Journal of English for Academic Purposes 54 (2021) 101039

Contents lists available at ScienceDirect

Journal of English for Academic Purposes

journal homepage: www.elsevier.com/locate/jeap

Exemplification in research articles: Structural, semantic and metadiscursive properties across disciplines

Nesrine Triki *

University of Turin, Department of Foreign Languages, Literature and Modern Cultures, Italy

ARTICLE INFO

Keywords:
Exemplification
Code glosses
Elaboration
Metadiscourse
Academic writing
Disciplinary practices

ABSTRACT

Examples are forms of code glosses similar to reformulations that help readers understand writers' intended meanings (Hyland, 2007) and contribute to the process of argumentation in texts (Triki, 2017). This paper investigates examples in research articles across the so-called soft and hard disciplines and aims to structurally and semantically explore the link between the building units of examples and how they could constrain the choices made across disciplines. To reach this end, the study investigates examples in a corpus of 80 research articles that cover four disciplines in the 'soft' sciences and four disciplines in the 'hard' sciences. Annotation was based on an automatic search of potential candidates then a manual annotation was performed using the UAM Corpus Tool (O'Donnell, 2008). Results suggest that (1) the structural features of exemplified units impose constraints on the choice of markers and exemplifying units (2) exemplifying clauses are more elaborative than exemplifying nominal groups and (3) the equivalence between the units exemplified and those exemplifying seems to be governed by the degree to which exemplifying units are expanding or compacting. The main conclusion is that the soft-hard distinction between academic disciplines is not always the major parameter triggering writers' choices.

1. Introduction

Exemplification is a discourse function equally useful in oral and written forms of language, in academic and non-academic settings and across all languages. Its basic role is to facilitate comprehension of terms, concepts and statements or to support claims and arguments. Together with other similar forms of text elaboration strategies like definitions and rewordings, exemplification plays a fundamental role in communicating speakers and writers' intended meanings. It, therefore, guarantees information transfer and interaction exchange as it facilitates the cognitive processing of utterances and claims (Sperber & Wilson, 1986; Blakemore, 1997).

Exemplification merits close investigation for several reasons. Siepmann (2005: 112) points to three significant ones. The first is that exemplification is a complex discourse operation that has its place in almost any argued text. The second reason relates to its high frequency in academic texts. The third one is related to the serious difficulties it poses for L1 and L2 learners. Siepmann's study concludes that despite the expectation "that writers at an advanced stage of language learning […] experience no difficulty in forming and using exemplifiers, the evidence, however, clearly suggests otherwise" (Siepmann, 2005, p. 257). These three features are indeed marking aspects of the research article genre in scientific and academic writing, where publishing conventions relate more to English as a Lingua Franca rather than English as a first or second language.

* Corresponding author. Università degli Studi di Torino, Centro Aldo Moro, Corner of via Sant'Ottavio & via Verdi, 10124, Torino, Italy.
E-mail address: nesrine.triki@unito.it.

https://doi.org/10.1016/j.jeap.2021.101039
Received 16 November 2020; Received in revised form 11 August 2021; Accepted 13 August 2021
Available online 18 August 2021

Exemplification has been studied in traditional grammar where it functions as a syntactic and semantic form of apposition (Quirk et al., 1985; Rodríguez-Abruñeiras, 2015), in functional grammar where it serves elaboration and cohesion relations (Halliday & Matthiessen, 2014) and in several types of hybrid discourse related fields like metadiscourse studies where examples gain, in addition to their cohesive textual function, some interpersonal and pragmatic values (e.g. Hyland, 2005 and, 2007; Dafouz-Milne, 2008; Barotto, 2018). A more general view of exemplification within metadiscourse studies indicates that very little is said about the specific use of exemplification in academic writing. It is often considered a sub-function or a secondary and minor category within broader rhetorical functions and receives little attention and space in the analysis and interpretation phases. Previous studies were more centered around the glossing nature of examples, their metadiscursive similarity with reformulations and their elaborative textual function (mainly Hyland, 2007), resulting, as such, in a limited understanding of the syntactic and functional drives behind the choices made at the level of the markers on the one hand, and the segments used to exemplify, on the other hand. These choices, obviously, would make sense only when they are scrutinized within their immediate linguistic co-text as well as their broader registerial or disciplinary context.

The discourse contexts are the research disciplines investigated in this research. Following Lenoir (1997), research disciplines are to be understood as "the institutional mechanisms for regulating the market relations between consumers and producers of knowledge" Lenoir (1997: 47). The market metaphor that Lenoir uses implies that knowledge production is mediated by academic brokers (like university staff, journal and conference editors and reviewers) and the more abstract discourse-oriented norms imposed by the academic text genres (such as lectures, conference presentations, research articles, PhD dissertations, book reviews etc.). Very often, academic disciplines are grouped under umbrella terms like 'hard' and 'soft' (Nesi & Gardner, 2006; Hyland, 2015; Jiang & Hyland, 2017; Casal et al., 2021) or, sometimes located across a continuum (Wu et al., 2020) where disciplines are "spread along a cline, with the 'hard knowledge' sciences and 'softer' humanities at opposite ends" (Hyland, 2008, p. 549). Studying lexical, grammatical and pragmatic properties within and across those disciplines could be fruitful to understand how these features are realized within academic texts and how the epistemological and methodological frames may construe authors' choices.

Given the value of exemplification in pedagogical and academic contexts, this paper aims to shed light on the use of this discourse function in a corpus of research articles belonging to eight different disciplines in the so-called soft and hard groups. The broad objectives of the study are to (1) describe the structural, semantic and metadiscursive properties of examples, with special focus on the nature of the units exemplified, the use of exemplifying marker, and the units used as exemplifying (2), explain the reasons behind opting for specific exemplification markers and exemplifying units, and (3) examine the extent to which the 'soft' versus 'hard' variables could mark the use of examples. While trying to reach these objectives, some theoretical and methodological considerations need to be revisited and discussed. More specifically, the study will try to answer the following related questions:

- How do examples elaborate on specific text spans and how can they guide readers' understanding?
- What favors the choice of markers and the choice of exemplifying units?
- Do writers in different soft and hard disciplines exemplify in the same way?

The remainder of the paper is structured in two main parts. The first provides the theoretical background for the study, namely, some initial reflections, the grammatical classification and the metadiscursive properties of examples. The second part is the empirical one. It outlines the methods used to analyze the corpus, gives main results and discussion and ends with a conclusion.

2. Initial reflections on exemplification

Exemplification is an overarching feature of human interaction and a necessary rhetorical tool for clarity and persuasion. In teaching and learning contexts, "exemplification is commonly used by science instructors for a variety of pedagogical ends, including developing and clarifying important concepts, explaining natural phenomena, giving supportive details to general and abstract ideas, engaging learners, and persuading students" (Oliveira & Brown, 2016, p. 737). Examples are not necessarily expressed through linguistic means (for example, dropping an object on the ground could illustrate the meaning of the verb 'fall' in English), but it they are, this could involve listing words that belong to the same class as the exemplified item (example1), or illustrating situations in which a specific claim or statement is arguably real or possible (example 2). Exemplification typically requires the presence of three discourse units. The first is the exemplified unit (highlighted in italics), the second is the exemplification marker (marked in bold) and the third is the exemplifying unit (underlined). Discourse units are discourse segments like those proposed by Mann and Thompson (1987) in Rhetorical Structure Theory (RST). Thus, the term unit, here, refers to a logical unit of meaning rather than a linguistic form.

1. (fabricated example) *Felines* are animals **like** cats, jaguars, leopards, and pumas.
2. (fabricated example) *Felines could be dangerous.* **For example**, they can scratch your skin and cause rabies.

In the first example, the speaker/writer uses some of the members of the set 'feline' which includes shared and concrete examples already familiar to the interlocutors. The example is used as an explanation for a superordinate class (feline) the meaning of which could be less accessible to readers. The main point of introducing the example is to elucidate the meaning of the noun *feline* and make the text more transparent. Instead of providing a whole definition for the term *feline,* one or more members of the set are given as illustration. The example's elaborative function is semantically restricted to the nominal groups and does not cover the whole clause. In example (2), however, the exemplifying unit serves as a support for a claim made in a previous clause. Its objective is to give readers a possible or hypothetical situation that proves the truthfulness of the claim made. Its range, therefore, covers the whole idea made in

the clause. The writer could strengthen their evidence by providing more illustrative examples. Yet, as Blakemore (1997:13–14) notes, such a link between the exemplified and exemplifying units is understood as "evidence" and can only be "inferential", and the process is made possible thanks to "relations of relevance". Processing and understanding the example as a piece of evidence to a prior segment is inferential or implicit. The exemplifying unit itself could be explicitly marked via a discourse label or other connectors. If the proposition is true, there exists at least one corresponding example that could illustrate it and there could be one counter-example that could refute it. Succession to its effects implicates acceptance of hypotheses and creation of new knowledge and or facts.

3. Syntactic classification of exemplification

Exemplification in grammar is almost always considered as a form of apposition, which for Quirk et al. (1985: 1308) falls under those types of least appositives that have an inclusive rather than equating (like definitions and reformulations) or attributing (namely, non-restrictive relative clauses) nature. Although exemplification does not necessarily require an explicit indicator, using one is "the norm" to guarantee unambiguous meaning of exemplification (ibid: 1316). Meyer (1992: 5) extends this appositional nature of examples and argues that all units in apposition have syntactic, semantic and pragmatic characteristics. He also stresses that examples in appositions "are joined by the **obligatory** markers of apposition *such as, like,* or *for example*" (ibid: 77) [bold added]. Apposition relations as syntactic categories are restricted to the intra-sentential scope, which means that they only enable the identification of examples within the sentence and not across sentences. The exemplification function, however, can bring sentences and even longer stretches of texts together. Similarly, apposition does not fit in the case where the exemplification relation holds between the subject and the predicate in a sentence. It makes more sense, therefore, to consider it as a logico-sematic elaborative function as in functional grammar theory.

From a Systemic Functional Grammar perspective (SFG), exemplification is considered as a form of elaboration where "one clause elaborates on the meaning of another by further specifying or describing it" (Halliday & Matthiessen, 2014, p. 461). Elaboration is a logico-semantic relation, a form of expansion where meaning is exemplified, restated or defined. Different forms of elaboration, including exemplification, could be realized at various grammatical ranks. Rank in SFG "refers to the different 'sizes' of the grammatical units (layers of constituency)" (Matthiessen & Halliday, 2009, p. 12). Meanings and experiences could be construed within the lower ranks, i.e., the group (e.g., nominal group, verbal group) or phrase (prepositional phrases) rank. Being forms of contracted clauses (Halliday & Matthiessen, 2014, pp. 362–367), exemplifying prepositional phrases would enact situations rather than entities. Above the group, logico-semantic relations could be located at the simple clause rank (simple sentence in traditional grammar) where examples will be the tie between the participant in the subject position and the one in the predicate. At the clause complex rank (compound or complex sentence in traditional grammar), exemplification brings together clauses in paratactic combinations. Finally, beyond clausal boundaries (between sentences) meaning stretches over longer linguistic chunks where sentences blend cohesively to form a text. These different types of exemplification will now be illustrated.

At the group level, specifically, the nominal group, exemplification is seen as a form of *Apposition* (Halliday & Martin, 1993, p. 255; Halliday & Matthiessen, 2014, p. 560). It elaborates on the head noun and/or any of its pre and post modifiers. Its scope is, therefore, restricted to the boundaries of the group as in example (3).

3. A few materials, such as germanium and silicon … (example from Halliday & Martin, 1993, p. 254)

At the simple clause level, exemplification is the meaning that bonds the subject and the predicate in the whole structure. Very often, it is construed within relational clauses that include equative processes, mainly copular verbs, of being rather than doing, saying or thinking as in (4). The segment in the subject (the Token) and the one in the complement (the Value) are more or less equivalent to one another (Harvey, 2001).

4. [Token] Frogs, toads, and salamanders [Process] are [Value] some amphibians we know today (Example from Halliday & Matthiessen, 2014, p. 285).

Exemplification in (4) has an implicit nature because there is no clear and explicit signal for the discourse function intended. Although the quantifier *some* may help in identifying the link, the meaning of exemplification is understood as the relation holding the nominal group in the subject position to the one in the complement. The following counterparts (5 and 6) have very similar structures, except that the meaning of exemplification becomes more salient thanks to the use of the more explicit markers *example of* in (5) and *exemplify* in (6).

5. Examples of amphibians are frogs, toads and salamanders (Halliday & Matthiessen, 2014, p. 290).
6. Amphibians are exemplified by frogs, toads and salamanders. (ibid)

At the clause complex level (example 7), exemplification is construed as a paratactic clause serving elaboration purposes of the type *Apposition*. It is found within the secondary clause which "develops the thesis of the primary clause by becoming more specific about it, often citing an actual example" (Halliday & Matthiessen, 2014, p. 463).

7. **Someone comes along with a great idea for an expedition** – for example, I did a book called Sand Rivers, just before the Indian books, and it was a safari into a very remote part of Africa (Example from Halliday & Matthiessen, 2014, p. 463).

At the text level, and beyond clausal boundaries, exemplification is located within the system of cohesion as a form of *Apposition* together with expository forms (paraphrasing and restating elements) (Halliday & Matthiessen, 2014, p. 612). Exemplifying chunks provide "resources for marking logico-semantic relationships that obtain between text spans of varying extent, ranging from clauses within clause complexes to long spans of a paragraph or more" (ibid: 609).

Exemplification is thus considered to have one of those enabling functions of language (a textual function). Yet, it also serves clarification and expansion ends, that is, an interpersonal function (VandeKopple, 1985; Dafouz-Milne, 2008; Hyland & Tse, 2004; Hyland, 2005). The appositive nature of examples and their similarity with other forms of appositives, like restatements, might be one of the reasons why they tend to be regarded as serving the non-propositional function of discourse in some metadiscourse models.

4. Exemplification as a metadiscourse function

Metadiscourse studies, specifically the ones adopting the broad model, have often prioritized macro level analysis of texts and corpora by looking at and comparing broad notions like interactive/interactional features and the sub-categories they include (e.g., Vande Kopple, 1985; Mauranen, 1993; Hyland & Tse, 2004; Hyland, 2005; Hyland, 2017). This observation finds roots in Hyland's (2017) study where results prove that the general tendencies and practices in metadiscourse studies are more focused on those broad notions. He states that "academic genres in English, particularly research articles and abstracts, are the primary areas of interest with attention given to interactional elements of the interpersonal model with stance, evaluation, engagement and persuasion prominent" (Hyland, 2017, p. 27). Research embracing a narrower understanding of metadiscourse, on the other hand, seems to provide a much deeper analysis of the studied phenomena (Ädel & Mauranen, 2010, p. 3). By focusing on smaller metadiscourse units (for example, (Ädel's 2017 and 2018) study of personal pronouns), it becomes possible to scrutinize not only the quantitative findings, but, most importantly, to relate and explain form to function relations within authentic extracts and examples.

In earlier models of metadiscourse (Crismore & Farnsworth, 1990; Vande Kopple, 1985), various forms of code glosses, including exemplification, are believed to serve the 'textual' function of language. They are more related to the way discourse is organized in a text and how its different units can be cohesively interconnected. This idea is based on a Hallidayan view of language as serving three basic metafunctions, namely: ideational, interpersonal and textual. Thus, the earlier models classify metadiscursive elements, which are distinguished from the propositional elements of texts, as serving either textual or interpersonal functions, but not the ideational one. Even in some more restrictive views of metadiscourse, the idea that the ideational metafunction is propositional while the interpersonal and textual ones are non-propositional sometimes exists. For example, Mauranen (2010: 14) who adopts a definition of metadiscourse as a form of discourse reflexivity does not argue much about understanding metadiscourse as the non-propositional side of language. She recognizes this as a fact, stipulating that "[t]he all-encompassing notion of metadiscourse" is "the 'non-ideational' text matter". This classification is a bit problematic because it presupposes that 'ideational' equals 'propositional'. Halliday's ideational metafunction in clauses and texts, however, seems to include many of the expressions considered non-propositional in metadiscourse. In addition, the speech functions of clauses in SFG include not only 'propositions' (enacted as statements and questions) but also 'proposals' (offers and commands). For these reasons, the propositional versus non-propositional dichotomy cannot be adequate in defining what examples are.

Exemplification is a form of code glossing similar to paraphrasing in that it also helps readers grasp the writer's intended reasoning (Hyland, 2007). The elaborative aspect of examples puts them in a close relation to other discourse functions of elaboration, namely paraphrasing and defining "that are triggered by writers' awareness of readers' requirements for more specification, elaboration or simply for some concrete and tangible illustrations" (Triki, 2019, p. 105). Although the three discourse functions (defining, rewording and exemplifying) seem to semantically and rhetorically serve one ultimate goal (elaboration), they have distinct lexico-grammatical realizations. Exemplification is "rarely personalized" in English academic texts (Ädel, 2006, p. 69), in the sense that it is rarely introduced via first person pronouns or reference to the author as in other forms of glossing and elaboration. On the other hand writers may use structures like "*I define x as y*, *we refer to x as y*" etc. in order to define a term or concept, and it is possible to use personal forms such as "*what I mean by x is y*, or "*we mean*" in rewordings or paraphrases,. As a form of discourse reflexivity where language is used to refer to and reflect language itself, exemplification is a kind of discourse reflexivity with a high degree of explicitness. It is almost always explicitly introduced via easily distinguishable discourse labels like *to illustrate*, *an example of* etc. (Mauranen, 1993).

Such an understanding of reflexivity, arguably, narrows down the meaning of 'reflex' and shrinks it to the marker. Ädel argues that "a connector such as *for example* would count as a 'discourse label' on the basis that it explicitly signals the discourse act of 'exemplifying'. Conversely, a connector such as *therefore* would not be considered metadiscursive simply by virtue of its connector status. In fact, the present model dictates that it does not sufficiently explicitly signal the presence of the writer, nor the text itself, and, therefore, it does not qualify as metadiscourse" (Ädel, 2006, p. 23). This would necessarily mean that examples introduced by *for example* are considered metadiscursive while others introduced by *such as*, *like,* or *as* are not. The way metadiscourse is understood in this study is much broader. All forms of elaboration are metadiscoursal as they represent language functions that echo, in one way or another, and with various degrees of explicitness, some precedent or subsequent units of meaning. Consequently, reasoning and argumentation are pushed forward, from dark, obscure, and unclear instantiation to more eloquent, transparent and convincing forms of meaning.

More specifically, exemplification in academic writing, according to Hyland (2007: 279–280), works in three main ways:

1) by offering an instance of a general category
2) by providing a parallel or similar case
3) by giving a precept or a rule

A closer look at the examples Hyland gives to illustrate on these meanings or uses of exemplification reveals a major problem of overlap that exists between cases 2 and 3:

Case 2: A tradition may be reflective and designed, *like the deliberations of the Supreme Court*, or unreflective and spontaneous, *like sports fans rooting for their teams* … (Philosophy).

Case 3: In the experience of any change we may identify a particularly salient point, *such as the moment a long-distance runner crosses the finishing line.* (Philosophy).

It is almost impossible to see the difference between the two illustrative examples. Thus, the example in case 2 could also be regarded as 'precept', and vice versa, the one in case 3 could be considered 'a possible case'. Differentiating similar cases becomes even harder in a large corpus like Hyland's, and this perhaps explains the reason why he does not provide any exact frequencies for their occurrence and distribution within his corpus and across the disciplines.

Another controversial issue in metadiscourse studies is the boundaries of examples. Whereas some would suggest that the marker of exemplification is the one fulfilling the metadiscourse function, I would argue that the exemplifying chunk should be included too. Hyland (2017: 17), for example, acknowledges that there is still disagreement and divergent views "on where we should draw the boundary of metadiscourse or what rhetorical categories it includes". Presumably, some metadiscourse functions could be captured by the signal itself, in which case the marker is at the same time the carrier of the metadiscourse meaning. This could be true for categories like *hedges* or *transition markers*. Yet, for code glosses, it does not make much sense to say that the signals *mean*, *such as* or *in other words* are the carriers of the meaning. The reformulation, definition or exemplification segments are rather situated before or after these markers. Otherwise, there would be no need to talk about two separate notions, one for the discourse function and another for its marker. Evidence for this could be found in several studies that investigate code glosses. For example, while exemplifying what is meant by code glosses in Vande Kopple's framework, Ädel (2006: 169) italicizes both the marker and the gloss in the example 'He called these questions antinomies *that is, contradictions*'. Another context is Hyland (2007) where the examples he gives include both the marker and the chunk carrying the reformulation or the example. This goes in line with the view of metadiscourse as a form of discourse reflexivity in that the exemplifying units reflect the piece of language already introduced in the exemplified chunk and are, as such, governed by the logico-semantic features introduced therein. This brief discussion confirms the necessity to study the three units of exemplification (exemplified units, exemplification markers and exemplifying units) and not exclude any of them.

5. Corpus and methods

The study investigates the use of examples in a corpus of 80 research articles of about 770 000 words (Table 1). They were randomly compiled from electronic journals published online. The corpus covers 10 articles from four disciplines in the soft sciences, namely, Linguistics (LING), History (HIS), Marketing (MKT) and Economics (ECO), and four disciplines in the hard sciences: Computer Science (CS), Electrical Engineering (EE), Physics (PHY) and Materials Science (MS). All articles are written in English "as a lingua franca in international contexts such as scientific publishing" (O'Neil, 2018, p. 161) and the native versus non-native distinction is not applied in this paper.

The choice of the journals was primarily based on suggestions from specialists in the different fields on the basis that they are peer-reviewed journals with high impact factors and good citation scores. Those specialists also served as informants to help with reading challenging parts of the corpus, specifically the sections involving complex technical terms, numerical data and mathematical equations, when these were vital for coding decisions. The articles were randomly selected based on their length (average text length = 9620 words/article) from open access numbers. Opting for texts with the same approximate word count was necessary to guarantee a similar number of texts belonging to each discipline. This was also crucial because annotation relied on an automatic search for potential candidates (Table 2 includes a list of 27 search items compiled from the literature) before a manual analysis of exemplification segments was performed using the UAM Corpus Tool software (O'Donnell, 2008). Obviously, the collected corpus cannot fully capture all the research and writing practices in all the sub-branches of these eight disciplines. Yet, this is a common practice in corpus-based studies where the linguistic feature (exemplification in this study) to be observed and investigated is a frequent one. For example, Hyland and Tse (2009) also analyze a sample of 10 texts in each of their four disciplines, and Biber (1995: 131) maintains that with as few as 10 texts belonging to a specific register it is possible to represent almost the totality of elements marking that register.

Once the corpus was compiled, all potential exemplification candidates were automatically extracted based on the items in the search list. The search list is probably not exhaustive but it definitely includes the most common and most frequent signals used in

Table 1
The corpus.

	Discipline	Number of texts	Number of words	Total number of words
Hard	Computer Science	10	95 615	383 955
	Electrical Engineering	10	87 654	
	Materials Science	10	104 162	
	Physics	10	96 524	
Soft	Linguistics	10	93 567	385 460
	History	10	97 325	
	Marketing	10	97 638	
	Economics	10	96 930	
Total		80	769 415	769 415

Table 2
Search list.

1.	another
2.	as in
3.	e.g/eg
4.	example of
5.	exemplify
6.	extract
7.	for example
8.	for instance
9.	in particular
10.	includ*
11.	like
12.	mainly
13.	namely
14.	one such
15.	a case in point
16.	particularly
17.	sample
18.	a few studies
19.	a certain study
20.	several/some studies
21.	say
22.	specifically
23.	such as
24.	to cite/mention/a few
25.	illustrat*

exemplification. Examples were not identified where no explicit marker was used, like in intensive identifying clauses explained in example (4), or where punctuation forms were used (such as brackets and colons). Manual checking then followed to eliminate any occurrence that did not indicate exemplification. For example, the search word *namely* was sometimes found to mean *specify* rather than *exemplify* (example 8), in which case the segment was eliminated.

8. Thankfully, an off-the-shelf implementation provided by Struc & Pavesic [49][50], **namely** INface Toolbox, grants us the opportunity to achieve our target efficiently and accurately. (Electrical Engineering)

All exemplifying instances were extracted with sufficient co-text to allow a better link between the different constituents and then they were exported to the UAM Corpus Tool for annotation. They were, then, segmented into the three building units introduced in section 2. Example (9) illustrates these units where (1) the exemplified unit is highlighted in italics, (2) the exemplification markers in bold and (3) the exemplifying units being underlined. These highlighting features apply to all examples used in the paper.

9. *In particular, the younger Marxist New Left figures were skeptical of sociology, regarding its vision of society as too 'static'*. Peter Worsley, **for example**, strongly criticised the 'facile optimism' of both Mass-Observation and the ICS. (History)

Exemplified and exemplifying units were then further analyzed in terms of their grammatical structure as being nominal groups (including nominalized forms) or clauses (single, sequences, paragraphs, sections). A second level of analysis targeted all exemplifying units, being, as it were, the carriers of the intended examples, in order to understand the essence of the illustration they provide (abstract versus concrete entities, citation elements, real versus hypothetical situations, extracts and passages from other sources, mathematical equations and non-verbal elements in the form of tables and figures). Such a classification also helps in identifying those types of examples that offer rather compact and opaque units (namely, figures, tables, mathematical equations, and reference to external published material) and those that are more straightforward and clearer (like abstract and concrete entities, and real and hypothetical situations).

6. Results and discussion

6.1. Exemplification across the soft and hard disciplines

Corpus annotation yielded a total number of 3012 instances of exemplification (Table 3), with an average of 37.65 instances per text. This high frequency, indeed, reflects the value of using examples in academic writing for a variety of reasons. As a metadiscursive tool, exemplification is found to be more frequent than other forms of code glossing like reformulation (Hyland, 2007, p. 271). When the soft/hard distinction is considered, results show that examples are 14% more frequent in the soft sciences with 57% of all occurrences versus 43% in the hard ones. This is a general tendency that seems to be confirmed by other studies (e.g., Hyland, 2007; Triki, 2014 and 2017), although the built-in statistical tool in the software used proves that this variation is not statistically significant.

Table 3
Exemplification across the 'soft'/'hard' continuum.

	EXEMPLIFICATION	
SOFT	1722	57%
HARD	1290	43%
TOTAL	3012	100%

These general results, however, do not reflect the divergences found within the various disciplines of the humanities and social sciences on the one hand and those of the hard sciences on the other hand. As Fig. 1 illustrates, one of the soft disciplines, Marketing, ranks first, with more than a quarter of all the examples found in the corpus, while History, another soft discipline, ranks last with less than 7% of the total number of examples. Between these two extremities, other hard and soft disciplines use examples with differing degrees of frequency. For example, Materials Science uses far more examples than Economics. This suggests that disciplines cannot simply be categorized as 'soft' and 'hard'.

Disciplines and sub-disciplines of the same science reveal different practices and writers may opt for totally different strategies to explain and elaborate their wordings and claims. Such choices could be constrained either by disciplinary and genre practices, contextual exigencies or personal idiosyncrasies. As will be argued in section 6.3, the variation could also be linked to lexico-grammatical constraints. Hyland (2007: 284) argues that "the sciences and engineering on one side and social sciences and humanities on the other draw on different linguistic resources in the creation of specialised knowledge". Yet, it is with caution that such a generalization should be taken. Disciplines and sub-disciplines within the same scientific field are not always homogeneous. Major differences could be spotted in the lexico-grammatical and rhetorical structures they use, and in the functions these same structures are meant to serve.

The following are illustrative examples (10 and 11) from the two disciplines lying at the two extremities. More illustrative examples and discussion of the specific exemplification instance will be given in the next sections.

10. *The assimilation sub-model depicts the co-creation proposition of S-D logic with realized value being a function of both the vendor's and the buyer's efforts.* **For instance**, implementation deficits and failure to attain the offering's full value potential could be due to internal buyer-attributed factors such as sub-optimal resource allocation […]. (Marketing)
11. In particular, *a number of intellectuals*, **including** Michael Young, were profoundly influenced by the 'solidaristic ethic' of wartime society. Stephen Brooke pinpoints the *'young academics' and Labour MPs associated with the New Fabian Research Bureau in the 1930s*, **including** Hugh Gaitskell, Evan Durbin, Douglas Jay, Barbara Wootton and James Meade […]. (History)

In marketing, claims and arguments tend to be rather complex. As illustrated by Skipper and Hyman (1987: 61–64), research articles in the marketing field follow strict and rigid norms of demonstrations based on the principles of logic. Examples in marketing academic publications "constitute much of the article" (ibid: 68) where they "easily could be taken as attempts to prove a general claim. Examples can be used to clarify a meaning, to prove existence claims, to *disprove* a general claim, or to disprove any claim of the form 'if A then B'" [italics in original]. Yet, a deeper analysis of the type of examples used within the Marketing sub-corpus (section 6.4) will exhibit divergent practices in the texts analyzed. Most importantly, the high frequency of examples in the Marketing discipline does not necessarily reflect a complexity in elaboration or in argumentation but rather an unusually extensive use of lengthy sequences

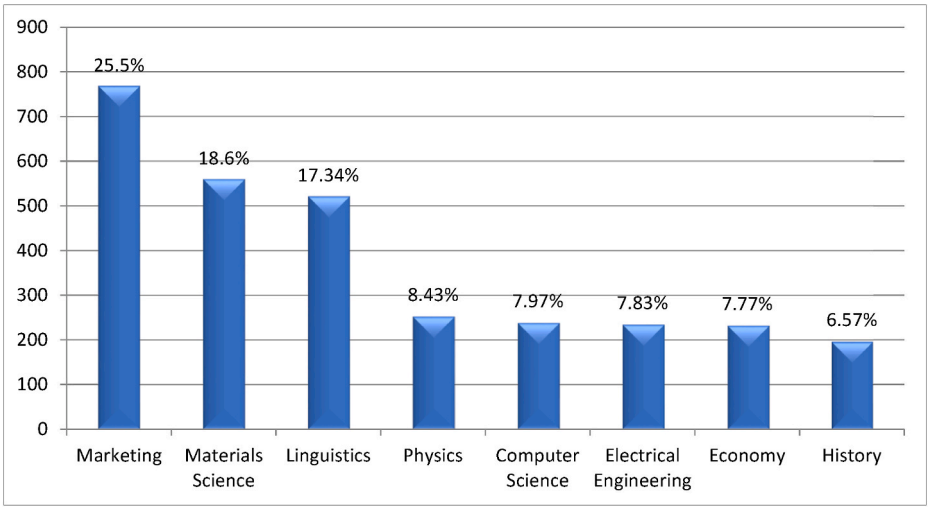

Fig. 1. Frequency of examples across disciplines.

of references as exemplars. Historians, on the other hand, make connections between events, participants, dates and places in order to construct narratives about the past. While doing so, they position themselves and their stories in line with or in contrast to other narratives (Nokes & De La Paz, 2018, p. 558). This could explain the fact that most of the examples they cite either refer to other authors, famous and influential people (example 11) or events and happenings in specific historical periods.

6.2. *Exemplified units*

In order to better understand the reasons why academic writers use examples it is necessary to look at the units of discourse that are being exemplified. As exemplification establishes a link between a term, concept or statement and another segment that serves as the form of elaboration, exemplified units could be structurally construed in different forms. Analysis has shown (Fig. 2) that they come in mainly two forms, either as nominal groups (54.71%) that generally refer to entities or as clauses (45.29%) that represent statements. The choice of form varies across disciplines, however. Computer Science and Physics exemplify using clauses more than nominal groups, with percentages of 74% and 57% respectively. In the History texts exemplification using clauses occurs in less than 24% of cases. These findings will be further discussed in section 6.4, where the structure of exemplified units is shown to constrain the structural realization of exemplifying chunks.

12. LMOF-based chemosensors usually show solvatochromism or vaporchromism, […] and hence provide a more direct and convenient method for sensing *certain chemicals*, **such as** volatile organic compounds, gases, ionic species or explosives. (Materials Science)
13. We can divide the seller's offering attributes (operand resources) into two categories: *core operand resources, which fulfill basic customer expectations about a product* (**e.g.**, compliance with functional and technical requirements), and *augmented operand resources, which help the seller to exceed customer expectations* (**e.g.**, installation, training, and support services). (Marketing)

The exemplified unit represents the trigger for the entire act of exemplification. This unit, sometimes also referred to as the anchor (Meyer, 1992), is thought of as being "syntactically more important than the appositive" (Rodríguez-Abruñeiras, 2015: 34). In other words, the presence of the markers *such as* in (12) and *e.g.* in (13), together with the segments (underlined) directly following them, are entirely motivated by the use of the italicized nominal groups. As the ultimate purpose of introducing an example is to elaborate on a prior text span, this implies that this text span is marked by a kind of ambiguity or lacks clarity. As such, the example is introduced to illustrate and guarantee precision and lucidity. When those text spans come in the form of nominal groups, the source of the ambiguity can be spotted within one or several constituents of the group. For example, in (12), the use of the adjective *certain* seems to be the trigger. Such an adjective is similar to many types of emphasizers, limiters and quantifiers used in nominal groups like *some*, *many*, *particular*, *specific*, etc. which all carry meanings of imprecision and vagueness. The author, therefore, gives a number of examples to guide the reader to what they specifically mean.

14. *In SFL, each genre is considered to follow certain stages (*Eggins, 2004*)*. **For example**, a case study analysis has certain stages such as Orientation and Recommendation. (Linguistics)

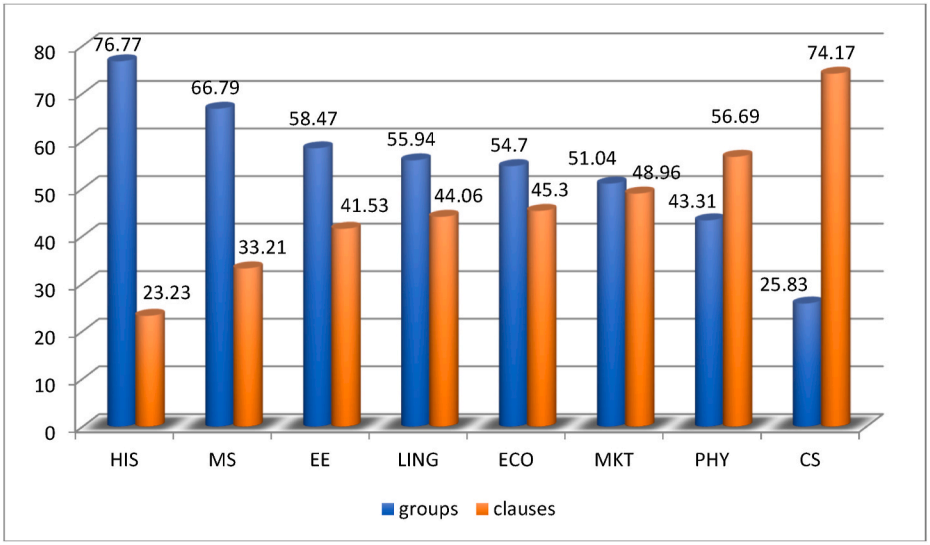

Fig. 2. Exemplified units across disciplines.

15. In other terms, *what we could prove is that quantum measurements are interpretable as universal measurements having a Hilbertian structure* […]. **Just to give some simple examples**, consider the two-dimensional (N = 2) case, and the density operator D = 1 I, where I is the identity operator. (Physics)

The need for elaboration in the case of clauses, however, is not solely motivated by one or two constituents within the clause but rather by the overall meaning generated by it. Accordingly, it is expected that the example (introduced in the exemplifying unit) would cover not one or some parts of the meaning but rather all the ideational load expressed in the exemplified unit. In example (14), the reader's expectation is constrained by at least three main ideas. The first and perhaps, most important one, is that genres follow stages, the second is that these stages are known, specific or limited, and third is that this whole idea is found in the literature of SFL. The same argument applies to example (15) where the exemplified unit includes a hypothesis in the form of a fact clause *'that quantum measurements … '* to be proved in the illustrative exemplifying examples. The exemplifying unit, accordingly, comes in line with these emergent ideas and illustrates how these various meanings are true or potentially true and verifiable. The link between exemplified and exemplifying units is generally based on hyponemic relations whereby lexical items refer to the same semantic repertoires. Lexical relations, apart from the fact that they guarantee cohesion in texts (Halliday & Hasan, 1976), also establish asymmetric equivalence links between the two units of the example. These exemplifying units draw from sources of shared or common knowledge; otherwise, the whole gist of elaboration and argumentation would be missed.

6.3. Discourse markers of exemplification

The different disciplines used a variety of exemplification markers, elsewhere named *discourse labels*. Table 4 illustrates the most frequent markers found in the corpus and their frequency and distribution across disciplines. Overall, three markers (*e.g.*, *such as* and *for example*) account for more than 64% of all instances of exemplification in the whole corpus, a result that confirms Hyland's (2007) findings which indicate that three quarters of the examples studied in his corpus were introduced by these markers. Yet, some differences concerning the frequencies of these markers are recorded in the present study. Although according to Rodríguez-Abruñeiras (2015: 131) "the use of *e.g.* is not advisable in most text-types, and even in formal and scholarly texts", it ranks first with more than 26%, followed by *such us* (22.11%) and *for example* (15.21%). Other less frequent markers are the nominal expression *example(s) of*, *include*, *illustrate*, *for instance* and *like*. Despite its similarity with *such as*, that is, its ability to introduce examples in the form of nominal groups, the marker *like* is more than five times less frequent than *such as* in the corpus. This could be explained by stylistic preferences in written academic genres where *like* is avoided because of "the general stigma" associating it to conversational genres and informal contexts (Meyer, 1992, p. 108).

In consistency with the previously recorded divergences, it seems that the use of these markers is also constrained by disciplinary practices or preferences. For example, a look at the use of *e.g.* across disciplines shows that it is mainly used in the soft fields. Chi square test points to a variation of high significance between the soft and hard sciences. Yet, while *e.g.* accounts for more than 50% of all examples in Marketing, it was not used at all in History (which prefers the marker *such as*). This again raises questions about the validity of packing social sciences together within a, presumably, homogeneous group. The hard sciences are also marked with greater variation. The top-ranking marker in Electrical Engineering and Materials Science is *such as,* while in Physics it is the nominalized form *example of,* and in Computer Science *e.g.* ranks first. Interestingly, Computer Science uses a far greater variety of markers, including less frequent markers such as *say*, *as in*, *one such*, and the use of headings (see examples 16 and 17).

16. In this section we show a gathering procedure for any configuration containing exactly one multiplicity, **say** at node v. (Computer Science)
17. **Example 6.1.** Consider the configuration C = (a, a +1, a −1, a +1, a −1, a +1, a) of 7 robots, for some a >1 (see Fig. 3). (Computer Science)

While the use of *say* in example 16 is generally imposed by the mathematical exigencies in computer science papers, where *say* enables the introduction of a hypothetical example used as a "supposition" or "a hypothesis" (Rodríguez-Abruñeiras, 2015: 149), the use of the heading in (17) adds an organizational function to this marker of exemplification.

Table 4
Markers of exemplification.

	Total	CS	EE	MS	PHY	Ling	Mkt	Eco	His
e.g	26.36%	**27.50**	7.63	3.21	5.51	**34.87**	**53.65**	**35.90**	0.00
such-as	22.11%	9.17	**26.27**	**41.07**	20.47	18.77	12.76	13.68	**36.36**
for-example	15.21%	10.83	8.47	**20.71**	14.96	12.64	**19.01**	13.68	7.07
example(s)-of	8.17%	9.17	9.32	8.93	**32.28**	7.66	1.82	4.27	3.03
includ*	6.90%	0.00	5.08	5.36	0.00	6.52	3.38	14.53	**17.17**
illustrat*	6.90%	5.53	**15.25**	3.21	11.02	3.45	2.60	10.26	12.12
for-instance	5.84%	6.67	11.02	6.79	5.51	4.98	3.39	0.85	**14.14**
like	4.05%	1.67	7.63	**10.36**	7.09	0.77	2.34	0.00	1.01
Others (13)	4.47%	**29.46**	9.33	0.36	3.16	10.34	1.04	6.82	9.10
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

One of the basic functions of these markers is to "express certain semantic relationships between the appositives" (Quirk et al., 1985, p. 1307) and to create cohesion and coherence in discourse (Halliday & Hasan, 1976). This stands true when the primary goal of the analysis is to study the properties of 'texture' and coherence in texts. If their role is restricted to the cohesion function this would mean that they only have textual function. Yet, these exemplifying markers also serve interpersonal ends because of their interactive function in helping readers grasp writers' intended meaning and convincing them about the validity of their claims. In this line of thought, Hyland and Tse (2004: 163) argue that "like other features of 'textual metadiscourse', the transitions that conjunctions mark between clauses can be oriented either towards the experiential or the interactional, referring to either propositional or interpersonal meanings". This argument can be expanded to other non-conjunctive forms that share the same exemplification purposes.

Most markers directly precede the exemplifying unit, constructing, as such, a solid composite segment that carries the meaning of exemplification intended. They have this frequent position because of their cohesive nature as conjunctive devices. Yet, some markers can have flexible positions or behave differently depending on the nature of the exemplifying unit (Rodríguez-Abruñeiras, 2020: 41). In addition, the nominal marker *example of* reverses the direction of exemplification resulting in the pattern (**Marker** + *Exemplified* + Exemplifying) rather than the more common one (*Exemplified* + **Marker** + Exemplifying).

Despite the various alternatives available to writers for the insertion of examples, they seem to favor specific choices. These choices could be opted for randomly; however, quantitative results suggest that these choices constitute a pattern governed by practices in the disciplines on the one hand, and by syntactic constraints, on the other hand. Thus, it is unlikely for an exemplified unit in the form of a clause to be exemplified by markers like *such as, like* or *e.g.* The marker *e.g.* itself, which is short for *exempli gratia* and often reads as *FOR EXAMPLE,* seems to be no longer interchangeable with its full extended form *for example*. It is, therefore, impossible to encounter a sentence starting with *e.g.*, and at the same time it is very rarely possible to use *for example* in a parenthetical way to introduce exemplifying units in the form of nominal groups (not a single case found in the corpus).

6.4. *Exemplifying units*

Exemplifying units are the carriers of the act of exemplification. It is within these units that concepts are elucidated, and arguments are strengthened. They refer to the structures that directly follow the markers of exemplification and they together constitute the metadiscourse segment. A close look at these units shows that they could be structurally construed as nominal groups or as various types of clauses (Fig. 3). Such a structural distinction is vital to understand the link between the units being exemplified and those exemplifying.

The hard sciences use exemplifying clauses more than the soft ones (Fig. 3). Exemplifying clauses in the Physics (PHY) and Computer Science (CS) sections slightly exceed nominal groups. In contrast, nominal groups are dominantly used within disciplines like History (HIS), Marketing (MKT) and Economics (ECO) where they respectively represent roughly 79%, 72% and 69% of all exemplifying units in these sections. What this major distinction indicates is the extent to which examples are used for explanation versus argumentation purposes. It has been previously argued that exemplifying clauses are used mainly to support claims and to strengthen the assumptions made in the exemplified unit, whereas nominal groups serve elucidation ends. With the exceptions of Materials Science and Linguistics, it could be said that soft sciences use examples to explain whereas hard ones use them for argumentation. This proves again that exemplification as a form of elaboration is not solely deployed for interpersonal and textual purposes, but it also boosts and supports argumentation.

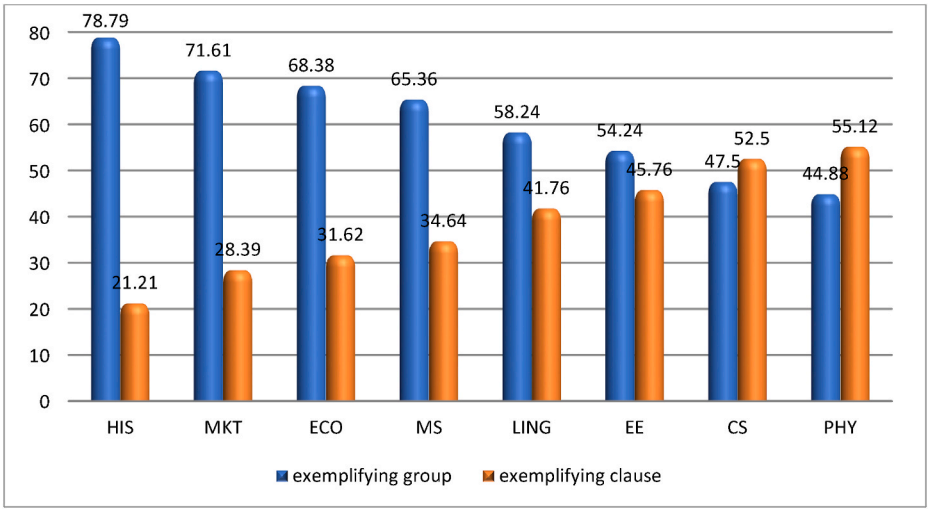

Fig. 3. Exemplifying groups versus clauses across disciplines.

6.4.1. Exemplifying groups

Exemplifying nominal groups are found to represent several grammatical and semantic categories. They can be very simple, in which case they contain little or no modification, or very complex with several levels of complexity and modification (Triki, 2014). They can refer to concrete and abstract entities, references to published works or to names of authors and people. Exemplifying nominal groups often represent abstract and concrete entities that help readers in grasping the intended meanings of the exemplified unit (Triki, 2017). For example, in (18), the two units have an abstract non-tangible nature because they both refer to linguistic phenomena. The writer judges that some specification is needed in order to guide readers towards what they mean by *linguistic features*. In (19), the use of concrete examples to elaborate on the abstract and rather general term *entities* is vital for the whole claim. Citing the actual physical names of these entities gives the argument a stronger and more reliable dimension. It boosts the appearance of precision and scientific rigor.

18. A number of corpus based studies have identified *linguistic features* (**e.g.**, relative clauses, subordination, verb tenses, prepositions, linking adverbials) that are … (Linguistics)
19. Then we must accept that *entities* **like** electrons, protons, neutrons, and even more complex atomic structures […] pass most of their time in a non-spatial condition. (Physics)

Examples may also come in the form of nominalizations (examples 20 and 21) where processes are turned into nouns, creating, as such, different types of situations rather than entities. Nominalized expressions allow reasoning to remain within this clause. They are very frequent in scientific academic writing (Halliday & Martin, 1993) because they are more economical than their clausal counterparts and because they have the summarizing value which is much needed in academic publishing. Their compacting aspect is, accordingly, more powerful as they somehow shrink and condense fuller forms of linguistic and cognitive representations. This compacting nature of exemplifying units can also be identified within the series of references that writers cite to support their claims. Such forms of in text citation (example 22) use different referencing styles across disciplines (authors' names + (date) in the soft disciplines or simply numbers in square brackets in some hard disciplines). Their compacting load resides in the way they contract long and elaborate ideas and arguments articulated in entities like articles and books and reduce them to minimal forms of linguistic and numerical representation.

20. *The hidden-measurement explanation is also a very natural one in the modelization of human cognitive processes* […]. **A typical example** is the checking of the pressure of an automobile tire, which is notoriously difficult to do without letting out some of the air in the process. (Physics)
21. […] *many of the basic features of the foundational narrative that had been in place since the early sixteenth century*—**such as** the distinction between secular and spiritual history, the Flacian chronologies of rise and decline, the importance of religion in human history. (History)
22. The topic has received considerable research attention under various headings: *sustainable innovations orientation* (**e.g.**, Varadarajan 2015), *eco-design practices* (**e.g.**, Sarkis et al., 2010), *green product innovation* (**e.g.**, Dangelico and Pujari 2010), *green product development* (**e.g.**, Chen 2001). (Marketing)

It is interesting to note that exemplifying nominal groups impose specific choices of the exemplifying marker to be used. Basically, they are signaled via *such as*, *e.g.* and *like* but very rarely via *for example* and *for instance*, the markers that would be preferred for the introduction of exemplifying units in the form of clauses.

6.4.2. Exemplifying clauses

Elaborating clauses have more elaborative and expanding power than groups. They are more explicit in meaning and they have the potential to carry heavy semantic and logical loads. These clauses can be short and simple or long and complex. They give writers more space to illustrate the concepts and claims introduced in the exemplified units (Triki, 2017). They also indicate that the units exemplified are very complex or fuzzy, thus, they need deep and precise elaboration. This, perhaps, explains why they are found more frequently in disciplines like Physics, Computer Science and Electrical Engineering, disciplines that rely heavily on standardized forms of argumentation that necessitate staged logical procedures for the construction of mathematical reasoning. In such disciplines, providing examples goes beyond mere metadiscursive interactional needs. Examples represent building blocks in the construction of mathematical definitions and theorems because "if we want to understand how science embodies, advances, and conveys understanding, we need to acknowledge and account for the ineliminable role that exemplification plays in science" (Elgin, 2011, p. 412).

Examples in the form of clauses have the potential to provide readers with wider and more elaborate ideational material compared to what nominal groups could offer. This is the case by virtue of their syntactic characteristics which render meaning construal more transparent (Halliday & Matthiessen, 2014, p. 490). Furthermore, exemplifying clauses seem to serve the purposes of argumentation more than illustration (Rodríguez-Abruñeiras, 2020). They generally provide situations and scenarios that would boost a previously introduced claim by offering real contexts where those claims could be more visible, or hypothetical ones (examples 23 and 24), where a scenario of authenticity could come to existence.

23. *It is possible to consider different types of functions fi for the definition of wi in* equation (3). **For instance**, if the surface/solid is homogeneous and isotropic, which is the case of the face, we can choose a function fi defined as follows. (Electrical Engineering)

24. Before providing a formal definition of M, we illustrate *the construction* **using a simple example.** Assume that A contains the unary rule r q (−1, +3) q and the binary rule r q q, q. M contains two agents. An inference with r followed by an inference with r2 is simulated using the transitions shown in Fig. 3 […]. (Computer Science)

The hypothetical nature of these examples can be understood via the way writers frame them. In example (23), the use of conditional clauses *if* puts a condition for the realization of the exemplified clause (in italics). In (24), such a hypothesis is signaled via the verb *assume*. In the two cases, the given examples are imaginary scenarios that serve as basis for further proof and argument to be added in subsequent text.

Unlike hypothetical examples, real situations are construed as fact clauses generally used in the present simple tense (example 25) to give them a general and acceptable aspect. Real examples can also have the form of non-verbal elements, often in the shape of illustrative figures and tables as in (26).

25. *Existence of the covert channels violates both secrecy and integrity properties of trusted systems [2].* **For example**, in a multilevel trusted system, users with higher secret clearance are not allowed to send data to users with lower clearance. (Computer Science)
26. **An example of** *a configuration with two multiplicities* is shown in Fig. 1. (Computer Science)

The exemplifying unit is not the nominal group *Fig. 1*. It is rather the non-verbal entity (the figure itself) that represents the example. Reading figures (even silent/mental reading) entails the use of different types of clauses to understand and relate them to the exemplified unit.

7. Conclusion

In this article, I have addressed the discourse function of exemplification in academic research articles across different disciplines. Findings point to the fact that the choice of exemplification markers is more significantly motivated by the structure of the exemplifying unit rather than by disciplinary practices. Examples have a crucial role in producing an engaging and trustworthy piece of research. Without examples, theories and results remain vague, authors, therefore, use examples to mitigate readers' doubts by anticipating their worries and satisfying their expectations. While trying to prove the validity of a given claim or hypothesis researchers often make sure that the example provided illustrates at least one actual or possible case and does not allow for a counter-example, that the example is accessible to the readers and their disciplinary conventions, and that the example is not necessarily the most readily available piece of illustration but the most telling, representative and efficient one.

Other results indicate that despite the high probability of syntactic equivalence (nominal groups being exemplified by nominal groups and clauses by other clauses) the elaborating segment does not have an equal semantic status to that of the elaborated one. Examples generally represent elements within the larger sets of the exemplified units. In addition, there seem to be various degrees of elaboration and compactness linking the three constituents of examples. On the one hand, abstract and concrete entities as well as exemplifying clauses expand and broaden the meaning of text spans, rendering them more accessible to readers (Elgin, 2011, p. 407) and making claims and arguments more persuasive. References, mathematical equations and non-verbal elements, on the other hand, compact authors' reasoning and lead to more challenging and less transparent reading experiences. Compacting examples enables authors to condense huge amounts of data and arguments into restricted and minimal forms of representation, often construed in a symbolic and numerical way, necessitating, therefore, much greater initial cognitive effort on the part of the reader to decompose and understand them, and then to figure out how they relate to the exemplified unit. This also entails that the metadiscursive interactive nature of exemplification varies in its degree of explicitness and form of elaboration.

Finally, some hard sciences used examples more frequently than some soft ones and vice versa, indicating that the soft-hard continuum does not properly fit as a dichotomy nor as a continuum, and that hasty over-generalizations need to be avoided. With research disciplines being more and more hybrid and interdisciplinary, that is, by adopting and integrating research tools and methods applied in other fields or by drawing from the practices in other research cultures (Davies & Devlin, 2010, pp. 12–13), the distinctions between soft and hard disciplines become blurred. The boundaries are fluid and overlapping, sometimes, also, due to national policies encouraging more collaboration in research between distinct research fields and sciences (see for example Holm and Liinason's (2005) report on the soft-hard disciplines and the emergent tendencies within some European universities). Despite the elegance and, sometimes, the convenience of dealing with disciplines as homogeneous groups, a closer look at the divergent practices within the same field suggests that these disciplines are quite heterogeneous, not only in terms of the content they discuss but also the methods and tools they deploy to reach their objectives. Some deep and rigorous look at these disciplines from within is much needed to better understand their intrinsic specificities.

Author statement

The author would like to thank the editors and the anonymous reviewers for their suggestions and comments on a prior version of the manuscript.

The author declares that there are no conflicts of interest.

This paper is single authored.

References

Ädel, A. (2006). *Metadiscourse in L1 and L2 English*. Amsterdam: John Benjamins.

Ädel, A. (2017). Remember that your reader cannot read your mind: Problem/solution-oriented metadiscourse in teacher feedback on student writing. *English for Specific Purposes, 45*, 54–68.

Ädel, A. (2018). Variation in metadiscursive 'you' across Genres: From research articles to teacher feedback. *Educational Sciences: Theory and Practice, 18*(4), 777–796.

Ädel, A. S., & Mauranen, A. (2010). Metadiscourse: Diverse and divided perspectives. *Nordic Journal of English Studies, 9*, 1–11.

Barotto, A. (2018). The hedging function of exemplification: Evidence from Japanese. *Journal of Pragmatics, 123*, 24–37.

Biber, D. (1995). *Dimensions of register variation: A cross linguistic comparison*. Cambridge: Cambridge University Press.

Blakemore, D. L. (1997). Restatement and exemplification: A relevance theoretic re-assessment of elaboration. *Pragmatics and Cognition, 5*(1), 1–19.

Casal, J. E., Lu, X., Qiu, X., Wang, Y., & Zhang, G. (2021). Syntactic complexity across academic research article part-genres: A cross-disciplinary perspective. *Journal of English for Academic Purposes, 52*, 2021.

Crismore, A., & Farnsworth, R. (1990). Metadiscourse in popular and professional science discourse. In W. Nash (Ed.), *The writing scholar: Studies in academic discourse* (pp. 118–136). Newbury Park, Ca: Sage.

Dafouz-Milne, E. (2008). The pragmatic role of textual and interpersonal metadiscourse markers in the construction and attainment of persuasion: A cross-linguistic study of newspaper. *Journal of Pragmatics, 40*(1), 95–113.

Davies, W. M., & Devlin, M. (2010). Interdisciplinary higher education. In W. M. Davies, M. Devlin, & M. Tight (Eds.), *Interdisciplinary higher education: Perspectives and practicalities* (pp. 3–28). , UK: Bingley.

Elgin, C. (2011). Making manifest: The role of exemplification in the sciences and the arts. *Principia, 15*(3), 399–413.

Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English*. London: Longman.

Halliday, M., & Martin, J. R. (1993). *Writing science: Literacy and discursive power*. London: Routledge Falmer.

Halliday, M. A. K., & Matthiessen, C. M. I. M. (2014). *An introduction to functional grammar* (4th ed.). London: Edward Arnold.

Harvey, A. (2001). Relational clauses in English technical discourse: Patterns of verb choice. *Pragmatics, 11*(4), 379–400.

Holm, U. M., & Liinason, M. (2005). *Disciplinary boundaries between the social sciences and humanities: Comparative report on interdisciplinarity*. Research Integration. http://www.hull.ac.uk/researchintegration.

Hyland, K. (2005). *Metadiscourse. Exploring interaction in writing*. London: Continuum.

Hyland, K. (2007). Applying a gloss: Exemplifying and reformulating in academic discourse. *Applied Linguistics, 28*(2), 266–285.

Hyland, K. (2008). Genre and academic writing in the disciplines. *Language Teaching, 41*(4), 543–562.

Hyland, K. (2015). Genre, discipline and identity. *Journal of English for Academic Purposes, 19*, 32–43.

Hyland, K. (2017). Metadiscourse: What is it and where is it going? *Journal of Pragmatics, 113*, 16–29.

Hyland, K., & Tse, P. (2004). Metadiscourse in academic writing: A reappraisal. *Applied Linguistics, XXV*(2), 156–177.

Hyland, K., & Tse, P. (2009). 'The leading journal in its field': Evaluation in journal descriptions. *Discourse Studies, 11*(6), 703–720.

Jiang, K., & Hyland, K. (2017). Metadiscursive nouns: Interaction and cohesion in abstract moves. *English for Specific Purposes, 46*, 1–14.

Lenoir, T. (1997). *Instituting science: The cultural production of scientific disciplines*. Stanford: Stanford University Press.

Mann, W. C., & Thompson, S. A. (1987). *Rhetorical structure theory: A theory of text organization*. Marina del Rey, CA: Information Sciences Institute. No. ISI/RS-87-190.

Matthiessen, C. M. I. M., & Halliday, M. A. K. (2009). *Systemic functional grammar: A first step into the theory*. Beijing: Higher Education Press.

Mauranen, A. (1993). Contrastive ESP rhetoric. *Metatext in Finnish-English economics texts. English for specific purposes, 12*, 3–22.

Mauranen, A. (2010). Discourse reflexivity - a discourse universal? The case of ELF. *Nordic Journal of English Studies, 9*(2), 13–40.

Meyer, C. F. (1992). *Apposition in contemporary English*. Cambridge. England: Cambridge University Press.

Nesi, H., & Gardner, S. (2006). Variation in disciplinary culture: University tutors' views on assessed writing tasks. In R. Kiely, G. Clibbon, P. Rea-Dickins, & H. Woodfield (Eds.), *Language, culture and identity in applied linguistics* (pp. 99–117). Equinox.

Nokes, J., & De La Paz, S. (2018). Writing and argumentation in history education. In S. A. Metzger, & L. McArthur Harris (Eds.), *International handbook of history teaching and learning*. Wiley-Blackwell.

O'Donnell, M. (2008). *The UAM CorpusTool: Software for corpus annotation and exploration*. Almeria, Spain: Proceedings of the XXVI Congreso de AESLA.

Oliveira, W. A., & Brown, A. O. (2016). Exemplification in science instruction: Teaching and learning through examples. *Journal of Research in Science Teaching, 53*(5), 737–767.

O'Neil, D. (2018). English as the lingua franca of international publishing. *World Englishes, 37*, 146–165.

Quirk, R., Greenbaum, S., Leech, G., & Svartvik, J. (1985). *A comprehensive grammar of the English language*. Longman.

Rodríguez-Abruñeiras, P. (2020). Two example markers in and beyond exemplification: Dialectal, register and pragmatic considerations in the 21st century. In C. Gregori-Signes, M. Fuster, & J. Santaemilia (Eds.), *Multiperspectives in Analysis and corpus design* (pp. 33–45). Granada: Comares.

Rodríguez-Abruñeiras, P. (2015). *Exemplifying markers in English: Synchronic and Diachronic considerations*. Ph.D. Dissertation. Santiago de Compostela: University of Santiago de Compostela.

Siepmann, D. (2005). *Discourse markers across languages: A contrastive study of second-level discourse markers in native and non-native text with implications for general and pedagogic lexicography*. London & New York: Routledge.

Skipper, R., & Hyman, M. R. (1987). Evaluating and improving argument-centered works in marketing. *Journal of Marketing, 51*(4), 60–75.

Sperber, D., & Wilson, D. (1986). *Relevance: Communication and cognition*. Malden: Blackwell Publishing.

Triki, N. (2014). Elaboration paradigms in PhD theses introductions. In M. Guirat, & M. Triki (Eds.), *Deviation (s)* (pp. 202–225). Tunisia: Laboratory on Approaches to Discourse ((LAD)).

Triki, N. (2017). *Elaboration across genre boundaries: Research articles and PhD dissertations as a case study*. Ph.D dissertation. University of Sfax.

Triki, N. (2019). Revisiting the metadiscursive aspect of definitions in academic writing. *Journal of English for Academic Purposes, 37*, 104–116.

Vande Kopple, W. J. (1985). Some exploratory discourse on metadiscourse. *College Composition & Communication, 36*, 82–93.

Wu, X., Mauranen, A., & Lei, L. (2020). Syntactic complexity in English as a lingua franca academic writing. *Journal of English for Academic Purposes, 43*, 1–13.

Nesrine Triki holds a PhD in English Language and Linguistics from the University of Sfax, Tunisia, and is now a Post-doc researcher at the University of Turin where she teaches English language modules for undergraduate and post graduate students. Her research interests include Systemic Functional Grammar, Discourse Analysis, English for Academic Purposes and English for Specific Purposes. Her most recent publications include a paper on 'the use of definitions in academic writing' (2019) and on 'the interface between Pragmatics and Systemic Functional Linguistics' (2018).