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*“Auxiliary verbs shall be used consistently”:
Standardisation and modality in directive texts¹*

Questo studio prende in esame gli aspetti teorici e applicativi dei recenti tentativi di standardizzare la modalità verbale nell’ambito ristretto delle specifiche tecniche stabilite dagli organismi di normazione. Le Regole redazionali prodotte da tali enti nell’ultimo decennio costituiscono infatti un interessante esempio del tentativo internazionale di dare ordine al complesso intreccio semantico-pragmatico dei modali inglesi, malgrado il loro notevole carico di ambiguità e polisemia. Il valore di questo approccio prettamente prescrittivo sarà attentamente discusso alla luce degli studi sulla modalità verbale (soprattutto deontica) e di alcuni esempi tratti da testi normativi redatti secondo tali Regole.

1. *Scope*

The standardisation of written English, at least in international contexts and restricted textual environments, is advocated in many quarters in response to the growing need for a straightforward, universally-accepted medium of communication. At the same time, however, its widespread use by both native and non-native speakers encourages the emergence of ever new varieties and rules of use. As Graddol (1997: 3) sums up the matter,

On the one hand, the use of English as a global lingua franca requires intelligibility and the setting and maintenance of standards. On the other hand, the increasing adoption of English as a second language, where it takes on local forms, is leading to fragmentation and diversity.

Against this shifting background, the attempt to ‘stabilize’ the use and interpretation of modal auxiliaries is fully justified, given that ver-

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bal modality is not only a semantic-grammatical category but also a key contributor to the illocutionary meaning of utterances (Leech 1987). In English, its behaviour is complicated by the polysemous nature of central modal auxiliaries, which can take on divergent meanings in different contexts: when *deontic*, they lay an obligation or grant permission; if *epistemic*, they make claims about the validity of a proposition; if *dynamic*, they express ability or circumstantial possibility (Palmer 1990). Indeed, their ambiguity is at times so strong that different types of modality may co-occur and overlap.

While semantic fuzziness is dealt with easily in conversational use, it can be a source of serious misunderstanding in written communication, especially when the purpose is strict compliance with a set of requirements. Insofar as they elicit a given behaviour on the reader's part, texts in this class - e.g. laws, regulations, rules and instructions - are generally of the 'directive' (Gläser 1995) type and resort above all to deontic modality. This category includes industrial standards, which (albeit not compulsory in their own right) may be incorporated or referred to in contracts and legislation, sometimes leading to litigation for lack of compliance.

Industrial standards provide a working framework for trade and industry within and between different countries. They cover an impressive number of fields, from danger warnings to grades of materials, paper sizes, computer protocols, technical compatibility, test methods, workplace safety, measurement units and management quality (ISO 1999). Their main purpose is to define common specifications for goods and services, regardless of geographical, cultural and linguistic constraints. A standard may therefore be defined (ISO 2001a: 9) as a

Document, established by consensus and approved by a recognized body, that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context. [...] Standards should be based on the consolidated results of science, technology and experience, and aimed at the promotion of optimum community benefits.

Standards are often drafted by non-native speakers and unclear language is admittedly the most frequent problem encountered by editors (Dicker 1997). The importance of modal auxiliaries in such a setting

can hardly be overemphasized, considering that (ISO 2001: 27): "In order to be able to claim compliance with a standard, the user needs to be able to identify the requirements he is obliged to satisfy. He needs also to be able to distinguish these requirements from other provisions where he has a certain freedom of choice".

This paper deals with recent attempts to standardize the use of English modal auxiliaries made by six regulatory agencies: the British Standards Institute (BSI), which targets a single country; the European Committee for Standardization (CEN), the European Committee for Electrotechnical Standardization (CENELEC) and the European Telecommunication Standards Institute (ETSI), which operate across Europe; the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC), which operate worldwide. The last two of these combined produce some 85% of all international standards.

Close collaboration and interaction in this field is confirmed by the growing number of standards issued in one area and later adopted *verbatim* by an authority in another area, whether in the original language alone or with a translation. Most of these bodies have more than one official language: English, French and German for CEN and CENELEC; English and French (plus Russian in some instances) for ISO and IEC. Only ETSI, in the international fold, has opted for English alone. Before investigating the linguistic concerns of these organisations, it is helpful to outline their functions and duties in each geographical area, from the UK to worldwide level.

BSI. This is the world's oldest national standards body. Its work is carried out by some 3,000 technical committees and working groups. Committees of manufacturers, users, research organisations, government departments and consumers are involved in the process. Besides issuing its own guidelines, it implements European standards from CEN/CENELEC and international standards from ISO/IEC. Language use is dealt with in the document "A Standard for Standards. Part 3. Specification for Structure, Drafting and Presentation" (BSI 1997).

CEN. Its mission is to promote technical harmonisation in Western Europe, where it works in partnership with CENELEC to produce Euro-

BODY	AREA	HQ	COUNTRIES	LANGUAGES	FIELDS	ESTD.
BSI	UK	London, UK	1	English	all fields	1901
CEN	Europe	Brussels, Belgium	19	English French German	all fields, except electro-technology and telecommunication	1961
CENELEC	Europe	Brussels, Belgium	19	English French German	electronic and electro-technical	1973
ETSI	Europe & beyond	Sophia Antipolis, France	52	English	telecommunication	1988
IEC	Global	Geneva, Switzerland	60	English French Russian (transl.)	electrical, electronic and related technologies	1906
ISO	Global	Geneva, Switzerland	140	English French Russian (transl.)	all fields, except electrical and electronic engineering	1947

Table 1. Standardisation agencies covered in this study.

pean standards. When participating countries (through their standardisation bodies) approve a new standard, they are required to implement it and to withdraw any conflicting local standard: they are also responsible for interpreting its content (CEN 1988: Art. 3). With CENELEC it has issued “Internal Regulations. Part 3. Rules for the Drafting and Presentation of European Standards” (CEN 1991, 1999) to address textual matters in this restricted context.

CENELEC. This is the official European organisation for electrotechnical standardisation, recognized by EEC directive 83/189. It is assisted by 35,000 technical experts and 19 national committees. All CENELEC standards must be adopted by member countries and submitted to IEC, which in turn provides a basis for 80% of European standards in the field.

ETSI. A non-profit making organisation based in France, with 789 members (mostly in Europe) including administrations, network operators, manufacturers, service providers, research bodies and users. It has so far produced 5,000 voluntary standards or ‘deliverables’, some of which are used by the European Union as a basis for its directives and regulations. More than 3,500 experts in 200 groups are currently involved in its activities. Language matters are targeted in its “Guide to the Use of English” (ETSI 1999) and “Drafting Rules” (ETSI 2001).

IEC. This is a global organisation concerned with standardisation and conformity assessment in the fields of electricity, electronics and related technologies. Its standards form the basis of the World Trade Organization’s agreement on Technical Barriers to Trade, which is applied by over 100 central governments.

ISO. The world’s largest standards institute. It is a non-governmental organisation whose mission is to develop voluntary technical standards which “contribute to making the development, manufacturing and supply of products and services more efficient, safer and cleaner” (ISO 1999: 2). The process involves manufacturers, vendors and users, consumer groups, testing laboratories, governments, engineers and research organisations. Since its establishment, ISO has issued some 12,000 in-

international standards and has a current membership of 140 national standards institutes. The ISO also liaises with hundreds of international organisations which have accepted to implement its decisions. In the electronic field, its work is complemented by the IEC; together they have issued common guidelines on language entitled “Directives. Part 2. Rules for the Structure and Drafting of International Standards” (ISO 2001a).

2. *Drafting standards*

Albeit voluntary in nature, standards are increasingly referred to in contracts and legislation (cf. Schepel and Falke 2000), where they compact hundreds of technical features but also encourage harmonisation of manufacturing practices. For this reason, the construction and interpretation of such quasi-legal texts is highly sensitive and raises issues shared by normative genres like statutes, instructions and regulations - a matter complicated by the presence of two or three official languages in most international bodies.

Efforts to standardize product quality have extended in many ways to text specifications and language use - with an emphasis on uniformity of style, terminology and wording, also in view of electronic text processing (CEN 1991: C3):

It is a principle of good standards drafting that once a term is selected to represent a concept, it should be used consistently throughout the text, even if this involves considerable repetition. No attempt should be made to find alternative expressions for the same meaning, simply to avoid repetition, or with the aim of imparting aesthetic literary merit to the text; this will only result in creating uncertainty and confusion by implying that different meanings are intended by the use of different forms of expression.

The underlying objective is to define provisions in a clear and unambiguous manner, which means a standard should: “be as complete as necessary within the limits specified by its scope; be consistent, clear and accurate; provide a framework for future technological development; and be comprehensible to qualified persons who have not participated in

its preparation" (ETSI 2001: 9). The last point raises the crucial issue of intended audience, generally restricted to readers familiar with the genre's language and content - a notion confirmed by the statement that "Users of British Standards are responsible for their correct application" (BSI 1997: ii) and that "A standard shall be written in a style designed to be intelligible to people who have knowledge and experience of the subject [...] It is assumed in the drafting of a standard that the execution of its provisions is entrusted to appropriately qualified and competent people. If necessary, a statement to this effect should be included in the foreword" (p. 7).

The same matter is discussed in a brief report from the ISO Central Secretariat (Dicker 1997) on the pitfalls of editorial directives: here the hypothetical reader is assumed to be a qualified person, typically a science graduate, but not necessarily a specialist in the field or a native speaker. Indeed, most of the problems tackled are experienced by L1 as much as L2 users. Linguistically speaking, the most enlightened view is found in the ETSI guide, which openly acknowledges that "As with most rules, there exist exceptions to some of those which follow [...] In addition, some solutions presented here have at least a degree of subjectivity to them" (1999: 3).

One of the main concerns that inspires such documents is the need to distinguish between *informative* and *normative* content: the former is limited to ancillary information and recommendations, whereas the latter includes provisions "to which it is necessary to conform in order to be able to claim compliance with the standard" (ISO 1997: 16). The most comprehensive account of this distinction is found in the Definitions section of the ETSI Drafting Rules (ETSI 2001: 7-8):

informative elements: elements that provide additional information intended to assist the understanding or use of the ETSI deliverable

informative reference: references that are not essential to the use of the ETSI deliverable but that assist the user with regard to a particular subject area

instruction: provision that conveys an action to be performed [ISO/IEC Guide 2: 1996, definition 7.3]

normative elements: elements setting out the provisions to which it is necessary to conform in order to be able to claim compliance with the ETSI deliverable

normative reference: references that are essential to the use of the ET-SI deliverable, i.e. without which the deliverable cannot be implemented

recommendation: provision that conveys advice or guidance [ISO/IEC Guide 2: 1996, definition 7.4]

requirement: provision that conveys criteria to be fulfilled [ISO/IEC Guide 2: 1996, definition 7.5]

statement: provision that conveys information [ISO/IEC Guide 2: 1996, definition 7.2]

The term *provision* here does not express a contractual condition but any textual item within the standard. Some provisions are binding (i.e. instructions and requirements) while others are not (i.e. statements and recommendations). Also the use of references may be either normative or merely informative, according to their purpose.

This distinction resurfaces in a template published by ISO (Table 2) for drafters engaged in the difficult task of constructing a consistent, semantically transparent text. It lists the sequence and content of textual elements within a standard, specifying also which of these are mandatory and/or allowed. The template is also a useful interpretative tool for novice readers.

3. *Linguistic standardisation*

In many respects, drafting rules resemble an academic stylesheet, with instructions on such mundane matters as content organisation, spelling, capitalisation and punctuation, while other features (style, abbreviations, use of articles and false friends) could occur in a student's writing manual. Finally there are matters that reflect more closely the sensitive matter of interpretation and semantic transparency: guidelines on terminology, definitions, equivalence of different language versions, avoidance of duplications and contradictions, multiple meanings and official translations all belong to this class.

The most intriguing element for our perspective is the *normative annex* appended to all international guidelines and therefore mandatory for all subsequent drafts or standards. It deals with verbal forms for the expression of provisions, which may "take the form of a statement, an instruction, a recommendation or a requirement" (ISO 1997: 16) and are

Type of element	Arrangement of elements ^a in document	Permitted content ^a of element(s) in document
Informative preliminary	<i>Title page</i>	Title
	<i>Table of contents</i>	<i>(generated content; see 6.1.2)</i>
	Foreword	Text <i>Notes</i> <i>Footnotes</i>
	<i>Introduction</i>	<i>Text</i> <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
Normative general	Title	Text
	Scope	Text <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
	Normative references	<i>References</i> <i>Footnotes</i>
Normative technical	Terms and definitions Symbols and abbreviated terms	<i>Text</i> <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
	Normative annex	<i>Text</i> <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
Informative supplementary	<i>Informative annex</i>	<i>Text</i> <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
Normative technical	Normative annex	<i>Text</i> <i>Figures</i> <i>Tables</i> <i>Notes</i> <i>Footnotes</i>
Informative supplementary	<i>Bibliography</i>	<i>References</i> <i>Footnotes</i>
	<i>Indexes</i>	<i>(generated content; see 6.4.3)</i>

^a Bold type = required element; upright type = normative element; italic type = informative element.

Table 2. Typical arrangement of elements in a standard (ISO 2001a: 15).

thus divided into four simple functional categories: Requirement, Recommendation, Permission, and Possibility/Capability. These labels reflect the need to distinguish between obligatory requirements and other provisions, where the user has a certain freedom of choice. “Clear provisions for the use of verbal forms (including modal auxiliaries) are therefore essential” (ISO 2001a: 27). In British terms, “Auxiliary verbs shall be used consistently throughout a standard and shall be in the form appropriate to the nature of the standard” (BSI 1997: 7) - hence the title of this paper.

Early CEN guidelines admit that the conventional, prescriptive nature of such efforts “is not intended to create a special grammar to replace normal usage” but “is necessary to define strictly the sense in which certain verbs are to be used in European Standards, so that equivalent statements can be made unambiguously in each language version, thus avoiding misunderstandings and inconsistent translation” (1991: 77). As mentioned earlier, there is also a need to ensure complete alignment between documents issued in different languages.

3.1. *English modal auxiliaries*

Rules for the use of modal auxiliaries are presented in the same format by all the international institutes listed earlier, with four tables specifying the verbal forms to be employed and a number of ‘equivalent expressions for use in exceptional cases’; only the BSI opts for a set of notes. Unless otherwise stated, the normative sources considered below are ISO 2001 [Annex G (normative). Verbal forms for the expression of provisions], ETSI 2001 [Section 23. Verbal forms for the expression of provisions], CEN 1991 (since the 1999 edition is identical to ISO 2001) [Annex C (normative). Verbal forms] and BSI 1997 [Paragraph 6.3.3. Auxiliary verbs]. Even at a first glance, there is a clear prevalence of deontic modality (covered in the first three tables), while dynamic modality is dealt with in the last table and epistemic meanings are avoided altogether.

This imbalance is consistent with the genre’s directive nature and the consequent need to define actual compliance rather than logical possibility, opinion or hypothetical operations.

3.1.1. Requirement (SHALL, SHALL NOT)

Requirement conveys 'criteria to be fulfilled' (ISO), 'prescription (prohibition), strict command' (CEN) or 'what the user must do' (Dicker 1997: 5). It is vital in this context to distinguish between mandatory and optional features, hence the emphasis on forms cutting a sharp line between Requirement and Recommendation. The prescribed modal is SHALL, equivalent of *is to*, *is required to*, *it is required that*, *has to*, *only... is permitted*, *it is necessary* (ETSI adds *must*). Drafters are warned to avoid MUST, which refers to 'unavoidable situations' (CEN) and external statutory obligations. Prohibition is expressed by SHALL NOT, meaning *is not allowed* [*permitted*, *acceptable*, *permissible*], *is required to be not* [sic], *is required that... be not*, *is not to be* (ETSI adds *must not*). For the same reasons mentioned above, MUST NOT is stigmatised as unsuitable. The only authorised alternative to these two options is the imperative mode, to be used for direct instruction in procedures.

3.1.2. Recommendation (SHOULD, SHOULD NOT)

Modals in this class are used for guidelines giving choice, which 'convey advice or guidance' (ISO), when 'among several possibilities one is recommended as particularly suitable' (CEN). The auxiliary allowed for recommendation is SHOULD, equivalent to *it is recommended that*, *ought to* (CEN adds *recommended to* and *it is normally*). Accordingly, the negative form is SHOULD NOT, which conveys *it is not recommended that*, *ought not to* (CEN includes *should be avoided*, *it is recommended that... not*, and *only in exceptional cases*).

3.1.3. Permission (MAY, NEED NOT)

Deontic permission is used for 'a course of action permissible within the limits of the document' (ISO) and expresses 'authorization, giving freedom' (CEN). The required modal is MAY, meaning *is permitted* [*allowed*, *permissible*]. Users are warned to avoid CAN in this context, because it 'refers to the ability of a user of the standard or to a possibility open to him/her' (ISO), that is to dynamic rather than deontic modality; *possible* and *impossible* are also excluded on the same grounds. CEN specifies that in the expression of voluntary behaviour, MAY has the

sense of 'being allowed'. For lack of obligation, the statutory form is NEED NOT, equal to *it is not required that, no... is required*.

3.1.4. *Possibility and capability (CAN, CANNOT)*

The last category refers to an ability of the user or to a possibility open to him, whether in material, physical or causal statements. These are exemplified respectively by 'A hand can exert a certain force', 'A motor can give a certain output', and 'A prerequisite can have certain consequences' (CEN). The prescribed modal is therefore CAN, which stands for *to be able to, there is a possibility of, it is possible to* (CEN adds *to be in position to* [sic]). Drafters are reminded not to use MAY for this meaning. The negative form is CANNOT, an equivalent of *to be unable to, there is no possibility of, it is not possible to* (CEN adds *it is impossible to, to be not in position to* [sic]).

4. *Discussion*

What may seem at first a reasonably straightforward response to the need for unambiguous wording in a highly structured, legally sensitive genre, is itself fraught with inconsistencies and vagueness. The first difficulty is encountered in the introductory paragraphs, where the user is informed that "the equivalent expressions given in the second column shall be used only in exceptional cases when the form given in the first column cannot be used for linguistic reasons" (ISO 2001a: 27). Nowhere, however, are such reasons defined or exemplified: are they syntactic, semantic or simply stylistic? The reference to 'exceptional cases' begs an answer but maybe it is only placed there as a Disclaimer, were the chosen modal verbs found to be inapplicable in certain contexts.

4.1. *Inconsistencies*

4.1.1. *MUST exclusion/inclusion*

The ETSI guide (1997: 3) remarks that "Although this text is intended for use as an 'instruction' document, the need for descriptive narra-

tive has meant that it has not always been possible to adopt a strictly prescriptive style. In simple instructions, the use of modal auxiliary verbs is that laid down in the ISO/IEC rules; but elsewhere a more natural, 'English' style has been used. Hence, the auxiliary verb 'must' when used below indicates the existence of an undisputed rule of the English language". The choice is explained as genre-driven - i.e. justified by the descriptive purpose of the document - and, even more interestingly, editors are aware of the 'unnatural' style enforced by ISO/IEC. The trend to MUST inclusion is confirmed by the institute's latest drafting rules, which state that "the word 'must' in ETSI deliverables is allowed" (2001: 6), dropping an earlier warning that it is an inappropriate substitute for SHALL (1998: 37). Here is a fitting example, taken from the guide itself (ETSI 1997: 6): "The prefix *non* must always be joined to its noun with a hyphen".

4.1.2. Requirement/Recommendation

A grey area inherent in this framework is the Requirement/ Recommendation distinction, as both categories belong to the deontic mode. Obviously, it is not enough to expect the user to "judge the force of his obligation to act from the circumstances" (Palmer 1986: 108). A line has to be drawn somewhere along the continuum, yet even Dicker is forced to admit the shortcomings of editorial prescriptions in this case (1997: 6):

In International Standards, the word "should" is not used to express an obligation but a recommendation or preference. Unfortunately, in ordinary English, the word "should" indicates a strong obligation, and so in ISO drafts, it is often used incorrectly. A well known Dutch standards professional from NNI once appropriately described "should" as expressing "a multi-interpretable semi-requirement". I would advise you to avoid using the word altogether, or to write instead "should preferably".

This helpful suggestion has not yet entered any of the drafting guidelines, but certainly identifies an unsolved problem and provides an interesting solution, with an adverbial serving as illocutionary-force disambiguator. However, it is hard to account for Dicker's claim that in ordinary English SHOULD conveys 'strong obligation', as it is universally accepted to be a weak deontic modal. Maybe his remark simply refers

to the interpersonal connotations it sometimes takes on in private conversation, where it may express strong expectation or an appeal to duty.

4.1.3. *Deontic/Dynamic possibility*

Though not directly relevant to verbal modality, there is a rather puzzling reference to the deontic/dynamic distinction in earlier CEN document (1991), which recognizes that *it is (im)possible* expresses factual possibility but also permission. Readers are simply advised to bear this in mind if they use the phrase as an alternative to the modal auxiliary.

4.1.4. *Requirement/Futurity*

An interesting development that breaks away from the fourfold taxonomy adopted so far, appears in the appendix to ETSI's online drafting rules (2001), with two additional tables devoted to Inevitability and Fact. The latter gives verbal forms (IS/ARE and IS/ARE NOT) for statements of fact - i.e. non-modal declaratives - but fails to provide an explanation or example to support this. The former (verbal forms: WILL and WILL NOT) is mandatory for the 'expected behaviour' of equipment or sub-systems, i.e. for futurity. This contrasts, however, with the fact that WILL is known to function deontically in directive genres: "Upon acceptance the authors *will* assign copyright to Elsevier Science" (cited in Giannoni 2001: 320).

A similar point is targeted by the BSI, when it warns readers that "Subjective or ambiguous qualitative descriptions such as 'After tests a, b, c the item shall show no signs of deformation when examined visually' should not be accepted as performance criteria" (1997: 24). This indicates, surprisingly, that in certain cases SHALL becomes unsuitable for conveying technical requirements (i.e. performance criteria), as the deontic meaning allocated to the modal is undermined by its context.

4.2. *Guideline implementation*

The dearth of corpus-driven research into this fascinating text type may be partly accounted for by the secretive behaviour of standardisation institutes. Access to published standards is restricted mostly by pri-

cing policies (even single photocopies carry a copyright fee) and the consequent reluctance of public libraries to stock such texts.

To assess the actual impact of drafting guidelines, a 50-page sample of approximately 15,000 words was scanned for evidence of compliance and/or deviation from the norm. It is taken from a European standard on playground equipment safety requirements (CEN 1998), approved in May 1998 and ostensibly in line with the institute's Internal Regulations (CEN 1991). The genre's normative purpose is starkly reflected in the prevalence of deontic necessity, which accounts for 76% of all modal verbs. This is followed by dynamic possibility with 15% of verbs, while all the other types of modality account for less than 10% of the total.

While the most frequently occurring modal auxiliaries in general English² are WOULD-WILL-CAN-COULD, the relative order here is SHALL-CAN-SHOULD-WILL. The functional difference between these two textual domains makes verbs encoding deontic modality (SHALL-SHOULD) more prominent in the latter, to the detriment of epistemic-dynamic meanings. This is in line with the normative orientation of industrial standards, with their emphasis on what is required/allowed rather than what is possible or probable. A detailed breakdown of such evidence is given in Table 3.

Though not numerous, there were also several 'deviations' from the mandatory verb form(s) in each of the four categories considered. They are discussed below, with the relevant words in italics for emphasis.

HAVE TO for requirement

Instead of encoding deontic necessity through SHALL (cf. 3.1.1), in a couple of cases drafters opt for the form *have to*, which can also be interpreted in dynamic terms:

- (1) The maximum and minimum prestressing loads *have to* be considered.
- (2) Information [*has*] *to be* provided by the supplier/manufacturer.

² Cf. the British National Corpus, a 100 million word collection of written (90%) and spoken (10%) English texts, first released in 1995. Compiled for Oxford University Press, it can be accessed online at <http://www.natcorp.ox.ac.uk>. Ute Römer's data presented at the Verona Conference ('A corpus-driven approach to modal auxiliaries and their dialects') points in the same direction.

D E O N T I C	NECESSITY (REQUIREMENT/RECOMMENDATION)	227
	SHALL [100 active; 60 passive] 22 negated [16 active; 6 passive]	182
	SHOULD [26 passive; 5 active] 6 negated [active]	37
	IS TO [passive]	2
	Imperative [4 metatextual]	6
	POSSIBILITY (PERMISSION)	10
	CAN [passive]	5
	NEED NOT [passive]	3
	MAY [passive]	1
	CAN [active]	1
D Y N A M I C	POSSIBILITY	46
	CAN [20 active; 20 passive] 4 negated [passive]	44
	MAY [passive]	1
	COULD [passive]	1
	NECESSITY	1
	HAVE TO [passive]	1
	PREDICTION	6
	WILL [4 active] [2 passive]	6
E P I S T E M I C	INFERENCE	10
	CAN [3 passive] [2 active]	5
	MAY [active]	3
	COULD [active]	1
	MIGHT NOT [passive]	1

Table 3. Distribution of verbal modality in a sample text (CEN 1998).

CAN for permission

Deviation from the required modal MAY or NEED NOT (cf. 3.1.3) occurs despite the warning to avoid CAN for its possible dynamic interpretations:

- (3) Unless otherwise stated, the extent of the falling space shall be 1.5 m from the point directly below the elevated part of the equipment. This requirement *can* be varied in certain cases, e.g. increased, in the case of force movement.
- (4) To assist the safe transfer from the ladder to the platform or its summit, the styles of the ladder without the rungs or steps *can* continue vertically from the platform to the top of the barrier (see Figure 17c).

MAY for epistemic inference

Drafting rules give MAY as the mandatory modal for deontic permission (cf. 3.1.3) but this requirement is not always complied with. Its epistemic interpretation resurfaces in two cases:

- (5) This standard specifies the requirements that will protect the child from hazards that he or she *may* be unable to foresee when using the equipment as intended
- (6) The annual inspection *may* require excavation or dismantling of certain parts.

No... need be for lack of obligation

The prescribed modal (cf. 3.1.3) is NEED NOT and allows only two alternative lexicalisations: it is *required that* and *no... is required*.

- (7) *No* allowance for accidental loads, i.e. loads produced by fire, collision by vehicles or earthquake *need be* made for playground equipment.

Possible for requirement

This lexicalisation is explicitly ruled out (cf. 3.1.3) because it allows both deontic and dynamic interpretations - a form of polysemy that drafters are always warned against. Despite this, the norm is broken in a case of future requirement:

- (8) It *shall not be possible* to undo turnbuckles without a tool.

Capable of for future possibility

The prescribed modal (cf. 3.1.4) is CAN and alternative lexicalisations do not include *capable of*, which is usually associated to animate agents. Its occurrence in the excerpts below is notably incongruous.

- (9) Components subjected to wear or designed to be renewed during the life of the equipment, for example bearings, *shall be capable of* being replaced.
- (10) These openings *shall not be capable of* being locked and shall be accessible without any additional aids.

5. Conclusion

In a rapidly evolving linguistic environment, the attempt to place a straightjacket on verbal modality offers an interesting insight into the challenge faced by applied linguists and practitioners working with technical discourse. Following recent analyses of German drafting rules (cf. Heller 2001, 2001a), this is the first study devoted to similar attempts targeting the English language at both national and supranational level.

The English modal system is especially difficult to discipline in this way because of its pervasive polysemy, coupled with a host of subtle diatopic/diastratic and pragmatic variations that make it virtually impossible to dissect the semantics of verbal modality in this language. With Palmer (1990: 21), one is forced to accept that “the meanings of the modals cannot be described in terms of wholly discrete categories, but that categories merge or fade into one another”. On purely linguistic grounds, this complexity justifies the rejection of a prescriptive interpretative grid such as that enforced by ISO and its affiliates.

On the other hand, the communicative needs of trade and industry cannot remain unanswered - hence the attempt to standardise textual construction also in the crucial realm of verbal modality. The evidence collected here shows that the separation between deontic, dynamic and epistemic meanings is far harder than first assumed by guideline drafters. The overriding normative orientation of industrial standards (76% of modal verbs in our sample encode deontic meanings) stigmatises the crucial distinction between requirement/permission; this is coupled with

an unusually high rate of passive constructions, stressing the technical-procedural orientation of this directive genre.

The friction between drafting guidelines and their implementation surfaces mainly in the use of auxiliaries outside their prescribed meaning - i.e. MAY for epistemic rather than deontic modality - and the occurrence of two (semi)modals as CAN and HAVE TO. Another source of confusion is the option of equivalent expressions for use in non-better-specified "exceptional cases". These amplify, rather than restrict, the number of potential interpretations and may even include expressions that violate the given rules, as shown in sentences (5-10) above.

In spite of such theoretical and textual difficulties, there remains a clear need for widely accepted encoding-decoding criteria applicable to verbal modality in ESP discourse. Here as elsewhere, business and scholarship could forge a partnership to develop sound tools of usage for improved technical communication.

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