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Intralingual translation in didactic practice: five case studies

Abstract: This article is a qualitative study charting the dimensional range of a particular type of translative phenomenon, namely, *intralingual translation* within educational practice. Theoretically, the article is based on a broadened concept of translation that encompasses any kind of sign translation, including the transcending of a language-internal comprehension barrier, such as the one between scientific and lay linguistic registers. Further, the article assumes that such intralingual translation is conceptually identical with the interpretive procedures found in didactic practice, given that the central aim of (much) pedagogy is to make sense of new and unfamiliar knowledge – typically embedded in abstract, scientific concepts – to learners. The article also draws on the Bakhtinian concept of "dialogized heteroglossia," i.e., the view that different language varieties may be fused into, and brought into dialogue with each other within, one and the same text. Empirically, the article investigates intralingual translation in didactic practice through analyses of textbooks and one classroom lecture in five different academic disciplines, spanning both the natural and social sciences and the humanities. The analyses identify a handful of different translational *strategies*, some of which are shared across several disciplines, and others of which are unique to a single discipline only.

Keywords: intralingual translation; didactic practice; registers; dialogized heteroglossia

1 Introduction

Although to some extent multidisciplinary, this article is primarily situated within Translation Studies, but with an empirical focus on monolingual educational texts. The article is concerned with certain aspects of pedagogy that may be conceptualized as instances of *translative* practice, more specifically as manifestations of *intralingual* translation. Within semiotics, the conceptual association between didactic practice and translation has been emphasized, e.g., by Petrilli, who points out that

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"[t]he material of learning and education is sign material, and like all activities that involve sign materiality and signifying processes, learning too evolves specifically through ongoing and open-ended semiosic processes that … are interpretive-*translative* processes …" (2020: 319, my emphasis). Like translation, in other words, knowledge-building – the overarching aim of most pedagogy – is a sense-making process.

The aim of the article is thus to expand what is a relatively new subfield of Translation Studies, namely, *intralingual translation*, to include those elements of educational practice that consist in the sense-making of specialized and abstract knowledge to learners. Previous research (e.g., Hill-Madsen 2015a, 2015b, 2019, 2022) has already applied the intralingual-translation perspective to the rewriting of specialized knowledge for a lay audience within the field of medicine, whereas educational practice has so far not been investigated from this perspective. It should be noted that the term *educational practice/didactic practice* is here used to refer to any kind of semiotic effort aimed at knowledge mediation for the benefit of learners. Two subtypes must be distinguished from each other, however. One is the kind of dynamic and collaborative practice where teacher and learners interact dialogically in knowledge building, and the other is the one-way and more "static" or reified type of practice manifested in lectures and textbooks. Of these two, the present inquiry focuses on the latter (see Subsection 3.1 on sampling strategy). Specifically, the aim of the article is to conduct a qualitative investigation into the nature of intralingual translation *strategies* in educational texts (four written textbooks and one oral lecture), which will be done through case studies (Section 3) from five different academic disciplines. Briefly told, investigating intralingual translation strategies in this context will consist in charting the kinds of reformulation procedures employed when textbook writers (and in one case a lecturer) pedagogize curricular content to learners (for a more elaborate definition of the concept of *intralingual translation strategies*, see Subsection 2.4).

With regard to conceptual foundations (to be presented in Section 2), the article takes its point of departure in semiotic translation theory that (1) includes intra-lingual translation in the overall concept of translation and (2) typologizes the phenomenon. In terms of underpinnings in educational theory, the article draws on *Legitimation Code Theory* (LCT; e.g., Maton 2014), which is a sociological theory of education, but one with a strong focus on the linguistic requirements of knowledge mediation. Being devoted to promoting social justice in education, LCT contains a clearly prescriptivist/interventionist strain, recommending particular types of strategies (to be detailed in Section 2) for pedagogizing specialized and abstract knowledge for learners. At the same time, the theory provides a theoretical frame-work explaining the mechanisms behind such strategies in semantic terms. Finally, the article relies on the linguistic concept of *dialogized heteroglossia*

(from Bakhtin 1981), i.e., the possibility of multiple linguistic registers being brought into dialogue with each other within one and the same text. From a linguistic point of view, the pedagogization of academic knowledge for novices typically consists in the interweaving of, and mediation between different registers, corresponding to intratextual *interregisterial* or *diaphasic intralingual translation* (see Subsection 2.2).

2 Theoretical foundations

2.1 Situating intralingual translation within a semiotic concept of translation

Although Jakobson's (1959) famous translation typology features three different categories, namely, *intralingual*, *interlingual*, and *intersemiotic*, it still appears, more than 60 years on, to be a controversial standpoint within Translation Studies to include other kinds of semiotic transformation in the very concept of translation apart from the interlingual type. Despite comprehensive advances in research into other types of translation, the bulk of research in TS is still within the interlingual category (cf. Marais and Kull 2016), reflecting what may be termed "the restrictive view" of translation. This is the notion that the translation concept should be restricted to the *interlingual* transfer of meaning, as represented by, e.g., Mossop (2016), Schubert (2005), and Trivedi (2007). The "restrictive" view ignores that translation is, in its essence, the mediation (via a target text) of meanings previously made in a source text (cf., e.g., Hartama-Heinonen 2012; Stecconi 2004, 2007), and that translation may thus clearly involve other meaning-making systems than verbal language (see also Hartama-Heinonen 2015).[1] This is the logical corollary of Hartama-Heinonen's dictum (2012: 308) that "[s]emiotically speaking, translation approached as sign production means sign translation, or sign-mediated communication … Proceeding from one sign to another sign – producing a sign out of a sign through translation – refers [to …] a process between signs, and this concerns all types of signs and sign uses." Therefore, the standpoint adopted here is that, in principle, no limitations can be posited as to the type of sign system constituting either source or target. Only a key point is, as Stecconi (2004, 2007) points out, that some kind of semiotic difference or barrier between source and target must exist and be transcended in translation. This barrier is in many cases interlingual or even intersemiotic but may in certain cases be *intralingual.* Indeed, as Petrilli points out,

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1 For an elaborate argument against the "restrictive" view, see Korning Zethsen and Hill-Madsen (2016).

> in principle, translation among different historical-natural languages is no different from translation within a single language. In both cases interpretive and explanatory processes are at work. To the question, "what do you mean? explain yourself better," we can just as easily reply by reformulating the utterance in the same historical-natural language, or in a different one … In any case, it is a question of reformulation that necessarily specifies sense and orients interpretation. (Petrilli 2007: 318)

Petrilli here voices the same view as the one underpinning this article, namely, that translation is, at its core, the semiosic act of making sense of an antecedent text (for similar views, see Arduini and Nergaard 2011; Basalamah 2018; Korning Zethsen and Hill-Madsen 2016; Kull and Torop 2003). For the field of Translation Studies, the implications of this expanded concept of translation are, as is Basalamah's point (2018), that the discipline must take heed of any translational phenomena, even ones occurring outside the discipline's traditional field of inquiry (translation between historical-natural languages), and even when these are brought to the attention of Translation Studies through interdisciplinary dialogue (see also Marais and Kull 2016).

2.2 Typologizing intralingual translation

Since the range of phenomena encompassed by a broadened, semiotic concept of translation (see Subsection 2.1) is vastly more extensive than the "restrictive view" allows, it also follows that a *typology* of translation understood thus will be infinitely more complex, and far beyond the scope of the present article to detail (for such a typology, see, e.g., Gottlieb 2008, 2018). Only a few key distinctions in such a typology need mentioning: The most basic distinction is thus between *intrasemiotic* translation, involving source-target identity in modality, and *intersemiotic*, involving different modalities (Toury 1986). The focus of the present article is on intrasemiotic translation, specifically with verbal language as the relevant type of sign system. Within verbal-language translation, the two subcategories are those identified in Jakobson's typology besides the intersemiotic type, namely, *intralingual* and *interlingual* translation. A typology of the former category is shown in Figure 1.

Since detailed comments on the typology in Figure 1 have been provided elsewhere (Hill-Madsen 2019, 2022), only a summary exposition will be given here. Thus, the most superordinate distinction within intralingual translation is between *intra-* and *intervarietal* subcategories, of which the former branches into *transliteration* (replacement of one alphabet with another) and *diamesic* transformation (conversion between oral and written text, as in intralingual subtitling). While the *translational* dimension of these two intravarietal types may not be apparent, given that they do not involve lexicogrammatical changes (changes in wording), they may
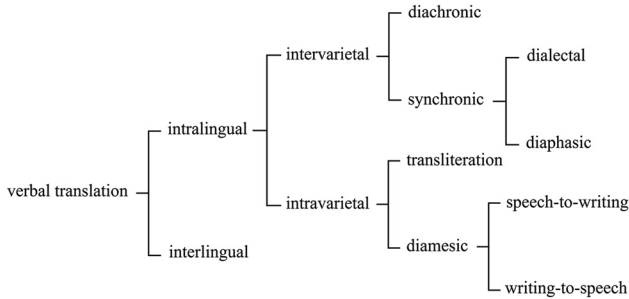
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                                    ┌── diachronic
                  ┌── intervarietal ─┤                    ┌── dialectal
                  │                 └── synchronic ──┤
   ┌── intralingual ─┤                                    └── diaphasic
   │              │                 ┌── transliteration
verbal translation ─┤              └── intravarietal ─┤           ┌── speech-to-writing
   │                                                 └── diamesic ─┤
   └── interlingual                                              └── writing-to-speech
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Figure 1: A typology of intralingual translation (adapted from Hill-Madsen 2019: 544).

be vindicated as translation on the grounds that in both cases a semiotic barrier is transcended to enable target recipients to access semiotic content to which they would otherwise (at least potentially) have no access (see Hill-Madsen 2019). Within the *intervarietal* category, a *diachronic* subtype is distinguished from a *synchronic* one, with the former typically seen in connection with the linguistic modernization of literary classics (see, e.g., Albachten 2013, 2014) or, in the case of Hebrew and Greek, biblical texts (see Remediaki 2013). The *synchronic* subcategory branches into *dialectal* and *diaphasic*, of which the former represents rewriting between geographical dialects (see, e.g., Pillière 2010, 2021), and *diaphasic* (term originating in Coseriu 1981; see also Petrilli 2003) consists in the transformation between linguistic registers or genres – primarily, but not only, specialized versus lay-oriented ones (see Hill-Madsen 2022). The concept of diaphasic, or interregisterial, intralingual translation will be further detailed in Subsection 2.3 below.

2.3 Intratextual diaphasic intralingual translation as dialogized heteroglossia

Conceptually, the very possibility of diaphasic intralingual translation is founded on the recognition that national-historical languages are never homogeneous entities. Rather, most languages feature not only dialectal (cf. above) but also *functional* variation, i.e., variation according to use in situational context (Halliday 1978). Since cultures tend to typify situations of semiotic exchange, semogenic situation *types* exhibit a strong tendency to correlate with distinguishable *subsections* of a language system, termed *registers* in systemic-functional (SF) linguistic theory (Halliday 1978; Halliday and Matthiessen 2014). In terms of functional variables, SF theory identifies three highly generalized contextual components of registers: Field

(the social activity or subject matter, i.e., the "aboutness" of the exchange), Tenor (the role relationship between the interactants) and Mode (medium [spoken versus written], turn characteristics [monologue versus dialogue] and rhetorical function of the text [narrative/reportive/narrative/instructional/promotional, etc.]; Halliday 1978; Hasan 2014). It is, in other words, variation in any or all of these three parameters which differentiates one register from another. With regard to diaphasic intralingual translation, the Tenor dimension is paramount: While Field (subject matter) is almost bound to remain invariant, variation in the type of textual personae involved accounts for the main contextual difference between a source text and its diaphasic target. Diaphasic intralingual translation thus mostly (though not in all cases – see below) consists in the mediation of specialized knowledge (textualized in expert-oriented sources) to a lay or novice target audience via a target text with a reduced degree of specialization.[2] Semiotic mediation across this kind of knowledge asymmetry is especially prominent within healthcare settings, where medical professionals are constantly faced with the challenges of communicating diagnoses and other types of medical information in lay terms for the patient's benefit. Accordingly, research within diaphasic intralingual translation has so far been almost exclusively conducted within this particular field (e.g., Ezpeleta Piorno 2012; Hill-Madsen 2015a, 2015b, 2019, 2022; Muñoz-Miquel 2012). In the present study, the difference in specialization characterizes the source-target divide in the first three case studies (from the fields of chemistry, biology, and psychology/psychiatry, respectively), where target segments mainly serve to translate specialized source concepts (see Subsections 3.2, 3.3 and 3.4). It should be noted, however, that in the two remaining cases (from the subjects of history and literary studies, respectively), the source-target divide does not consist in a contrast in specialization, but in a registerial disparity in accessibility nonetheless (see Subsections 3.5 and 3.6).

However, while the SF theory of registerial variation within a language system can be drawn on for the underpinning of the concept of diaphasic/interregisterial intralingual translation, one problem with the notion of register is (or at least *was*, at the infancy of SF theory around half a century ago) that it may be too inflexible to recognize the possibility of text-internal *variation* in register. Rigidly understood, the theory entails that registers – conceived of as *subsections* of a language system as a whole – are discrete and unified sets of linguistic resources, and that any given text instantiates one particular register only, if only parts of it. The possibility of cross-registerial instantiation in one and the same text is not really taken heed of, and one needs to look beyond SF theory to, e.g., Fairclough's (1992) concept of *interdiscursivity* or Bhatia's (2010) *appropriation of generic resources* to capture the

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2 For examples of the opposite translational direction, i.e., from lay source text to specialized target, see Hill-Madsen (2024).

possibility of the intratextual blending of registers. Even more relevant for present purposes, however, is the Bakhtinian concept of *heteroglossia* (Bakhtin 1981), which is identical with the fact of intrasystemic dialectal and registerial variation, but which also contributes the observation that language-internal varieties may be brought into dialogue with each other within one and the same text – what Bakhtin terms *dialogization of heteroglossia*:

> [E]ach of them [i.e., language varieties] permits a multiplicity of social voices and a wide variety of their links and interrelationships (always more or less dialogized). These distinctive links and interrelationships between utterances and languages, this movement of the theme through different languages and speech types [i.e., dialects and registers], its dispersion into the rivulets and droplets of social heteroglossia, its dialogization – this is the basic distinguishing feature of the stylistics of the novel. (Bakhtin 1981: 277)

Although the present article is concerned with didactic genres and not "the stylistics of the novel," the primary aim is to evidence how, in the treatment of a disciplinary "theme" in educational texts, contrasting registers may be brought into dialogue with each other via a process of intralingual translation. The didactic mediation between specialized and non-specialized registers is a matter of dialogizing contrasting conceptualizations of a given educational subject matter, or, as previously noted, making sense of one set of meanings in terms of another, given that, in the words of Bakhtin again,

> [a]ll languages of heteroglossia [i.e., all language varieties], whatever the principle underlying them and making each unique, are specific points of view on the world, forms for conceptualizing the world in words, specific world views, each characterized by its own objects, meanings, and values. As such they all may be … interrelated dialogically (Bakhtin 1981: 303–304)

Subsection 2.4 below details the semantic resources available for interregisterial "dialogization" in didactic practice.

2.4 The concept of translation strategy

When didactic practice is viewed as inherently interpretive-translative in nature (see introductory section), the implication for educators and textbook authors is the necessity of applying some kind of conscious translation *strategy* in their effort to make sense of the knowledge object to learners. *Strategy*, then, inevitably implies *choice*. In relation to translation, the centrality of choice is an underlying premise in Hans J. Vermeer's *Skopos theory* (e.g., Nord 1997; Vermeer 1996, 2000), which highlights the fact that any source text may be translated in a number of different ways,

and that the principle guiding the linguistic *choices* to be made by the translator is (or ought to be) the *skopos* (Greek for 'purpose') which the target text is allocated in the target-language culture. The point is that a different target-text *skopos* would mandate different linguistic choices. The same prescriptive principle may be maintained vis-a-vis educational practice, i.e., that it is the particular *skopos* of a lesson/textbook chapter/instructional video, etc., that needs to guide the choice of translative-didactic strategy.

Besides *choice*, the notion of translation strategy centrally consists in *change*, i.e., in some kind of reformulation between a source-text unit and its corresponding target unit (cf. Chesterman 1997: 92). However, one crucial difference that should be noted between the types of intralingual translation strategies to be charted here and those featuring in "ordinary," i.e., interlingual, translation, is that in the latter case, strategies are to a large extent analyzable as *lexicogrammatical* changes, i.e., changes at the level of *wording*, between corresponding source and target language units. These may be, e.g., shifts between syntactic levels, between clause mood types, paradigmatic shifts in lexis, etc. (see Chesterman 1997: Ch. 4). Analysis of such shifts or changes, however, requires a clearly identifiable syntactic or lexical *tertium comparationis* between source and target unit, which is far from always possible in educational intralingual translation. Thus, in one of the cases in Section 3, one lexical source item (a specialized psychological term) is intralingually translated into what constitutes an entire *text* in itself (a short account of a case story). In the analysis of educational intralingual translation, therefore, a more viable solution is to approach translation strategies as shifts (or, occasionally, additions) at the level of *meaning*, which is why the LCT concepts of *semantic gravity* and *semantic density* (see Subsection 2.5.1) are found to be apt points of departure for such analysis. It should be emphasized, however, that the two LCT concepts are not assumed to be equally relevant to all cases. In most cases, in fact, it is either one or the other (in some cases *gravity* and in others *density*). It should also be noted that in one case (number 5), the strategy identified may not really be related to either of the two.

2.5 Legitimation Code Theory

LCT is, as already noted, a sociological theory of education, whose central preoccupation, inspired by the late educational sociologist Basil Bernstein (e.g., 2003), is with the "codes of legitimation" underlying educational contexts, i.e., the codes legitimizing certain types of dispositions and disfavoring others in learners' struggle for educational achievement (Maton 2014: 17–18). A central objective for LCT is thus to provide an explanatory framework (Maton 2014) that will enable

educational researchers and practitioners to uncover those – usually tacit – codes in specific educational practices (e.g., school subjects) that learners need to master to achieve success. One aspect of such codes is a specifically linguistic dimension, pertaining to the types of semantic resources that need to be mastered by students in their engagement with curricular content: Building on a long tradition of research within Systemic-Functional Linguistics into the relation between language and education (see, e.g., Christie 1999; Halliday 2016; Halliday and Martin 1993), Maton (2014: ch. 6 and 7) points to the fact that the *discourse* in which academic knowledge is enshrined (i.e., the knowledge to be gradually acquired by students) is inherently challenging to young learners. This is because, firstly, scientific/academic terms – the linguistic "pillars" of academic disciplines – tend to embody highly compact and elaborate meanings that encode "uncommonsense" knowledge (cf. Halliday and Martin 1993; Halliday and Matthiessen 1999), i.e., knowledge that tends to be at odds with the "common sense" understanding of the world inherent in everyday, non-scientific practices. Secondly, scientific/academic concepts represent highly abstract meanings, insofar as they invariably represent generalized phenomena. It is one of Maton's (2014) fundamental points that mastery of both types of semantic characteristics (the compactness and the abstraction) is a prerequisite for what he calls *cumulative knowledge-building*. His own specialized terms for the two aspects of meaning are *semantic density* and *semantic gravity*, respectively. Significant to present purposes is Maton's (2014: 122) claim that the utilization of these semantic resources may enable as well as impede students' learning, depending on *how* those resources are deployed and recontextualized in pedagogic discourse, which is a question that will be briefly addressed in the following subsection.

2.5.1 Operationalizing the LCT concepts of "semantic gravity" and "semantic density"

Semantic gravity (SG) is a scalar concept that is here interpreted as being centrally concerned with degrees of concreteness/abstraction in meanings. For present purposes, "concreteness" may thus be translated (!) as "groundedness" in types of representation that reflect immediate human sensory experience of reality. The opposite, "abstraction," then, is representation that is at some kind of remove from such experience. Following Maton (2014) and, to some extent, Hood (2020) and Martin and Matruglio (2020), the scale of semantic gravity will here be operationalized as a continuum from "most particular and context-bound" to "most generalized and context-independent" types of meaning. Meanings at the "most particular"/"most concrete" end of the scale are those embedded in the material and temporal setting of the communicative event itself, manifesting themselves as references to the
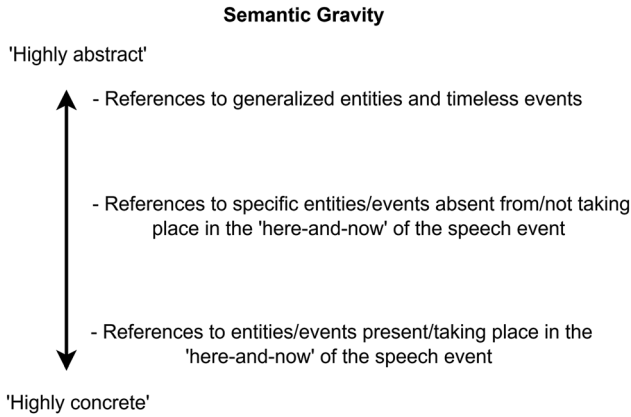
Semantic Gravity

'Highly abstract'

- References to generalized entities and timeless events

- References to specific entities/events absent from/not taking place in the 'here-and-now' of the speech event

- References to entities/events present/taking place in the 'here-and-now' of the speech event

'Highly concrete'

Figure 2: A scale of semantic gravity.

"here-and-now" of the linguistic exchange, i.e., to the objects, persons and actions that can be immediately perceived by the interlocutors. At the opposite end of the scale are found completely generalized, timeless and context-independent utterances. In the intermediate zone on the scale are found references to specific items, persons and events that are absent from the "here-and-now" of the exchange. Graphically, the scale of SG (as operationalized above) may be illustrated as in Figure 2.

As some of the case studies in Section 3 will show, intralingual translation in educational settings will typically involve movements between generalized and more specific/concrete representations.

Semantic density (SD) is a scalar concept also, referring, in Maton's (2013: 11) words, to "the degree of condensation of meaning within socio-cultural practices, whether these comprise symbols, terms, concepts, phrases, expressions, gestures, clothing, etc. …" As applied to verbal language, SD thus concerns the "amount" or complexity of representational meaning "compacted" into signs. Although SD is a scalar dimension, a key distinction highly relevant to present purposes is between the type of meanings encoded in specialized terms versus those carried by everyday, lay vocabulary: As previously noted, scientific/specialized terms tend to be aggregates of a range of semantic components (see, e.g., Martin 2013), unlike lay terms, which tend to be "shallower" in meaning, integrating markedly fewer components (see Maton and Yaegan 2017). Translating specialized concepts into lay terms thus inevitably "weakens" SD.[3]

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3 A graphical illustration of SD will not be provided, being not found relevant.

2.6 Heteroglossia and LCT: movements along the SG and SD clines

Since, as noted above, both the SG and the SD dimension are scalar phenomena, it follows that the particular set of semantic resources deployed in a given text or dialogue is not necessarily confined to particular points or zones on the two scales. Intratextual shifts or movements *along* the two scales are perfectly conceivable, which is an insight that intersects with the Bakhtinian concept of heteroglossia. In LCT terms, heteroglossic movement along the SG scale from the "abstract" towards the "concrete" end is *gravitation*, and the opposite direction is *levitation*. On the SD scale, a "weakening" of SD equals *rarefaction* (a metaphorical borrowing from the field of chemistry, where the term denotes the "thinning" of a liquid when it evaporates), whereas the opposite development is *condensation* (Maton 2014: 129–30). In educational discourse, LCT *recommends* such movements or "waves" up and down the two scales, which is where the prescriptive dimension of the theory manifests itself. The recommendation derives from the observation that, as also previously intimated, the deployment in educational discourse of semantic resources *confined* to one end of the scales is likely to lead to pedagogic failure. This is because exposing learners to highly specialized and abstract meanings *only* will hamper understanding and thus impede the acquisition of knowledge. Conversely, deploying wholly non-technical and highly concrete meanings only will not contribute to any cumulative knowledge-building either. This is why LCT recommends semantic "waving," or heteroglossic shifts along both semantic scales, as the pathway to cumulative knowledge-building (e.g., Blackie 2014; Clarence 2017; Maton 2013; Matruglio et al. 2013). Some of these movements will indeed be seen to feature in some of the case studies in Section 3.

3 Case studies

3.1 Selection criteria

Since the present investigation is a qualitative study into the character of intralingual translation in didactic practice, the principle behind the selection of cases has been the particular type of qualitative sampling known as *theory-based sampling* (Corbin and Strauss 2012; Patton 2002; Ritchie et al. 2003). According to Patton (2002: 238), this type of sampling consists in the selection of cases that can be seen as manifestations or representations of a theoretically defined concept or phenomenon (here: educational intralingual translation). The purpose of this type of sampling is,

in the words of Corbin and Strauss (2012), "to collect data from places, people, and events that will maximize opportunities to develop concepts in terms of their properties and dimensions, uncover variations, and identify relationships between concepts." Apart from the fact that the data of the present study are texts and not places, people or events, the purpose of the investigation is indeed to chart the "properties and dimensions" (specifically, the range of translation strategies) of intralingual translation in educational practice, which will be done on the basis of the phenomenon's manifestation in real-life pedagogy. To be able to chart the fullest possible dimensional range of the object of study, the sampling has been coupled with the principle of *maximum heterogeneity* (Patton 2002: 234–235). This means that five cases have been selected from five different academic disciplines, ranging across the natural and social sciences as well as the humanities: A chemistry textbook (Subsection 3.2), a biology textbook (3.3) a psychiatric textbook (3.4), a teacher's oral exposition in a history class (3.5), and a literary *reader's guide* to a modernist novel (3.6).

In accordance with the principle of theory-based sampling as defined above, the most important, if obvious, selection criterion has been the actual presence of intralingual translation in the data, which is far from always the case in educational texts (oral or written). Many history books, e.g., report facts and provide accounts and descriptions, but do not actually feature sense-making of specialized/academic knowledge. Another aspect taken into account in the sampling is an observation made in preparatory investigations for the present article, namely, that in the natural and social sciences, intralingual translation mostly occurs in connection with *conceptual* exposition, i.e., the explanation of individual specialized concepts, whereas in the humanities, intralingual translation tends to manifest itself as *textual* exposition, i.e., as explication of longer *stretches* of inaccessible text such as historical sources or challenging pieces of literature. These tendencies are reflected in the selection of cases.

Three further selection criteria have been (1) target register, (2) pedagogic quality and (3) mode (monologue/dialogue). (1) By *target register*, what is meant here is the register of the intralingually translated segments (the *target segments*) of the texts. Since the aim is to investigate diaphasic intralingual translation aimed at making curricular knowledge accessible to (young) learners/novices, only texts with *target segments* belonging to a decidedly non-specialized register have been selected. To some extent, this also accounts for the variation in academic level across the texts: Whereas the psychiatric textbook and the literary reader's guide are both aimed at college level, the chemistry book is aimed at the upper-secondary level of schooling. A college-level science textbook would be certain to represent a relatively high level of specialization throughout, even in explanations of new terms. (2) All five texts have been subjected to an informal assessment of pedagogic quality,

i.e., whether, on a simple reading, they could be judged to actually fulfill the function of making sense of their disciplinary object to the learners, which is far from a matter of course in educational literature. (3) A third restriction on the sampling, as noted in the introductory section, has been the exclusion of educational dialogue, meaning that only monologic texts (four written and one oral) will be considered. Conceivably, educational dialogue makes for a somewhat different range of intralingual translation strategies and must remain a separate research project for the future.

Finally, it is to be noted that no restrictions have been found relevant as to the specific (national-historical) language of the texts: Since the translation strategies to be charted are in most cases concerned with rather general types of source-to-target changes at the level of *meaning,* sameness of (national-historical) language for all texts (e.g., English) has not been a selection criterion. If the purpose had been the charting of *lexicogrammatical* changes (i.e., changes at the level of *wording*), then obviously comparison across the cases would require all texts to belong to one language only. Since the concern is with meanings rather than wordings, this has not been a relevant concern, and so the texts have been selected from three different languages (Danish, Swedish, and English). The non-English texts will be rendered here in a literal English translation which renders the meaning of the source texts as faithfully as possible.

3.2 Case 1: a chemistry textbook

The extract below is the very first page of a chemistry textbook aimed at upper-secondary level students (year 11) in Denmark:

Example 1:
> [1] Air, water, sand, clay, white stones, black stones, yellow stones, wood, grass …
> [2] We can immediately ascertain that our natural surroundings consist of many different substances. [3] It is an old idea that all matter is made up of a few basic components [4] In ancient Greece, the philosopher *Empedocles* (ca. 490–435 BC). put forward a theory about the structure of substances. [5] According to this theory, all matter is made up of four *elements*, namely *water, earth, air*, and *fire*. [6] The idea of the four elements was later elaborated by Aristotle (384–322 BC), and his views were the prevailing theory for the next approx. 2000 years. [7] It was a purely philosophical theory – in contrast to modern scientific theories, which are based on experiments.
> [8] The modern concept of chemical elements must first and foremost be attributed to the French chemist Antoine Laurent Lavoisier (1743–1794). [9] He believed that a substance could be considered an *element* if it had not yet been possible to break the substance down into other substances.

[10] Water can be split into two other substances, namely hydrogen … and oxygen … [11] Therefore, water is *not* an element.

[12] In contrast, hydrogen could not be split, so it is an element. [13] The same goes for oxygen. [14] Substances that are not elements are called *chemical compounds*. [15] Water is a chemical compound of the elements hydrogen and oxygen.

[16] In 1789, Lavoisier made a list of 33 elements. [17] Some of these substances have later been shown to be chemical compounds, and two of them, light and heat, are not substances at all according to today's view.

[18] *Atomic theory* is closely linked to the concept of chemical elements. [19] According to atomic theory, all matter consists of some very small particles called *atoms*. [20] A chemical element consists of identical atoms, but a chemical compound consists of different atoms, which are bonded together. [21] The first applicable atomic theory was established by John Dalton in 1803. [22] When writing chemical formulae, Dalton used symbolic drawings of atoms, see Figure 1. (Mygind 1994: 9; emphases as in the source text, translation by the author).

Example 1 illustrates how in didactic practice passages containing intralingual translation occur side by side with sections without this feature. Thus, the first two paragraphs (sentences 1–8) contain no translation, serving only to prepare the reader for the notion that substances may consist of smaller components. Similarly, sentences 16–17 add further information, but contain no sense-making of scientific concepts either, and the same applies to sentences 21 and 22, which only supply historical facts about the development of atomic theory. Translation occurs from sentence 9, when the text starts introducing and linking the three most basic concepts in modern chemistry, i.e., *element*, *chemical compound*, and *atom*. In each case, the term is intralingually translated through definition in (mostly) non-specialized terms, i.e., by means of *rarefaction* (see Subsection 2.5.1) as an intralingual translation strategy. Thus, the concept of *element* is defined as a "substance" that is "impossible to break … down into other substances"; a *chemical compound* is then defined in contrast to *elements* (as composite substances, exemplified by water); and finally *atoms* are defined via part-whole relations, in the first round via their status as the smallest constituents of "all matter," and in the second round through their contrasting meronymic relations to both *elements* and *chemical compounds*. It is to be noted, however, that the extract is a case where the dialogization is not back and forth between a specialized register (represented by the technical terms as *explananda*) and a non-specialized one throughout. In sentence 9, the definition of *chemical element* does relate the technical term to non-specialized meanings, and the same is the case in the initial, compositional definition given of *atoms* in [19], but *chemical compound*, as we have seen, is partially defined in contrast to the first technical term introduced (*element*), and once we reach sentence 20, the definition of *chemical element* and *chemical compound* each is expanded through integration

with the meaning of *atoms*, with which the reader has been familiarized in the immediately preceding sentence. It is this integration of technical meanings that nicely illustrates the textual process of knowledge-building.[4]

3.3 Case 2: a biology textbook

The following extract is taken from another Danish textbook, similarly aimed at upper-secondary level students (year 11):

Example 2:
Cells
[1] Living organisms are made up of cells. [2] There are two main types of cells. [3] Those without a nucleus are called *prokaryotes*. [4] This type of cell is found in all bacteria and the so-called archaea.
[5] *Archaea*, or *archaebacteria* as they are also known, are single-celled organisms that are similar to bacteria in many ways. [6] Cells that have a nucleus are called *eukaryotes*.
[7] The eukaryotic cell type is found in all other living organisms, including multicellular organisms such as animals, plants, and fungi, as well as a number of single-celled organisms collectively known as *protists*.
[8] Figure 9 shows how different cell types look under a microscope. [9] Prokaryotic and eukaryotic cells have in common [the fact] that they are surrounded by a cell membrane that regulates which substances can pass in and out of the cells. [10] They also contain an aqueous solution called the *cytoplasm*, which contains the cell's components. [11] In the cytoplasm, for example, there are a large number of special structures called *ribosomes*. [12] This is where the cell's proteins are produced in a process called *protein synthesis*.

Prokaryotic cells
[13] Prokaryotic cells have a number of basic features in common, see Figure 10. [14] On the outside, they have a stiffening cell wall that helps the cell maintain its structure. [15] The cell wall is mainly made up of a substance called *peptidoglycan*. [16] Peptidoglycan is made up of a type of carbohydrate bound together by special proteins.
[17] There are two different types of cell walls in bacteria. [18] The difference means that bacteria can be divided into *gram-positive* and *gram-negative* bacteria using a technique called *gram staining*, see Figure 11. [19] The cell wall of

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4 It should be stressed that, in accordance with Maton (2014), only the textual/mediational aspect of knowledge-building is considered here. No claims can be made regarding the cognitive effect on learners, of course.

gram-positive bacteria consists of a thick layer of peptidoglycan, while the gram-negative bacteria have a thinner layer. [20] The difference in cell wall structure influences, among other things, which types of antibiotics are most effective against different types of bacteria …

Eurokaryotic cells
[21] Eukaryotic cells are larger than prokaryotic cells. [22] They contain a nucleus and are generally more complex in their structure. [23] The nucleus is surrounded by a nuclear membrane containing small protein pores (nuclear pores) through which certain substances can pass, see Figure 12. [24] The cytoplasm of a eukaryotic cell is more complex and contains, among other things, a *cytoskeleton*. [25] This acts as the cell's internal skeleton and helps to give the cell its shape. [26] It also helps regulate the transport of different substances around the cell. (Frøsig et al. 2020: 14–16; translated by the author)

In this excerpt also, the intralingual translation strategy is *rarefaction* throughout, with terms from cell biology being defined in mostly non-specialized terms. In fact, most of the translations in the extract adhere to the "classic" structure of definitions, which, according to Hanks (2006: 399), has two components: (1) a reference to a superordinate class of phenomena (called the *genus*) of which the *definiendum* is a member; and (2) one or several distinctive features (so-called *differentiae*). Thus, a list of the *genera* with which some of the various *definienda* are associated in the text are the following (with the *definiendum* indicated in brackets):
– [2–3] [*Prokaryotes =*] *cells*
– [5] [*Archaea/archaebacteria =*] *organisms*
– [6] [*Eukaryotes =*] *cells*
– [7] [*Protists =*] *organisms*
– [10] [*Cytoplasm =*] *solution*
– [11] [*Ribosomes =*] *structure*
– [12] [*Protein synthesis =*] *process*
– [15] [*Peptidoclygan =*] *substance*
– [18] [*Gram staining =*] *technique*

As the list shows, most of the superordinate classes to which *definienda* are assigned here are indeed highly generalized phenomena such as *organisms, solution, structure, process*, and *substance*. With regard to *differentiae*, four different categories can be identified in the extract: (1) composition/"design"/structure, (2) material, (3) prevalence or "location," i.e., where the phenomenon is to be found, and (4) function/characteristic activity. Thus, those translations/definitions featuring composition/"design"/structure as *differentia(e)* are:
– [3] [*Prokaryotes =*] *those without a nucleus*
– [5] [*Archaea =*] *single-celled*

– [6] [*Eukaryotes* =] *have a nucleus*
– [7] [*Protists* =] *single-celled*
– [9] [*Prokaryotes and eukaryotes* =] *surrounded by a cell membrane*
– [10] [*Prokaryotes and eukaryotes* =] *contain an aqueous solution called cytoplasm*
– [10] [*Cytoplasm* =] *contains the cell's components.*
– [14] [*Prokaryotes* =] *have a stiffening cell wall that helps the cell maintain its structure*
– [22] [*Eukaryotes* =] *contain a nucleus and are generally more complex in their structure*
– [24] [*The cytoplasm of a eukaryotic cell* =] *is more complex and contains … a cytoskeleton*

And those featuring material are:
– [16] [*Peptidoglycan* =] *is made up of a type of carbohydrate bound together by special proteins*
– [19] [*The cell wall of gram-positive bacteria* =] *consists of a thick layer of peptidoglycan*
– [19] [[*The cell wall of*] *gram-negative bacteria* =] *ha[s] a thinner layer*

And those defined in terms of prevalence/"location" are:
– [4] [*Prokaryotes* =] *found in all bacteria and the so-called archaea*
– [7] [*Eukaryotes* =] *found in all other living organisms*

And finally, those defined with reference to function/characteristic activity are:
– [12] [*Ribosomes* =] *where the cell's proteins are produced*
– [24–26] [*Cytoskeleton* =] *acts as the cell's internal skeleton and helps to give the cell its shape. It also helps regulate the transport of different substances around the cell.*

In certain cases, the definitions interlock textually in such a way that a *differentia* may contain the *genus* and/or a new term to be defined. This is the case, e.g., in sentence 10, which mentions one of the shared properties (*differentiae*) of prokaryotes and eukaryotes, namely, the fact that they contain *cytoplasm*, which is defined as *an aqueous solution* within the same clause.

3.4 Case 3: a psychiatric textbook

The extract below is taken from a Swedish textbook in psychiatry (also rendered here in a literal English translation) written for students in vocational college programs

aimed at the healthcare and social sector, e.g., nurses and occupational therapists. The extract details the meaning of two of the cardinal concepts in Sigmund Freud's thinking, namely, *the unconscious* and *the subconscious*:

Example 3:

[1] One of Freud's most important discoveries was the presence of significant, *unconscious* driving forces in our thinking and our actions. [2] Many people are still offended by the idea that one can talk about unconscious needs, desires, and fantasies. [3] However, this concept is inevitable for understanding many of our normal as well as neurotic actions.

[4] An example of this is a man whose childhood had been greatly dominated by a fervent hatred for a younger, charming brother, who constantly threatened to win against him in the relationship with their parents. [5] After initially reacting violently to his brother, as young children do, he was systematically brought up to control and restrain such needs and tendencies, so that now, as an adult, he can boast of never committing a rash act. [5] Nevertheless, his adult life is marked by the fact that in his role as a manager he is able to keep his subordinates up to the mark by formal and bureaucratic means. [6] He can also, with his controlled self-restraint, subdue his children's need to assert themselves. [7] This man has long ago "forgotten" how bitterly he fought against his brother. [8] And even though he can remember the conflicts, he has nevertheless forgotten their murderous intensity. [9] This knowledge is far too offensive and incompatible with his current perception of himself. [10] The rivalry and the struggle have become unconscious; the aggressive needs have been completely or partially displaced from consciousness and have instead found an outlet in socially accepted and sanctioned methods of exercising power and control over his surroundings.

[11] A person's attitude to life can thus be strongly influenced by previously repressed, now unconscious needs and desires. [12] To gain a deeper understanding of these facts, one needs to study developmental psychology. [13] We can also get a more direct impression of our mental world through dreams, daydreams, and free imagination. [14] Freud developed psychoanalysis as a science to investigate, among other things, the unconscious driving forces behind our behavior. [15] An unconscious fantasy cannot gain access to a person's consciousness through an effort of will. [16] It may be necessary to use psychoanalytic techniques. [17] The unconscious can also sometimes be accessed through hypnosis. [18] Mental shocks can also in some cases result in repressed memories and ideas emerging into consciousness.

[19] Between the unconscious and the conscious, there is an "area" which we call the *subconscious*. [20] These are thoughts and ideas that are not relevant to the person in question, but which can be made conscious through a certain effort.

[21] One may, for example, have forgotten a name ("It is on the tip of my tongue"), and a moment later remember it again. [22] We can also hide away socially less acceptable needs and desires in the subconscious, in the sense that we do know we have them, yet can sometimes completely forget them. [23] We can also forget socially less acceptable needs and desires in the preconscious, in the sense that we know we have them, but sometimes forget them altogether. (Cullberg 1999: 88–89; emphases as in the source text, translation by the author)

While the intralingual translation of the technical terms in the chemistry and biology textbook extracts was predominantly based on *rarefaction*, i.e., a "weakening" of *semantic density*, the psychiatry textbook extract above features *gravitation* also, specifically in the case story (sentences 4–10) of the jealous boy who internalized his aggression and grew up to become a controlling boss and father. As an intralingual translation of the specialized psychiatric concept of *the unconscious*, the case story integrates *gravitation* and *rarefaction*, by being "grounded" in the narrative of a specific person and events unique to this person's childhood and adult life, all of it related in non-specialized terms such as *hatred* [sentence 4], *fought* [7], *bitterly* [7], *forgotten* [8], *rivalry* [10], *exercising power and control* [10], etc. The conclusion to the case story, on the other hand, may be seen as the opposite "movement," i.e., as *levitation/condensation*, when the author completes the dialogization in sentence [11] by explicitly translating the narrative back into the specialized concept (*unconscious*), and by abstracting a generalized psychological tenet from it: "A person's attitude to life can thus be strongly influenced by previously repressed, now **unconscious** needs and desires" (specialized term emphasized by the present author). The levitation/condensation as a semantic strategy highlights the fact that the source-to-target translational "direction" can be non-specialized-to-specialized as well as the reverse, i.e., with non-specialized terms translated *into* a specialized concept, which is the case here (see also Hill-Madsen 2015a, 2024).

In the rest of the paragraph (sentences 12–18), the intralingual translation is discontinued, in that a small number of additional characteristics are provided in relation to the concept of the unconscious, but not ones that actually serve to elucidate the *meaning* of the term, apart, perhaps, from sentence 15 ("An unconscious fantasy cannot gain access to a person's consciousness through an effort of will"), which could possibly be paraphrased as *when a fantasy is unconscious it means that it cannot gain access* … Whether the sentence should be regarded as translation or not must thus be left an undecided question.

In the last paragraph (sentences 19–23), on the other hand, the intralingual translation is resumed, this time with *rarefaction* as the primary strategy: Sentence 19 clearly signals that a new specialized term is being introduced ("… which we **call** the subconscious [my emphasis]"), which is then followed by a definition in

non-technical terms: "These are **thoughts** and **ideas** … [my emphases]," and supplemented by other core-vocabulary items such as *effort, forgotten, hide away*, etc. The definition briefly features *gravitation* also, insofar as the "tip-of-the-tongue" example (sentence 21) must be said to "ground" the concept of the *subconscious* in a concrete, everyday type of experience familiar to any reader. The same type of integration of several specialized concepts as that seen in the chemistry book extract, moreover, occurs in sentence 19, when *the subconscious* is related to *the unconscious* and *the conscious*, here by means of a geographical or geometric metaphor (that of "area").

3.5 Case 4: teacher's textual exposition in a history lesson

The following example is taken from Matruglio et al. (2013: 41–45), which relates a history teacher's explication of the ancient Roman author Pliny the Younger's first-hand description of the eruption of Vesuvius in 79 AD. According to Matruglio et al. (2013: 41), the lesson was part of the final year of Ancient History studies in New South Wales secondary schooling. The extracts below detail how Pliny the Younger's uncle is alerted to the eruption and sails out from the ancient navy port of Misenum to study the eruption more closely. Below, Pliny's account (read aloud by the teacher in class) is quoted first, followed by the teacher's comment:[5]

Example 4:

Source text:
[1] He was at misenum in active command of the fleet. [2] The ninth day before the Kalends of September my mother pointed out to him a cloud of unusual size and appearance. [3] He had been out in the sun, then had taken a cold bath, had lunched lying down, and then was studying. [4] He demanded his shoes and climbed to a place from which he was able to have the best view of the marvelous thing (Quoted in Matruglio et al. 2013: 45).

History teacher's paraphrase:
[5] they're across up this end, and they're looking across to, um Pompeii, so there's quite a distance, and it's mum who first sees this strange cloud coming out of the volcano, and you know they'd all just been having a normal day lying in the sun "I'm hot now! [6] No swimming pool I'll just go and have a, a cold bath, um study," don't you like it … (quoted in Matruglio et al. 2013: 45).

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5 It is to be noted that since the oral text is a transcription, it is most likely not completely faithful to the teacher's exact oral output, but a slightly edited version, rather.

Source text:
[7] It was apparent to so learned a man that this warranted closer inspection. [8] He ordered a fast sailing vessel to be prepared and told me that I could come if I wanted. [9] I replied that I preferred to study (Quoted in Matruglio et al. 2013: 42).

History teacher's paraphrase:
[10] Pliny the Elder says "ohhh! Better see what's here! [11] Do you wanna come with me?" [12] And I love Pliny the Younger. [13] He says "oh no I have to study." (Quoted in Matruglio et al. 2013: 42).

Source text:
[14] Now, as the ships drew near, ashes were falling, hotter and thicker. [15] Now pumice and blackened stones, charred and cracked by fire. [16] Now they were in shallow water and the shore was obstructed by debris fallen down from the mountain (quoted in Matruglio et al. 2013: 42). [17] Having hesitated a bit about whether he should turn back, he soon said to the helmsman, who was advising that he do just that: [18] "Fortune favors the brave: head for Pomponianus." (Foss 2013).[6]

History teacher's paraphrase:
[19] They're rowing and rowing and as they get closer it starts to rain pumice and hot ashes and the sea is starting to get full of garbage and you can just imagine the oarsmen are trying to go through and there's pumice it floats, [20] there's all pumice on the top and they're trying to row … [21] and he, and he's thinking "oh my god what are we gonna do" and the helmsmen saying "oh we've gotta go back, go back, go back," and um, poor old Pliny's saying, what does he say? [22] Fortune favors brave men. [23] Even though he mightn't believe it he says it … (quoted in Matruglio et al. 2013: 42).

Source text:
[24] He (Pomponianus) had loaded luggage onto ships, set on escape once the contrary wind had died back down. [25] By that (same) most favorable wind my uncle was carried in; [26] He embraces the trembling man, comforts him, and encourages him so that he might alleviate the man's fear through his own

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6 Surprisingly, sentences 17–18 and 24–28 from the source text are not quoted in Matruglio et al. (2013), though the teacher's paraphrases of these particular passages are. To solve the problem, sentences 17–18 and 24–28 are quoted here from an online English-language translation of Pliny's letter (Foss 2013) instead. These passages thus stem from a different translation of the same Latin original. The English *wordings* of these particular passages are therefore likely to be not exactly the same as the ones actually read aloud by the history teacher to her class. The *meanings*, however, can be trusted to be the same, or very close.

confidence; [27] He asks to be brought to the baths; [28] having washed, he lies down at table and dines, either cheerful or (that which is equally as impressive) pretending to be cheerful (Foss 2013)

History teacher's paraphrase:
[29] … and so they keep rowing on, and there's Pomponianus standing on the shore, with his luggage, and a bit of a panic and they get him into the boat, or they get to shore and Pliny the um, Elder, is trying to appear calm and everything's alright, I'll just go and have a bath (Quoted in Matruglio et al. 2013: 43).

As Matruglio et al. (2013) point out, the teacher's paraphrase of the ancient text is clearly intended to make sense of it to the students, and so it may be regarded as a case of intralingual translation, which is in fact Matruglio et al.'s conceptualization of the paraphrase also. Their analysis of the strategies in the teacher's commentary, on the other hand, is on some points less convincing. In their interpretation, the paraphrase is first and foremost a case of intralingual *modernization*, i.e., "archaic" language brought up to date. What is ignored in this interpretation, however, is that the source text read aloud by the teacher is itself an *interlingual* translation, most likely from the twentieth century, of the Latin original. Thus, although the register of this English translation may indeed be considered rather formal and "bookish," it is dubious whether any *linguistically* archaic elements occur in it, with the possible exception of an expression like *this marvelous thing*, for which a more modern adjective would be, e.g., *extraordinary*.[7] It is also dubious whether the teacher's explicatory paraphrase actually weakens the semantic density of the (English-language) source text, which is what Matruglio et al. (2013: 42) claim, citing the intralingual translation of expressions such as *warranted closer inspection* into *Better see what's here* and of *the shore was obstructed by debris* into *the sea is starting to get full of garbage*. What makes the claim of weakened SD questionable is the fact that the source wordings are not technical terms. Nevertheless, as Matruglio et al. (2013: 42) point out, the target expressions are more spoken in style and less formal than the corresponding source wordings, which must be considered a cardinal element in the attempt to make the narrative accessible to the modern students.

An equally prominent strategy in the teacher's commentary is *gravitation*, which is evidenced in the change of grammatical tense from past to present (e.g., *my mother pointed out to him* … versus *it's mum who first sees* …), and in the transformation of third-person narrative and reported speech into dialogue. In this way, as Matruglio et al. (2013: 42) point out, the reported events are re-

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7 The Latin word in the original is *miraculum* (https://quemdixerechaos.com/2012/12/04/translatingplinypt4/).

enacted, thus in a sense making the students contemporaries of young Pliny and his uncle and direct witnesses of the events, which, it might be added, are made to unfold in a way similar to the mode of a modern sports commentary. In this way, the distance between the reported events and the modern students is minimized and something close to a maximum of concreteness is achieved. As Matruglio et al. (2013: 42) note, the semantic gravity is also strengthened by the addition of sensory details in the teacher's paraphrase, e.g., when she imagines *the oarsmen … trying to go through* (sentence 19). This "semantic filling" is also characteristic of the final example of intralingual translation to be given in Section 3.6 below.

3.6 Case 5: literary commentary

The first of the two source text excerpts below is the very opening of James Joyce's famous novel *Ulysses*, and the second is the beginning of the novel's second chapter. The target text extracts are sections from a reader's guide explaining Joyce's inaccessible prose. The guide is thus aimed at students of literature at a level of education where demanding modernist works like *Ulysses* are engaged with, most likely the final years of the upper-secondary level or university level.

Example 5

Source text extract I:
Chapter 1
[1] Stately, plump Buck Mulligan came from the stairhead, bearing a bowl of lather on which a mirror and a razor lay crossed. [2] A yellow dressing gown, ungirdled, was sustained gently behind him on the mild morning air. [3] He held the bowl aloft and intoned:
[4] – *Introibo ad altare Dei.*
[5] Halted, he peered down the dark winding stairs and called out coarsely:
[6] – Come up, Kinch! Come up, you fearful jesuit!
[7] Solemnly he came forward and mounted the round gunrest. [8] He faced about and blessed gravely thrice the tower, the surrounding land and the awaking mountains. [9] Then, catching sight of Stephen Dedalus, he bent towards him and made rapid crosses in the air, gurgling in his throat and shaking his head. [10] Stephen Dedalus, displeased and sleepy, leaned his arms on the top of the staircase and looked coldly at the shaking gurgling face that blessed him, equine in its length, and at the light untonsured hair, grained and hued like pale oak (Joyce 2001).

Reader's guide:

[11] *Ulysses* opens on the rooftop of the Martello Tower at 8:00 am on the morning of June 16th, 1904. [12] Buck Mulligan, a medical student in his 20s, looks out over Sandycove, a bayside suburb just south of Dublin, and begins to parody the Catholic mass as he prepares to shave his face. [13] He calls back down "the dark winding stairs" … for Stephen Dedalus to join him in the mild morning air. [14] … As he blasphemously mocks the liturgy, Stephen emerges onto the rooftop; Buck "ben[ds] toward him and ma[kes] rapid crosses in the air, gurgling in his throat and shaking his head" … acting as if Stephen is possessed by a demon. [15] At this gesture specifically and at his situation generally, Stephen is "displeased and sleepy" … [16] … You may notice that the novel's opening scene depicts a fairly unremarkable event (an obnoxious young man shaves his face while antago-nizing his dour roommate), but the epic setting of the tower and Joyce's careful prose instill a sense that each detail is laden with meaning and significance. [17] Perhaps Buck's "equine" face and "oak" hued hair signal that he is a Trojan horse … but those details also simply describe the guy's head (Hastings 2016a).

Source text extract II:
Chapter 2
[18] – You, Cochrane, what city sent for him?
[19] – Tarentum, sir.
[20] – Very good. Well?
[21] – There was a battle, sir.
[22] – Very good. Where?
[23] The boy's blank face asked the blank window.
[24] Fabled by the daughters of memory. And yet it was in some way if not as memory fabled it. [25] A phrase, then, of impatience, thud of Blake's wings of excess. [26] I hear the ruin of all space, shattered glass and toppling masonry, and time one livid final flame. [27] What's left us then?
[28] – I forget the place, sir. 279 B. C.
[29] – Asculum, Stephen said, glancing at the name and date in the gorescarred book.
[30] – Yes, sir. And he said: *Another victory like that and we are done for.*
[31] That phrase the world had remembered. [32] A dull ease of the mind. [33] From a hill above a corpsestrewn plain a general speaking to his officers, leaned upon his spear. [34] Any general to any officers. [35] They lend ear.
[36] – You, Armstrong, Stephen said. [37] What was the end of Pyrrhus?
[38] – End of Pyrrhus, sir?
[39] – I know, sir. Ask me, sir, Comyn said.
[40] – Wait. You, Armstrong. Do you know anything about Pyrrhus? … (Joyce 2001).

Reader's guide:

[41] The "Nestor" episode depicts Stephen at work as a teacher at a private boys' school in Dalkey, which is about a 20-minute walk south from the Martello Tower. [42] We know Stephen departed the tower no sooner than 8:45 am (the bells chimed three quarters past the hour at the end of "Telemachus"), so he presumably arrives a few minutes past 9:00 am. [43] He is late to work. [44] The narrative joins Stephen around 9:40 am in the midst of his lesson. [45] Stephen's teaching is uninspired. [46] He quizzes the boys on memorized historical facts related to the costly victory won by the Greek King Pyrrhus over the Romans at Asculum. [47] By Stephen's need to "glance at the name and date in the gorescarred book" …, we gather that he is unprepared for class … we've all been there, students and teachers alike. [48] As Stephen teaches, his inner monologue reveals the background activity of his remarkable mind: [49] he thinks of William Blake's characterization of history as romanticized and "memory fabled" …, he wrestles with Aristotle's ideas regarding history and events as the only possible outcomes ("was that only possible which came to pass?" …), and he vividly imagines General Pyrrhus leaning on a spear and speaking to his officers on "a hill above a corpestrewn plain" … (Hastings 2016b).

In contrast to the chemistry, biology, and psychiatry textbook cases, the intralingual translation strategies here do not really involve changes in either semantic density or gravity, since the source-target difference is not that between a specialized and a non-specialized register, but rather between a narrative-literary register and a non-literary, didactic-expository one. Also, what makes the two *Ulysses* extracts inaccessible (at least on a first reading) is not strong semantic density and a high degree of abstraction. On the contrary, the narrative is highly concrete, being centered on specific persons in particular places doing particular things. The opaqueness of the text is to a large extent a matter of implicit information which the reader is unlikely to have, or which can only be inferred from the text with quite some difficulty. Particularly in the first source text extract, the problem resides, not in knowledge-dense specialized terms, as in scientific texts, but in the reference of noun phrases (NPs) such as *the stairhead, the winding stairs, the gunrest*, and *the tower*. Semantically, the use of the definite article (*the*) in these NPs signals "presuming reference" (Martin 1992: 102), i.e., reference to items that are all presupposed as being known to the reader. In both extracts, the same applies to the personal names,[8] which are "homophora," i.e., references to persons, etc., known to sender and addressee alike through co-membership of a shared culture (Martin 1992: 121–122). Under normal circumstances, to make themselves understood, senders are

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8 By the beginning of chapter 2, however, Stephen Dedalus will be a character known to the reader.

obliged to properly introduce referents that are *not* known to the addressee, by explaining the identity of persons, places, etc., referred to, in accordance with Grice's (1975: 46) conversational maxim of "manner" and the conversational imperative of being perspicuous and avoiding obscurity. This "maxim" is flouted in the *Ulysses* excerpt, giving the narrative its apparently incoherent, *in medias res* quality. In establishing the identity of the objects and the persons referred to, including the relation between the characters, the reader's guide essentially supplies the contextual information needed to make sense of the source extract, i.e., the *who* and *where* (and the *when*, which is similarly expected from a narrator under normal circumstances). Likewise, the reader's guide makes explicit the *what*, i.e., the various kinds of goings-on in the extracts – not only the external (physical) activities, but also the verbal and mental ones. Thus, in the comment on the first extract, the guide explains Buck Mulligans' blasphemous theatrics and Stephen's reaction to it, and in the comment on the second extract, the guide starts by making explicit what the situational context is (the fact that it is a school setting, specifically a History lesson), with the teacher (Stephen Dedalus) engaged in the verbal activity of "quizzing the students" on historical facts and with the students attempting to answer these questions. Similarly, in sentence 47 the guide interprets the significance of Stephen's external, but private action (his glancing down in the textbook) and in 48–49 the content of his thought processes.

The intralingual translation, then, largely amounts to a re-narration of the *Ulysses* extract in a way that satisfies the normal requirements applying to "disembedded" texts (cf. Leckie-Tarry 1995: 46), i.e., texts (such as most narratives) whose referents are absent from the immediate, material context of the language production. Under normal circumstances, such texts are expected to be self-contextualizing, i.e., to explicitly encode all the contextual information needed to make sense of the narrative (cf. Leckie-Tarry 1995: 46). Thus, the central intralingual translation strategy in the reader's guide may be termed *explicitation*, which is a strategy known from interlingual translation theory, defined by Chesterman (1997: 108–109) as "the way in which translators add components explicitly in the TT which are only implicit in the ST."

4 Discussion and conclusion

In rounding off, certain limitations to the study need to be emphasized: Since the investigation is based on a limited number of case studies, no claims to exhaustiveness can be made with regard to the range of strategies charted, which means that the preliminary nature of the results must be stressed. Similarly, the claims regarding *differences* between different (groups of) educational disciplines should be

regarded as preliminary hypotheses awaiting further exploration in more comprehensive studies. Indeed, compiling a more comprehensive inventory of intralingual translation strategies in didactic practice and identifying more specific regularities within and between different disciplines is a future research avenue.

Nevertheless, from the five case studies certain tendencies emerge. The first one concerns the "location" of source and target segments/texts vis-à-vis each other: Since, as noted in Subsection 3.1, the intralingual translation featuring in natural and social science textbooks tends to consist in *conceptual* exposition, the translation was *intratextual* in the chemistry, biology, and psychiatry textbooks, with source and target items intertwined in one and the same text. In the two humanities subjects, on the other hand, where the intralingual translation in both cases took the shape of running textual commentary, sources and targets occurred as separate textual entities.

In terms of translational strategies, certain patterns also emerge, in that *rarefaction* (the "weakening" of semantic density) was mainly observable in the chemistry, biology and psychiatry examples, and more or less absent in the two humanities cases. The reason is, as previously noted, that the *explananda* in the humanities cases do not really consist in specialized concepts, but "only" in inaccessible narratives. *Gravitation*, or *concretization* (i.e., the strengthening of semantic gravity), on the other hand, was observed across the divide between the natural/social sciences and the humanities, manifesting itself in what might specifically be termed *narrativization* in the psychiatric textbook (evidenced in the case story), and as *re-enactment* and *semantic filling* in the humanities target texts. Also, whether an example of *concretization* or not, the strategy of *explicitation* was encountered in the *Ulysses* case. Altogether, given the previously mentioned assumption (see Subsection 3.1) about the difference in the way intralingual translation manifests itself in the sciences versus the humanities (as conceptual versus textual exposition), there is strong reason to hypothesize that the general types of semantic strategies identified in the two main fields (sciences versus humanities) are representative, especially in the sciences. More specific types are conceivable in the humanities, but if textual explication is a main "site" of intralingual translation in those fields, undiscovered semantic strategies are likely to be (merely) other similar, if more particular, varieties.

A hypothesis to be explored in a future investigation of intralingual translation within didactic practice is to what extent the variation in strategies between the different educational disciplines is linked with the differences in the type of *knowledge structure* characteristic of the natural and social sciences versus the humanities. In Bernstein's (1996) analysis, the knowledge structures of the natural sciences are *hierarchical*, meaning that knowledge is "vertically" organized: At the "apex" of the knowledge "pyramid" are found highly complex and specialized

concepts that subsume and presuppose less complex concepts which in turn build on concepts of lesser complexity, etc. The learning process in such fields is thus an ascension "up" through the levels of increasing conceptual complexity. To facilitate this progression – this *knowledge building*, to use Maton's (2014) term again – science teaching must take the shape of semantic "waving," as previously noted (Subsection 2.6), "up and down" between different strengths of semantic gravity and density, which is why *rarefaction* (one type of "downward" movement in the "waving") in particular is likely to be a core intralingual translation strategy in science education. The humanities, on the other hand, are characterized by *horizontal* knowledge structures (Bernstein 1996), meaning that "items" of knowledge in these fields (e.g., knowledge about a number of different pieces of literature in literary studies, different historical events or eras in history, etc.) tend to consist in parallel and less closely related elements at more or less the same level of complexity.[9] It may therefore be hypothesized that *rarefaction* as an intralingual translation strategy will be generally less frequent in the humanities.

With regard to further research avenues, possibilities are manifold, given that the investigation of intralingual translation is still in its infancy, especially when it comes to the diaphasic variety: Since education is only the second field where diaphasic intralingual translation has now been investigated, further fields dominated by knowledge asymmetries between senders and receivers await exploration, e.g., the field of law, which is similarly characterized by the encounter between experts and lay persons. Another field that has clear affinities with education is science journalism, where journalists are forced to assume an educational role in the mediation of scientific knowledge to their lay readership, and where, accordingly, a strong presence of intralingual translation is similarly to be expected.

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9 It may be noted that Bernstein's (1996) *vertical-horizontal* dichotomy and its mapping onto the sciences versus the humanities may be too inflexible and not allow for exceptions, such as possible elements of vertical knowledge structures in the humanities. A critical discussion of Bernstein's theses, however, is beyond the scope of this article.

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