speakers of English, on the one hand, and of German, on the other.

Nevertheless, a closer look at the German-speaking groups reveals some spreads in target-text realisation, which appear to be a factor of experience. This is borne out by the process data, which indicate a cline of increasing problem awareness and reflection from the beginners to the professionals, with the MA students in between. Although further investigations of more participants re-mapping other metaphors are clearly required to validate such an interpretation,

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[9]    We are indebted to Nicole Minder for drawing my attention to this quotation.

one plausible pedagogical implication is that, as Massey (2016) proposes, systematically heightening awareness of conceptual metaphor and cognitive linguistics in translation education curricula might accelerate the development of reflective practice.

The process data also suggest that, amongst more experienced and reflective practitioners, re-mapping to a source-language target domain may create more uncertainty than generic-level mapping, and may be more effortful. This would imply even more forcefully the need to address conceptual metaphor in training if future research were to confirm such a hypothesis.

The question is how that research could and should be pursued. Supplementing product-oriented approaches with process elicitation and analysis methods seems to be a promising way forward, as we hope this paper has been able to demonstrate, and plans are in place to extend the current study to analyse the way different conceptual metaphors in these and other source texts are handled by professional and student translators. We would also hope that the work reported here encourages fellow researchers in the field of cognitive linguistics to apply similar techniques. Yet, researchers will still need to find ways of reducing the range of potential variables influencing participants' decisions for the results to be interpreted meaningfully. Alongside enriching the data with additional collection methods, such as workplace video recordings and facial recognition to capture affective dimensions, the key lies in rigorous control of tasking and setting, including more specific cross-language matching of metaphors, combined with targeted elicitation methods, such as immediate retrospective interview questions. If this is achieved, we are likely to learn a great deal more about conceptual metaphor re-mapping.

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## Appendix: Briefs and Source Texts

### German-English

**Übersetzungsauftrag**: Zu übersetzen ist ein Abschnitt aus einem Artikel, der im April 2009 in der Tageszeitung *Neue Zürcher Zeitung* erschienen ist. Der Text soll für eine ähnliche Tageszeitung der Zielkultur übersetzt werden.

### Strandungen von Walen

Ein Hang zum Selbstmord dürfte dem Phänomen nicht zugrunde liegen. Vielmehr sind es wohl meist mehrere und oft von Fall zu Fall verschiedene Faktoren, die Strandungen lebender Wale verursachen oder begünstigen. Die am besten untersuchten Strandungen sind die von Schnabelwalen, für die ein Zusammenhang mit dem Einsatz bestimmter Sonartypen vermutet wird. Nach solchen Sonareinsätzen beobachtete man mehrfach ein für die Gattung ungewöhnliches Strandungsmuster: Viele Schnabelwale strandeten innert weniger Stunden, über viele Kilometer Küstenlinie verstreut. Bei manchen von ihnen stellten die Forscher Verletzungen der Hörorgane fest, die auf einen Verlust der Navigationsfähigkeit schliessen lassen.

**English-German**

**Übersetzungsauftrag**: Zu übersetzen ist ein Abschnitt aus einem Artikel von Mark Townsend, der im August 2004 in der Onlinezeitung *The Observer* erschienen ist. Der Text soll für eine ähnliche deutschsprachige Tageszeitung übersetzt werden.

**Whales at risk in sonar sea exercises**
Recently, a US judge banned the American Navy from testing a similar system to that which the MoD is keen to introduce. The judge concluded that the booming sounds could damage marine life, yet his comments have done little to deter Britain from entering the low-frequency race in which powerful speakers on a metal post are lowered into the sea. An intense burst of noise designed to detect enemy vessels floods the ocean, causing panic among whales, which use similar sonic booms to find food and mating partners.