Pope Francis' *Laudato Si'*: A Corpus-Based Study of Modality in the English and Chinese Versions

Adriano Boaretto
Università Ca' Foscari Venezia, Italia

Erik Castello
Università degli Studi di Padova, Italia

Abstract This paper compares the use of modal expressions in the English and Chinese versions of Pope Francis' Encyclical Letter *Laudato Si'* (2015). It explores the Encyclical Letter as a corpus through the study of word lists and parallel concordance lines. The research also benefits from the close parallel reading of extracts from the two versions. It focuses on the semantic areas of prediction/volition/intention, lack of possibility/ability/permission and obligation. The results confirm predictable parallel expressions (e.g. *will* and 会 *huì*, *cannot* and 不能 *bùnéng*, *be called to* and 召 *zhào*) and bring to light less predictable renderings – e.g. *zero* (in English) and 会 *huì*, *cannot* and 无法 *wúfǎ*, the noun *vocation* and 召 *zhào*. They also suggest that some translation choices are due to the translator's attempt to make the text explicit and to adapt it to the target culture.

Keywords Chinese-English modality. Corpus-based study. Explicitation. Laudato Si'.

Summary 1 Introduction. – 2 The Encyclical Letter *Laudato Si'*. Religious Writing about Ecological Issues. – 3 Modality in English and Chinese. – 4 Corpus Linguistics for the Study of English and Translated Chinese. – 5 The Data and the Analysis. – 6 An Analysis of Modality in *Laudato Si'*. – 6.1 Modality in the English and Chinese Versions. General Observations. – 6.2 Will/Shall. Epistemic Possibility and Probability; Participant-Internal Willingness and Intention. – 6.3 Cannot and May not. Participant-Internal Ability and Participant-External Possibility. – 6.4 CALL. Participant-External Necessity, Obligation, and Requirement. – 7 Conclusions.

Edizioni
Ca'Foscari

1 Introduction[1]

This paper explores *Laudato Si'*, Pope's Francis' second Encyclical Letter, issued in 2015. Novelist and essayist Amitav Ghosh (2016) compares it to the *Paris Agreement on Climate Change*, which was also released in 2015 by diplomats and delegates from the United Nations. He claims that both texts "occupy a realm that few texts can aspire to: one in which words effect changes in the real world" (Ghosh 2016, 150). They are both founded on the results of research produced by climate science, yet they diverge sharply in linguistic terms. The Encyclical is "remarkable for the lucidity of its language and the simplicity of its construction", while the *Paris Agreement* is "highly stylised in its wording and complex in structure" (Ghosh 2016, 151). Ghosh goes on to say that "mass organisations will have to be in the forefront of the struggle. And of such organisations, those with religious affiliations possess the ability to mobilise people in far greater numbers than any others" (Gosh 2016, 160). The Papal document thus appears to be particularly meaningful and worth investigating from a linguistic perspective: it lucidly discusses climate change issues and has the potential to effectively put forward insightful religious, cultural, social and economic lines of action against it.

The recent branch of linguistics called "ecolinguistics" attempts to raise awareness on "discourses that have (or potentially have) a significant impact not only on how people treat other people, but also on how they treat the larger ecological systems that life depends on" (Stibbe 2014, 118). In line with this approach, Castello and Gesuato (2019) explore the language of the English version of *Laudato Si'* using corpus-based methods. Among their findings is the frequent use of modality in the text, with the modal verbs *must*, *cannot*, *need*, *needs*, *should*, *can* figuring among the keywords they obtained. They also identified a number of other expressions of modality, including *fail to* and *be called to*. They claim that

> the modal items identified and their patterns of occurrence suggest that *Laudato Si'* is mainly oriented towards the expression of deontic (participant external) modality, qualifying the degree of human involvement in and responsibility for the well-being of the planet. Additionally, [...] the text draws attention to the possibility for humankind to perceive and become aware of the planet's present condition and future prospects. (Castello, Gesuato 2019, 139-40)

---

1 For academic purposes, Adriano Boaretto is responsible for §§ 1, 2, 3, 6.2 and 6.3; Erik Castello is responsible for §§ 4, 5, 6.1, 6.4 and 7.

The notion of modality has been dealt with from various theoretical perspectives, including the functional, the formal syntactic and the semantic ones (see Nuyts, van der Auwera 2016 for an overview). This paper adopts a semantic approach to this phenomenon, and refers to the domains of 'epistemic' modality and 'non-epistemic' modality, which can in turn be subdivided into "participant-external modality" and "participant-internal modality" (Chappell, Peyraube 2016, 300). It also takes into account the closely related notion of negation (Nuyts 2016, 3-4). As is well known, it is often difficult to decide which sense should be attributed to a given English modal item in a sentence (Huddleston 2002, 177). For example, the modal verb *can* (and its negative counterpart *cannot*) can be used epistemically to make suppositions, participant-externally to express (lack of) permissions, or participant-internally to indicate (lack of) ability. Analogously, in Chinese most modal verbs display a high degree of polysemy, e.g. the modal verb 能 *néng* can indicate, among others, the ability of the subject (non-epistemic participant-internal modality) or the permission given to somebody due to circumstances (non-epistemic participant-external modality) (Chappell, Peyraube 2016, 299-300). During the translation process, translators have to make out the correct interpretation of the meaning of a given modal marker and then choose the most suitable item or a construction from those available in the target language that conveys it.

Like all encyclical letters, *Laudato Si'* is available in different languages. Teubert, who studies a corpus of papal documents, suggests that a linguistic comparison of the various versions of an encyclical letter "can be a fruitful exercise in itself" (2007, 95), which is exactly what the present paper sets out to do with reference to the English and the Chinese versions of *Laudato Si'*. A parallel close reading of them suggests that the Chinese version was translated from the English one,[2] and, consequently, that the former is highly likely to present features of translated language, such as explicitation and simplification (e.g. Laviosa 2002). From a methodological perspective, this paper adopts a corpus-based translation approach (e.g. Xiao, Wei 2014) for the investigation of a selection of modal expressions in the English version vis-à-vis the Chinese one, including the 'quasi-modal' verb *be called to*. It attempts to identify and categorise the "meaningful correspondences" (Tognini-Bonelli 1996, 199) between the instances of the selected English and Chinese modal items, and to explore the semantic space that they cover. Finally, it investigates the hypothesis that at least some of these translation choices might represent cases of explicitation of the modal meanings expressed in the source text.

---

2 The Authors have read the English, Italian and Chinese versions of the Letter, and noticed that many parts of the Chinese version are more adherent to the English one.

§ 2 provides a brief introduction to *Laudato Si'*, while § 3 presents the concept of modality and its realisation in English and Chinese. § 4 introduces corpus-based translation studies of English and Chinese, and § 5 describes the features of the two texts and how they are investigated as corpus data. Finally, § 6 discusses the results, starting from general observations and then focusing on three areas of modality and a selection of modal items.

2 The Encyclical Letter *Laudato Si'*. Religious Writing about Ecological Issues

Jorge Mario Bergoglio, Pope Francis, was elected Pope of the Catholic Church on 13 March 2013. He published his first Encyclical Letter, *Lumen Fidei*, on 29 June 2013 and issued his second and latest one, *Laudato Si'*, on 24 May 2015. *Laudato Si'* is a complex document, probably resulting from the writing of several authors (Tilche, Nociti 2015, 5) writing in different languages, which is the case for most papal texts. Encyclicals are normally released in one modern language, mainly French, German or Italian, while their Latin version, the authoritative one, is usually produced at a later stage (Teubert 2007, 95). *Laudato Si'* is currently available in fourteen languages, including Italian, Latin, English, and Chinese.[3] The Chinese translation is released both in simplified characters, Chinese (China), and in traditional characters, Chinese (Taiwan).

Laudato Si' consists of a Preamble, six chapters and two final prayers, "A Prayer for Our Earth" and "A Christian Prayer in Union with Creation". Chapters one, three, four and five appear to have a stronger economic and ecological slant, while chapters two and six share a more religious and pastoral thrust (Castello, Gesuato 2019, 134). The Preamble provides an overview of the Pope's thought, of Saint Francis' view of beauty and fraternity, and of the ethical and spiritual roots of environmental problems. It calls for a spiritual change of humankind and expresses the Pope's openness to a dialogue with science (Tilche, Nociti 2015, 2). The first chapter draws a picture of the problems *our common home* (Chinese: 我们的共同家园 *wǒmen de gòngtóng jiāyuán*)[4] is now facing, including the changes affecting humanity and our planet, the *throwaway culture* (Chinese: 丢弃文化 *diūqì wénhuà*), and *climate as a common good* (气候乃是大众福

---

3 The versions are available on the Vatican website in the following languages: Arabic, Belarusian, Chinese (China), Chinese (Taiwan), English, French, German, Italian, Latin, Polish, Portuguese, Russian, Spanish, Ukrainian: http://www.vatican.va/content/francesco/en/encyclicals.html.

4 Simplified Chinese characters and the *Pinyin* romanisation system have been used throughout the article.

祉 *qìhòu nǎi shì dàzhòng fúzhǐ*). Subsequently, it describes some features of climate change using "correct but non-scientific language" (Tilche, Nociti 2015, 3), such as the pressure on water resources and the loss of biodiversity, and finally it addresses the human and social dimension of the ecological crisis. The second chapter re-reads biblical texts concerning the relationship between God, humankind and nature. It focuses on the mystery of the universe and on the conception of creation as a gift from God. It ends up claiming that creation is bound up with the mystery of Christ. The third chapter explores the ultimate causes of the ecological crisis with reference to philosophy and science and to the global phenomena known as technocratic paradigm and power. It then looks at the consequences of modern anthropocentrism, that is practical relativism, at the need to protect employment, and finally considers new biological technologies. The fourth chapter gets to the core of Pope Francis's message and proposes *integral ecology* (整体生态学 *zhěngtǐ shēngtàixué*) as the fruitful combination of scientific, environmental, economic and social perspectives on ecology. The Pope also puts forward the concepts of *cultural ecology* (文化生态学 *wénhuà shēngtàixué*) and the *ecology of daily life* (日常生活的生态学 *rìcháng shēnghuó de shēngtàixué*), in view of the *principle of the common good* (公益原则 *gōngyì yuánzé*) and of the need of justice between the generations (Spadaro 2015). The fifth chapter claims that a series of patterns of dialogue should be pursued with a view to escaping the current spiral of self-destruction: dialogue in the international community, dialogue for new national and local policies, dialogue and transparency in decision-making, dialogue between politics and economy for human fulfilment, dialogue between religions and science. The sixth chapter posits that an *ecological conversion* (生态皈依 *shēngtài guīyī*) is needed. People should change their lifestyle and overcome selfishness. They should be educated for the covenant between humanity and the environment, which should bring them joy and peace, reflected in a balanced lifestyle and a deeper understanding of life. The Eucharist and the day of rest should motivate people's concerns for the environment.

3 Modality in English and Chinese

Modality is a semantic category which is "centrally concerned with the speaker's attitude towards the factuality or actualisation of the situation expressed by the rest of the clause" (Huddleston 2002, 172-3). By contrast, mood is a

> formally grammaticalized category of the verb which has a modal function. [Mood is] expressed inflectionally, generally in distinct sets of verbal paradigms, e.g. indicative, subjunctive, optative, im-

perative, conditional etc., which vary from one language to another. (Bybee, Fleischmann 1995, 2)

English modality has been studied extensively from various perspectives, including the semantic (e.g. Lyons 1977; Bybee, Fleischman 1995; Palmer 2001; Portner 2009), the descriptive (e.g. Quirk et al. 1985; Huddleston 2002) and the functional one (e.g. Halliday 1976, 2004). This phenomenon has also been addressed in the field of Chinese linguistics, and various proposals have been put forward to categorise Chinese modality (e.g. Tsang 1981; Peng 2007; Tang 2000; Chappell, Peyraube 2016). Scholars have also explored Chinese modality in relation to English modality from the contrastive and typological perspective (e.g. Li 2004; Hsieh 2005) and the functional perspective (e.g. Chen 2017). A large number of studies have also availed themselves of corpus-based methods (Coates 1983; Biber et al. 1999; Carter, McCarthy 2006) for the study of modality.

From the semantic perspective, von Wright (1951) breaks down modality into "epistemic", "deontic", and "dynamic" modality. Epistemic modality is concerned with "the speaker's attitude to the truth-value or factual status of the proposition", deontic modality "relates to obligation or permission emanating from an external source", while dynamic modality "relates to the ability or willingness which comes from the individual concerned" (Palmer 2001, 9-10). This terminology has been frequently elaborated and revised. For example, Chappell and Peyraube (2016, 299-300) follow van der Auwera and Plungian's (1998) framework and distinguish between epistemic and "situational" (non-epistemic) modality. More specifically, they divide situational modality into "participant-internal" and "participant-external". Furthermore, they associate epistemic modality with the semantic fields of possibility, probability, certainty. and necessity, participant-external modality with possibility, permission, obligation, requirement, and necessity, and, finally, participant-internal modality with ability, willingness, volition, and intention. The subdivision between participant-internal and participant-external modality partly overlaps with that between dynamic and deontic modality (e.g. Palmer 2001), yet in Chappell and Peyraube's (2016) framework the main discriminating factor lies in whether the modal meaning is related to the subject of the sentences or to an external participant. Chappell and Peyraube's (2016) semantic categorisation is reproduced in table 1:

Table 1 Categories for modality markers (slightly adapted from Chappell and Peyraube 2016, 300)

Epistemic	Situational (non-epistemic)	
	Participant-external	**Participant-internal**
possibility	possibility	
	permission	ability
probability	obligation	willingness
certainty	requirement	volition
necessity	necessity	intention

In English, modality is primarily expressed by core modal auxiliaries (e.g. *must*, *will*, *should*) and marginal auxiliaries or quasi-modals (e.g. *have to*, *need to*, *be bound to*) (Quirk et al. 1985, 237). English modal auxiliaries display special features, including the fact that they have no -*s* form for the third person singular (e.g. **cans*, **musts*), take negation directly (e.g. *can't/cannot*, *mustn't*), do not admit co-occurrence (e.g. **may will*), and take inversion without *do* (e.g. *can I?*, *must I*) (Coates 1983, 4). Quasi-modals do not share these features with modal auxiliaries and are much closer to lexical verbs. Modality is also conveyed by "lexical modals", a broad category comprising items that do not belong to the class of auxiliary verbs. It includes adjectives (e.g. *possible*, *necessary*), adverbs (e.g. *perhaps*, *possibly*), lexical verbs (e.g. *hope*, *want*), and nouns (e.g. *possibility*, *necessity*) (Huddleston 2002, 173).

Chinese expresses modality by means of grammatical, lexical and syntactic devices. It shares with English the use of modal auxiliary verbs (variously named, e.g. 情态助动词 *qíngtài zhùdòngcí* or 能愿动词 *néngyuàn dòngcí*) and lexical modals, such as modal adverbs (态度副词 *tàidù fùcí*). It also employs the so-called modal particles (语气助词 *yǔqì zhùcí*) and the potential construction, also known as potential verb compound (Hsieh 2005, 38; Chappell, Peyraube 2016, 297, 312-14).

The category of modal auxiliary verbs[5] include: 能 *néng*, 能够 *nénggòu*, 可以 *kěyǐ*, 得 *dé*, 会 *huì*, and 可能 *kěnéng*,[6] used to express possibility, permission and ability; 要 *yào*, 应 *yīng*, 应该 *yīnggāi*, 应当 *yīngdāng*, 该 *gāi*, 当 *dāng*, 得 *děi*, 需要 *xūyào*, 必须 *bìxū*, and 须要 *xūyào* to express obligation and necessity; and 要 *yào*, 想 *xiǎng*, 想

---

5 The status of Chinese modal auxiliary verbs is debated in the literature. Tang (2000), for example, does not even ascribe them to the category of auxiliary verbs and calls them 情态动词 *qíngtài dòngcí* 'modal verbs'.

6 The status of 可能 *kěnéng* is controversial. Some authors consider it an adverb (Li, Thompson 1983, 168), yet some others consider it a modal verb (Li 2004, 138).

要 *xiǎngyào*, 愿 *yuàn*, 愿意 *yuànyì*, 肯 *kěn* to express volition (intention) (e.g. Chao 1968, 731-48; Chapell, Peyraube 2016, 301-2; Abbiati 2014, 213-21).

Adverbs such as 竟 *jìng*, 居然 *jūrán*, 究竟 *jiūjìng*, 或许 *huòxǔ*, and 显然 *xiǎnrán* belong to the category of modal adverbs (e.g. Chao 1968, 780-90; Li, Thompson 1983, 267-8). Modal or sentence particles (e.g. 吗 *ma*, 呢 *ne*, 啊 *a*, 吧 *ba*, 了 *le* and 嘛 *ma*) are morphemes uttered in the neutral tone occurring at the end of an utterance with the aim of adding modal and attitudinal meanings to it (Chao 1968, 796; Abbiati 2014, 58). Finally, potential constructions (verb compounds) derive from both resultative and directional verb compounds and can indicate either ability or possibility, as can be seen from example (1):[7]

1. 听得懂
    tīng   de   dǒng
    hear   POT   understand
    'can understand'

Li and Thompson (1981, 182-3) suggest a series of functional correspondences between Chinese and English modal auxiliaries. Sparvoli (2012, 209) elaborates on their proposal, and puts forward a possible mapping of modal Chinese/English pairs of auxiliaries onto van der Auwera and Plungian's (1998) semantic categories. Table 2 is an adaptation of Sparvoli's list of correspondences, and will be the starting point for the study presented in this paper. Differently from Sparvoli (2012), the categories "participant-internal volition, intention", "epistemic possibility" and "epistemic necessity, certainty" have been included. Also, a wider repertoire of Chinese and English modal auxiliaries is presented, as they are relevant to this study.[8]

Table 2 Hypothesised correspondences between a selection of English and Chinese modal auxiliaries

English	Chinese	Categories
will, shall, be going to	会 *huì*	Epistemic possibility, probability Participant-internal willingness, intention

---

7   The glosses used in this paper follow the general guidelines of the Leipzig Glossing Rules. Additional glosses include: DIR = 'directional complement or verb'; DISP = 'disposal construction marker'; LIG = 'ligature' (genitive, relative clause or attributive marker); P = 'particle'; POT = 'potential marker'.

8   The Chinese modal 要 *yào* has been added, although Li and Thompson (1981), for example, do not include it into their list of modal auxiliaries. The English modal verb *can*, the quasi-modal *be called to*, and its hypothesised Chinese equivalent 召 *zhào* have also been included.

can, be able to	会 *huì*, 能 *néng*, 能够 *nénggòu*, 可以 *kěyǐ*	Epistemic possibility Participant-internal ability
can, may	能 *néng*, 可以 *kěyǐ*	Participant-external possibility
must, should, have to, need to, ought to, be called to	要 *yào*, 应 *yīng*, 应该 *yīnggāi*, 应当 *yīngdāng*, 该 *gāi*, 需要 *xūyào*, 召 *zhào*	Epistemic necessity, certainty Participant-external necessity, obligation, requirement
want to, will/shall	要 *yào*, 想 *xiǎng*, 想要 *xiǎngyào*, 愿 *yuàn*	Participant-internal volition, intention

From table 2, the polysemous nature of some auxiliary verbs is apparent, as they straddle one or more semantic categories. This is the case of *will* and 会 *huì*, *can* and 能 *néng*, 可以 *kěyǐ* and 要 *yào*.

The English modal auxiliary *will* can alternatively indicate epistemic possibility/probability or participant-internal willingness and intention (Coates 1983, 170-1; Huddleston 2002, 188-91). *Shall* can be used with first person subjects either singular or plural, as an alternative of *will* to ask for the intention or volition of the addressee. Also, in more formal and prescriptive contexts, *will* and *shall* can convey obligation (participant-internal modality) (Coates 1983, 185-6). In this last sense, *will/shall* correspond to the Chinese auxiliary 要 *yào* and to other verbs indicating participant-internal volition/intention.

The Chinese modal 会 *huì* can take on three main meanings: 1) 'know how to, have the ability to'; 2) 'be good at'; 3) 'there is the possibility (that...)' (our translation) (Lǚ 2004, 278-9). In the first two senses it overlaps semantically with the English auxiliary core modal *can* and the quasi-modal *be able to*, and indicates participant-internal ability, while in the third sense it covers part of the semantic area of *will* and *shall*.

The modal auxiliary *can* has the potential to express epistemic possibility, participant-internal ability or participant-external possibility and permission, and thus it overlaps semantically with the Chinese auxiliaries 能 *néng* and 可以 *kěyǐ*. Interpreting whether the use of *can* is epistemic, participant-internal or participant-external can be hard in some contexts, as suggested, for example, by Biber et al. (1999, 491-3) with regard to academic prose.

Finally, as seen above, not only can 要 *yào* be employed to convey participant-internal volition or intention, but also participant-external necessity, obligation, and requirement, and thus corresponds to, for instance, English *must*, *should*, and *need to.*

As noticed by Coates (1983, 20), the negative forms of some English modal auxiliaries are unavailable in the language, and alternative ones have to be used to make up for them. For example, in British English the negative form of epistemic *must* is *cannot* and not **mustn't*. This phenomenon, also known as 'suppletion', can be found in Chinese as well, in that some modal auxiliaries have a negative

counterpart which differs from the positive one for all or some of their meanings (Sparvoli 2012, 171). For example, 可以 *kěyǐ* takes on the negative forms 不能 *bù néng*, 不行 *bù xíng*, 不成 *bù chéng* or 不值得 *bù zhídé* when it indicates negative participant-external possibility. The auxiliaries 要 *yào*, 必须 *bìxū* and 得 *děi* are negated by 不用 *búyòng* or 不必 *búbì* in contexts in which they express participant-external necessity. Furthermore, the verb 要 *yào*, indicating participant-internal volition and intention, is negated with 不想 *bù xiǎng*, 不会 *bú huì*, or 不可能 *bù kěnéng* (Abbiati 2014, 213-20).

In spite of these shared functional and semantic aspects, many authors have pointed out typological differences between modality in English and Chinese, especially from the morphosyntactic perspective (e.g. Li, Thompson 1981; Tang 2000; Li 2004). In this respect, Li claims that:

> modal verbs in English and Chinese are very different things […] They constitute a grammatical category belonging to "auxiliary verbs". However, apart from the component of the modals, the auxiliary verbs of the two languages share little resemblance. The "helping" functions of English auxiliaries in aspect, phase, and voice do not exist with Chinese auxiliaries. "Auxiliary verb" is a suitable term for the intermediate category between verbs and modal verbs in English, but not for that in Chinese. Chinese has no auxiliary verbs in the English sense. (2004, 316)

4 Corpus Linguistics for the Study of English and Translated Chinese

Language corpora are naturally occurring language data, stored as computer files. An important distinction can be drawn between general corpora, representing a language as a whole, and specialised corpora, focusing on a specific language variety. Depending on the type of language under examination and the research questions the corpus is designed to address, one might need to restrict the number of texts that make up a corpus (Baker 2010, 12-14). Pierini (2015), for example, carries out a study of the translation of English compound adjectives from English into Italian and chooses to study only one text, Stephen King's novel *Under the Dome* and its Italian translation. She claims that while it is true that "a small corpus provides a partial insight into a phenomenon" it "can be scanned manually so that the collection of data does not leave out any […] pattern" (Pierini 2015, 22). Corpus linguistics can be defined as a series of methods, techniques, and processes for the investigation of language corpora, including the analysis of word frequencies, concordances, collocations, keywords and the dispersion of words and keywords (Baker 2010, 5, 19-30).

Some studies have applied corpus-based methods to the investigation of translated language. These are known as Corpus-Based Translation Studies and are based on bilingual parallel corpora and comparable corpora of native and translated texts. This research attempts "to uncover evidence to support or reject the so-called translation universal hypotheses" (Xiao, Wei 2014, 3), including the existence of translation phenomena such as explicitation and simplification (e.g. Laviosa 2002). Explicitation, in particular, is "an overall tendency to spell things out rather than leave them implicit in translation" (Baker 1996, 180).

Xiao (2010) examines features of translated Chinese emerging from the study of a corpus of translated texts compared to original Chinese texts. His analysis reveals the presence of "properties which are specific to English-to-Chinese translation due to translation shifts", including significantly lower lexical density and a lower proportion of lexical words over function words than in native Chinese (Xiao 2010, 29). Xiao and Dai reevaluate the "English-based" translation universal hypotheses and suggest that:

> some [hypotheses] (e.g. explicitation) are supported in Chinese while others are not fully supported (e.g. simplification) [...]. More specifically, translational language is more explicit semantically, lexically, grammatically and logically. But simplification is not a pure, simple phenomenon in that translated texts may be simpler in some aspects but more complicated in others vis-à-vis comparable native texts. (2014, 50)

Xiao and Wei call for further corpus-based translation and cross-linguistic studies of "genetically distant languages such as English and Chinese" (2014, 5), as they can have important implications for linguistic theorisation.

Corpus-based translation studies can also have practical aims and implications. Lian and Jiang (2014), for example, examine the use of modality in a parallel corpus of Chinese laws and regulations of international exchanges and their translations into English. Such legal texts have become increasingly important in our globalised world, and more attention should be paid to their translation, as translators tend to use the "modal operator" *shall* excessively and to misuse other English modal operators. Furthermore, they tend to overuse synonymous words to avoid repetitions, but in this way they violate the principles of consistency, accuracy, and authority of the law (Lian, Jiang 2014, 502).

Finally, corpus linguistics methodologies have also informed the study of the writings of the Catholic Church. Teubert (2007), for instance, examines concordances extracted from a corpus of encyclical letters and other texts about the social doctrine of the Church and explores the evolution of the meaning of concepts such as 'natural law', 'human rights', and 'property' over time. The author claims

that not only can corpus linguistics help to identify the regularities of language use, but also to observe the construction of social reality in a given discourse at a given time (Teubert 2007, 89).

5 The Data and the Analysis

The English and the Chinese versions of the Encyclical Letter were downloaded from the Vatican website as PDF files and converted into .txt files. We tokenised the Chinese text with the aid of the software *SegmentAnt* (Anthony 2018), as Chinese is written as running strings of characters without spaces delimiting words (Xiao 2010, 14). We checked the output of the software manually and made some changes to it. For example, Some sets of characters had been treated by the software as single units, while for semantic and syntactic reasons we decided to separate them and put a space between them, e.g. 一些 *yī xiē*, 就是 *jiù shì*, 不可 *bù kě*, 不能 *bù néng*.The first string is composed of a numeral followed by a classifier and the remaining ones of an adverb followed by a verb. By contrast, we decided to write idiomatic expressions with no space between their characters, e.g. 若无其事 *ruòwúqíshì* 'as if it did/does not concern him'. In dubious cases, we consulted the 现代汉语词典 *Xiandai Hanyu Cidian - The Contemporary Chinese Dictionary* (2014). Once the two versions were ready for analysis, we processed them by means of the software *AntConc* (Anthony 2019), and obtained word lists and concordances for a selection of both English and Chinese modal expressions. The word lists provided information about the frequency of all the words in each corpus, while concordances presented all the occurrences of a given modal item within their linguistic contexts.

We first identified parallel expressions that encode modal meanings in the two languages (cf. Tognini-Bonelli 1996, 198). Subsequently, we attempted to "locate meaningful correspondences and build up a network of semantic relations across the two languages"; however, as is often the case, some "mismatches [came] to light […]: these are just as important as the similarities between the two languages" (Tognini-Bonelli 1996, 199). Using an Excel spreadsheet, we matched each line in a concordance with the corresponding "co-text" in the other version of the Letter and inserted the parallel expressions into to two adjacent columns for further analysis. This procedure provided us with a framework for the study of translation equivalence in the English and in the Chinese version with regard to modality.

As can be seen from table 3, the number of word types (i.e. unique words) and word tokens (i.e. running words) in the two versions is similar, and so is the type/token ratio, that is the ratio between the number of types and the number of tokens (Xiao 2010, 17).

Table 3 Quantitative data about the English and the Chinese version of *Laudato Si'*

Laudato Si'	English	Chinese
Word types	4,846	4,861
Word tokens	36,911	35,547
Type/token ratio	7.6	7.3

The two research questions explored in this study are:

1. Which are the most important 'meaningful correspondences' of a selection of the most frequent English modal expressions in the two versions, and how can they help understand the semantic space covered by each expression in *Laudato Si'*?
2. Can any differences in the use of modal items be detected which might not only be due to typological contrasts between the two languages but also, or exclusively, to attempts to make the target text more explicit?

6 An Analysis of Modality in *Laudato Si'*

This section first looks at the overall use of modality in the English and Chinese versions of *Laudato Si'* (§ 6.1). It then zooms in on the use of a selection of frequently occurring modal expressions indicating epistemic possibility and probability and participant-internal willingness, intention (§ 6.2), lack of participant-internal ability or participant-external possibility (§ 6.3), and participant-external obligation and requirement (§ 6.4).

6.1 Modality in the English and Chinese Versions. General Observations

Table 4 lists the most frequent modal expressions found on the English and Chinese word lists, respectively. On the one hand, the modal expressions occurring at least 30 times in the English version are *can*, *will*, *would*, *must*, *cannot*, *should* and *may*, the lemmas NEED (verb) and CALL (verb).[9] On the other hand, the ones that stand out quantitatively in the Chinese version are the modal verbs 能 *néng*, 会 *huì*, 可 *kě*, 要 *yào*, 应 *yīng*, 必须 *bìxū*, and 可以 *kěyǐ*, the modal verb/noun 需要 *xūyào*, the adverb 将 *jiāng* and the compound verb 无法 *wúfǎ*. We

---

9 Capital letters indicate lemmas, that is, groups of all inflectional forms related to one stem that belong to the same word class (Kučera, Francis 1967, 19). NEED (verb) stands for *need*, *needs*, *needed*, *needing*, and CALL (verb) stands for *call*, *calls*, *called*, *calling*.

decided to also include the occurrences of NEED (noun), which are very frequent in the Letter, and also those of HOPE (noun) and CALL (noun),[10] because their equivalent Chinese translations 需要 *xūyào*, 希望 *xīwàng*, 召 *zhào* and its compound forms (indicated as 召* *zhào**) are used as both verbs and nouns. The raw frequencies are provided along with the normalised frequencies per number of word tokens.

Table 4 The most frequent modal expressions in the English and Chinese versions of *Laudato Si'*

English	Freq.	%	Chinese (1)	Freq.	%	Chinese (2)	Freq.	%
can	179	0.48	能 *néng*	198	0.56	召* *zhào** *	17	0.05
will	94	0.25	会 *huì*	140	0.39	需 *xū*	14	0.04
NEED (verb)	75	0.20	可 *kě*	132	0.37	应该 *yīnggāi*	11	0.03
would	64	0.17	需要 *xūyào*	102	0.29	想 *xiǎng*	11	0.03
must	58	0.16	要 *yào*	97	0.27	愿意 *yuànyì*	9	0.03
cannot	54	0.15	应 *yīng*	74	0.21	毋须 (无须) *wúxū*	7	0.02
NEED (noun)	47	0.13	无法 *wúfǎ*	58	0.16	不 得 不 *bùdé bù*	7	0.02
should	41	0.11	必须 *bìxū*	57	0.16	难以 *nányǐ*	6	0.02
CALL (verb)	34	0.09	将 *jiāng*	42	0.12	须 *xū*	6	0.02
may	32	0.09	可以 *kěyǐ*	30	0.08	想要 *xiǎngyào*	6	0.02
could	19	0.05	可能 *kěnéng*	21	0.06	懂得 *dǒngdé*	5	0.01
shall	11	0.03	必要 *bìyào*	21	0.06	易 *yì*	5	0.01
might	7	0.02	要求 *yāoqiú*	18	0.05	难 *nán*	5	0.01
HOPE (noun)	10	0.03	希望 *xīwàng*	18	0.05	愿 *yuàn*	5	0.01
HOPE (verb)	4	0.01	能够 *nénggòu*	17	0.05	宜 *yí*	2	0.01
CALL (noun)	2	0.01				**Total**	1,141	3.2
Total	731	1.98						

* 召* *zhào** stands for: 召唤 *zhàohuàn*, 召叫 *zhàojiào*, 号召 *hàozhào*.

For space constraints, we decided to focus on the following selection of English modal expressions: *will/shall* (*not*), *cannot* and *may/might not* and CALL (verb and noun, expressing a modal meaning). The auxiliaries *will/shall* and *cannot* (*may not*) were chosen because of their polysemous nature, that is, because of their potential to cover more than one of the meanings identified in table 2 above. The quasi-modal CALL, on the other hand, was chosen because previous research had identified it as a marker of modality in *Laudato Si'*.

Starting from these English modals, we first investigated how their instances are rendered into Chinese, and came up with lists of

---

10 NEED (noun) stands for the forms *need* and *needs*, HOPE (noun) stands for *hope* and *hopes*, and CALL (noun) for *call* and *calls*.

Chinese equivalents for each one of them. As predictable, in almost all cases each identified Chinese modal translates various source expressions and not just the ones from which we started. Therefore, we also created and analysed lists of source items corresponding to the most frequent Chinese equivalents. §§ 6.3 to 6.5 illustrate in detail the results of this 'bi-directional' analysis, which aims at shedding light on the semantic space covered by each of these English modal verbs with respect to their Chinese translation equivalents and at exploring possible instances of explicitation.

As can be noticed from table 4, the number of modal verbs identified in the Chinese version of *Laudato Si'* is higher than those in the English one. This may be due to two main reasons. The first one is that some modal expressions used in the Chinese version do not correspond to any explicit modal expression in English, as illustrated by example (2):

2.   Some forms of pollution **Ø** are part of people's daily experience.
     每人在日常生活中均会接触到不同形式的污染。
     *měi   rén   zài   rìcháng   shēnghuó   zhōng   jūn   **huì***
     every   person at   daily   life   inside   all   can
     jiēchù-dào   bù   tóng   xíngshì   de   wūrǎn
     come.into.contact-RES   NEG   similar form   LIG   pollution

The second one is that in our corpus a large number of English adjectives (e.g. *possible*, *probable*, *able*) used in impersonal constructions, such as the one in example (3), are translated into Chinese with a modal verb:

3.   It is **possible** that we do not grasp the gravity of the challenges now before us.
     我们很可能仍未理解到目前的挑战有多么严峻。
     *wǒmen   hěn   **kěnéng**   réng   wèi   lǐjiě-dào*
     1PL   very   can   still   NEG   comprehend-RES
     mùqián   de   tiǎozhàn   yǒu   duōme   yánjùn
     at.present LIG   challenge   have   how.much   severe

It stands to reason that a complete correspondence between the English and the Chinese modal expressions in the two versions cannot be expected, as a given modal meaning in one language can be phrased in the other language in various ways, according to the specific contextual (and typological needs) and the translator's preferences. Furthermore, the original English (co-)texts often differ from the translated ones in various other respects, including syntactic aspects. For example, in the parallel sentences in excerpt (4), the English modal verb *can* in the main clause is rendered in Chinese with the verb 会 *huì*. Also, the Chinese version adds the modal verb 能 *néng* in the subordinate clause, which has no explicit equivalent in the English

version. Finally, the main clause and the subordinate if-clause are inverted in the Chinese version with respect to the English one:

4. Local legislation can be more effective, too, if agreements exist between neighbouring communities to support the same environmental policies.
若能与邻近地区达成协议, 支持相同的环境政策, 本地立法则会更有效力。

ruò	*néng*	*yǔ*	*línjìn*	*dìqū*	*dáchéng*	*xiéyì*
if	can	with	close	area	reach	agreement
zhīchí	*xiāngtóng*	*de*	*huánjìng*	*zhèngcè*	*běndì*	
support	similar	LIG	environment	policy	this.place	
lìfǎ	*zé*	*huì*	*gèng*	*yǒu*	*xiàolì*	
legislation	then	can	still.more	have	effect	

6.2 Will/Shall. Epistemic Possibility and Probability; Participant-Internal Willingness and Intention

Table 5 lays out the translations of the instances of *will* and *shall* in the Letter.

Table 5 The use of *will* and *shall* in the English version and their corresponding translations into Chinese

English >	Freq.	Chinese	Freq.
		Ø	37
		会 *huì*	26
		将 *jiāng*	9
will (not)	96 →	无法 *wúfǎ*	4
		能 *néng*	4
		将(不)会 *jiāng (bù) huì*	3
		others	12
		Sub-total	**95**
		不可 *bù kě*	7
		不应 *bù yīng*	2
shall (not)	11 →	应 *yīng*	1
		会 *huì*	1
		Sub-total	**11**
		Grand total	**105**

As can be noticed, 37 occurrences of *will* are not translated into Chinese altogether, 26 are translated with the verb 会 *huì*, 9 with the adverb 将 *jiāng*, 4 with 能 *néng*, 3 with the adverb/verb combination 将会 *jiāng huì* or its negative counterpart 将 (不) 会 *jiāng (bu) huì*. Finally, 无法 *wúfǎ* translates negative uses of *will* in four cases. As for *shall* (*not*), all the instances but one are part of citations from the Bible or from other documents. Only one case of *shall* conveys epistemic modality and is translated as 会 *huì*, while the others express participant-external modality. We will deal with some instances of them in § 6.3 below.

会 *huì* is the second most used modal verb in the Chinese version after 能 *néng* **[tab. 2]**. As seen in § 3, 会 *huì* can indicate epistemic possibility and probability as well as participant-internal ability, while 能 *néng* expresses both participant-internal ability and external possibility (Abbiati 2014, 213).

An interesting modal item is the adverb 将 *jiāng*,[11] which is used in formal written Chinese to indicate imminent future reference or certainty about a future situation (Lǚ 2004, 300). Generally speaking, future tense and modality are strongly linked. With regard to *will* and *shall*, for instance, Coates points out that "it would be meaningless to be willing or to intend to do something which has already been done" (1983, 233-4). Furthermore, Lehmann notices that from a diachronic perspective "often the future may arise through the grammaticalisation of a desiderative modal", of which "*will* is a known example" (2002, 26). That is, although modal expressions signal epistemic possibility and probability or participant-internal ability rather than future time *per se*, they are used with reference to future events or states.[12]

The translation of *will/shall* (*not*) with 会 *huì* and 将 *jiāng* was expected, while the correspondence with 无法 *wúfǎ* was not, both because of its meaning (see the description in § 6.3) and because, like 将 *jiāng*, it is not often mentioned in studies on modality. The frequent use of 会 *huì* and 将 *jiāng* suggests that epistemic possibility and probability and participant-internal willingness and intention are the main semantic areas covered by *will* in the Encyclical Letter. Examples (5) and (6) show the use of 会 *huì* as a translation of *will*, while example (7) illustrates how 将 *jiāng* is used to this end:

---

11 Some authors, including Smith and Erbaugh (2005, 731), consider 将 *jiāng* as a modal verb.

12 For a more in-depth treatment of modality in relation to tense, see Portner 2009, 236-41.

5. I **will** briefly turn to what is happening to our common home.
   […] 我会略述我们共同家园的现况。

wǒ	**huì**	lüè	shù	wǒmen	gòngtóng	jiāyuán
1SG	can	sketchy	narrate	1PL	common	home

de	xiànkuàng
LIG	present.situation

6. Greater scarcity of water **will** lead to an increase in the cost of food and the various products which depend on its use.
   水资源不足若进一步恶化, 会使食物, 以及各种制造过程中需要用水的产品的成本增加。

shuǐ	zīyuán	bù	zú	ruò	jìnyībù	èhuà
water	resource	NEG	sufficient	if	further	deteriorate

huì	shǐ	shíwù	yǐjí	gè	zhǒng	zhìzào	guòchéng
can	let	food	as.well	each	CLF	produce	process

zhōng	xūyào	yòng	shuǐ	de	chǎnpǐn	de
inside	need	use	water	LIG	product	LIG

chéngběn	zēngjiā
cost	increase

7. […] politicians **will** inevitably clash with the mindset of short-term gain and results which dominates present-day economics and politics.
   从政者[…], 将无可避免地与现今经济和政治以短期利益和成效为目标的心态相冲突。

cóngzhèngzhě	**jiāng**	wú-kě-bìmiǎn	de	yǔ	xiànjīn
politician	will	NEG-can-avoid	LIG	and	present

jīngjì	hé	zhèngzhì	yǐ	duǎnqī	lìyì	hé
economy	and	politics	with	short.term	profit	and

chéngxiào	wéi	mùbiāo	de	xīntài	xiāng	chōngtū
effect	be	target	LIG	mindset	mutually	clash

Example (5) is an extract from the "Preamble" and expresses the Pope's intention to address a given topic later on in the Letter, while example (6) predicts that a given event will happen in the future. 将 *jiāng* in example (7) also conveys the meaning of epistemic possibility and probability rather than imminent future reference or certainty about a future situation, which suggests that the semantic spaces covered by 将 *jiāng* and 会 *huì* are very close. However, the two of them are also used together in the combination 将会 *jiāng huì* to translate some other instances of *will*, which suggests that their meanings do not fully overlap and that, if used together, they complement each other, such as in extract (8):[13]

---

13 We are undecided about whether in this particular case the hierarchical structure is [[将会]是] or [将[会是]], and leave the question to future investigation.

8. Eternal life *will* be a shared experience of awe […]
永生将会是共享的美事。

yǒngshēng	***jiāng***	*huì*	*shì*	*gòngxiǎng*	*de*	*měi-shì*
eternal.life	will	can	be	share	LIG	beautiful-thing

A large number of instances of *will* (37) are not translated into Chinese with an explicit modal expression. The reason for this choice is not easy to explain, yet three observations can be made. Firstly, on some occasions the original English text had to be rephrased to meet the needs of Chinese syntax and discourse, which also involved omitting the translation of the modality. This is especially the case of many English restrictive relative clauses which were translated into Chinese as pre-modifying structures, as example (9) shows (the relative clauses are underlined):

9. Those who **will** have to suffer the consequences of what we are trying to hide will not forget this failure of conscience and responsibility.
那些因我们的隐瞒实情而Ø受害的人，将不会忘记我们的埋没良知和欠缺承担。

nà	*xiē*	*yīn*		*women*	*de*	*yǐnmán*	*shíqíng*	*ér*	***Ø***
those	CLF	because		1PL	LIG	conceal	truth	and	
shòu	*hài*	*de*	*rén*	*jiāng*	*bú*	*huì*	*wàngjì*	*wǒmen*	
suffer	harm	LIG	person	will	NEG	can	forget	1PL	
de	*máimò*	*liángzhī*			*hé*	*qiànquē*	*chéngdān*		
LIG	cover.up	intuitive.knowledge			and	lack	assume		

As can be noticed, the relative construction pre-modifying the noun 人 *rén* 'person' does not explicitly render *will*. This can be related to a general tendency in Chinese to avoid the use of grammatical markers in such constructions, including the perfective aspectual marker 了 *le* and modal particles.

Secondly, some other instances of *will* are not explicitly translated when the verb *hope* (Chinese 希望 *xīwàng* and 盼望 *pànwàng*) is used in the main clause to introduce another clause expressing futurity with *will*, such as in example (10):

10. Can we **hope**, then, that in such cases, legislation and regulations dealing with the environment **will** really prove effective?
在这种情况之下，我们仍能希望有关环境的立法和规定Ø真正有效用吗?

zài	*zhè*	*zhǒng*	*qíngkuàng*	*zhīxià*	*women*	*réng*	*néng*
at	this	CLF	situation	under	1PL	still	can
xīwàng	*yǒuguān*	*huánjìng*	*de*	*lìfǎ*		*hé*	
hope	regard	environment	LIG	legislation		and	
guīdìng	***Ø***	*zhēnzhèng*	*yǒu*	*xiàoyòng*	*ma*		
regulation		really	have	effect	Q		

Hope implies the speaker's attitude towards the future (cf. Portner 2009, 6), which is arguably the reason why the translator did not feel the need to translate *will* explicitly.

Thirdly, when a quasi-modal (e.g. *be able to*) is used in combination with *will*, only the meaning of the quasi-modal is translated.[14] Example (11) illustrates that 能 *néng* translates the meaning of *be able to* but not that of *will*:

11. Only by cultivating sound virtues **will** people **be able** to make a selfless ecological commitment.
    唯有藉培养良好的品德, 人才∅能作出无私的生态承诺。

wéiyǒu	*jiè*		*péiyǎng*	*liánghǎo*	*de*	*pǐndé*
only	make.use.of	cultivate	good	LIG	moral.character

rén	*cái*	**∅**	**néng**	*zuò-chū*	*wúsī*	*de*	*shēngtài*	*chéngnuò*
person	only		can	make-DIR	unselfish	LIG	ecology	promise

Four cases of *will* were rendered with the verb 能 *néng* expressing participant-internal ability or epistemic possibility (see example (12)), while four cases of *will* plus a negative element were translated with 无法 *wúfǎ*, functioning as a marker of negative participant-internal ability (see example (13)). Obviously, as is always the case, it is the overall meaning emerging from the unfolding discourse rather than that of a single word (e.g. the modal verb *will*) that leads a translator to make a given translation choice.

12. [...] ecological problems **will** solve themselves [...]
    [...] 则生态问题自然能迎刃而解。

zé	*shēngtài*	*wèntí*	*zìrán*	**néng**	*yíng-rèn-ér-jiě*
then	ecology	problem	naturally	can	meet-blade-and-solve

13. Unless we do this, other creatures **will not** be recognised for their true worth [...]
    除非我们这样做, 否则无法认识其它受造物的真正价值 [...]

chúfēi	*women*	*zhèyàng*	*zuò*	*fǒuzé*	**wúfǎ**	*rènshi*
unless	1PL	this.way	do	otherwise	not.have.way	know

qítā	*shòuzàowù*	*de*	*zhēnzhèng*	*jiàzhí*
other	creature	LIG	true	worth

Some more instances of *will* are translated with a Chinese modal verb preceded by a time adverbial, thus adding to the epistemic probability meaning of the sentence and making the reference to the fu-

---

14 According to Chao (1968, 732), two or more auxiliary verbs, including 会能 *huì* and 能 *néng*, can occur in succession. The translator clearly did not opt for this use in this case.

ture even more explicit. For example, in excerpt (14) the adverb 永远 *yǒngyuǎn*, which, unlike the English adverb *never*, can only refer to the future, occurs before 无法 *wúfǎ*:

14. […] so too living species are part of a network which we **will never** fully explore and understand.
    […] 生物物种之间也是如此, 它们属于一个我们永远无法完全探索和明白的网络的一部分。

shēngwù	*wùzhǒng*	*zhījiān*	*yě*	*shì*	*rúcǐ*	*tāmen*
living.being	species	between	also	be	this.way	3PL
shǔyú	*yī*	*ge*	*wǒmen*	***yǒngyuǎn***	***wúfǎ***	*wánquán*
belong	one	CLF	1PL	forever	not.have.way	fully
tànsuǒ	*hé*	*míngbai*	*de*	*wǎngluo*	*de*	*yī*	*bùfen*
explore	and	understand	LIG	net		LIG	one	part

The compound 无法 *wúfǎ* will be dealt with in more detail in § 6.3 below as a translation equivalent of *cannot*. The other translations of *will* are not discussed here, as they occur only once each. They include the modal auxiliaries 应 *yīng*, 不可能 *bù kěnéng*, 可 *kě*, 可能 *kěnéng*, 必要 *bìyào*, 要 *yào*, 足以 *zúyǐ* and the adverbs 未必 *wèibì* and 决 *jué*.

The right-hand side of table 6 below summarises the English modal expressions that were translated into Chinese with 会 *huì*, 将 *jiāng* and 将会 *jiāng huì* and their frequencies. The analysis of these translation equivalents aims to illuminate the semantic space covered by these three Chinese modal expressions further, with reference to the original modal expressions and their co-texts.

Table 6 The use of 会 *huì*, 将 *jiāng* and 将(不)会 *jiāng (bù) huì* in Chinese and the corresponding source expressions

English	Freq.	Chinese	Freq.
Ø	58		
will	26		
can	21		
would	10	→ 会 *huì*	132
end up	6		
may	4		
others	7		
Sub-total	**132**		

Ø	14			
will	9			
would	4	→ 将 *jiāng*		29
could	1			
may	1			
Sub-total	**29**			

Ø	3			
will	3			
would	2	→ 将(不)会 *jiāng (bù) huì*		9
can	1			
Sub-total	**9**			

Grand total	**170**

The data shows that 58 cases of 会 *huì*, 14 of 将 *jiāng*, and 3 of 将会 *jiāng huì* do not correspond to any explicit modal element in the original version, while 26 of 会 *huì*, 9 of 将 *jiāng*, and 3 of 将会 *jiāng huì* translate the verb *will*. The other source modal verb that these three forms have in common is *would*. What is also noticeable is that 21 instances of *can*, 6 of the verb *end up* and 4 of *may* are associated with 会 *huì*.

The 58 instances of 会 *huì* that do not translate any overt English modal marker (Ø) need a tentative explanation, as they might represent attempts of explicitation of the source meaning. An analysis of the concordance lines for 会 *huì* reveals that in many such cases this modal translates statements which in English are couched in the simple present and indicate a general truth, which is either habitual or bound to happen, such as in examples (15) and (16):

15. Valuable works of art and music now **make use** of new technologies.
    现时具价值的艺术品和音乐也会运用新科技。

xiànshí	*jù*	*jiàzhí*	*de*	*yìshùpǐn*	*hé*
current.time	possess	value	LIG	work.of.art	and

yīnyuè	*yě*	***huì***	*yùnyòng*	*xīn*	*kējì*
music	also	can	utilise	new	technology

16. Yet God's infinite power **does not** lead us to flee his fatherly tenderness [...]
    天主无限的威能总不会令我们逃离祂父爱的温柔 [...]

Tiānzhǔ	*wúxiàn*	*de*	*wēinéng*	*zǒng*	*bú*	***huì***	*lìng*
God	infinite	LIG	power	after.all	NEG	can	let

women	*táolí*	*tā*	*fù*	*ài*	*de*	*wēnróu*
1PL	flee	3SG	father	love	LIG	tenderness

The addition of the modal disambiguates the original meaning and appears to make the Chinese version more transparent and therefore explicit. The analysis also suggests that in other cases the explicit translation of modality with 会 *huì* is triggered by the conditional meaning of the sentence it occurs in, such as in example (17):[15]

17. If we do not, we **burden** our consciences with the weight of having denied the existence of others.
如果我们不这样做, 会因否定他人的存在而受良知的譴责。

rúguǒ	*women*	*bù*	*zhèyàng*	*zuò*	***huì***	*yīn*		*fǒudìng*
if	1PL	NEG	this.way	do	can	because		negate

tā-rén	*de*	*cúnzài*	*ér*	*shòu*	*liángzhī*
other-person	LIG	existence	and	suffer	intuitive.knowledge

de	*qiǎnzé*
LIG	condemn

Finally, instances of 会 *huì* corresponding to no modal marker in the original text are found in clauses complementing the meaning of verbs such as 相信 *xiāngxìn* (see example 18). This verb translates the source text *believe*, which, like the verb *hope* discussed above, implies the speaker's attitude towards the future.

18. There is also the fact that people no longer seem to **believe** in a happy future.
此外人类似乎不再相信会有快乐的未来。

cǐwài	*rénlèi*	*sìhū*	*bù*	*zài*	***xiāngxìn***	***huì***
moreover	humanity	seemingly	NEG	again	believe	can

yǒu	*kuàilè*	*de*	*wèilái*
there.be	joyful	LIG	future

The occurrences of 会 *huì* that translate English *can* and *may* are less unexpected and confirm that 会 *huì* shares with these English modals the semantic areas of participant-internal ability and epistemic possibility and probability, as illustrated by example (19):

---

15 This is in line with Chappell and Peyraube (2016, 306), who found that also the cognate Cantonese modal verb 會 *wúih* is highly compatible with conditional and counterfactual clauses. For more information about the relation between conditionals and modality, see Portner 2009, 247-57.

19. [...] for we know that things **can** change.
    [...] 因为我们知道事情是会改变的。

yīnwèi	*women*	*zhīdào*	*shìqing*	*shì*	***huì***	*gǎibiàn*	*de*
because	1PL	know	thing	be	can	change	P

Another parallel expression of 会 *huì* emerging from table 6 that deserves some attention is the lexical verb *end up*. This verb is used epistemically in the English version to make a prediction through a general statement, and is translated into Chinese with 会 *huì* in six cases. It must be said that the adverb 最终 *zuìzhōng* is used in four such instances out of six to reinforce the telicity of *end up*, as in example (20):

20. The alliance between the economy and technology **ends up** sidelining anything unrelated to its immediate interests.
    经济和科技结盟, 最终会将与其当时利益无关的一切弃之不顾。

jīngjì	*hé*	*kējì*	*jié*	*méng*	***zuìzhōng***	***huì***
economy	and	technology	unite	alliance	finally	can

jiāng	*yǔ*	*qí*	*dāngshí*	*lìyì*	*wú*	*guān*	*de*
DISP	with	3SG/PL	then	profit	NEG.have	relation	LIG

yīqiè	*qì-zhī-bú-gù*
all	abandon-3SG/PL-NEG-care

To sum up, with regard to the Encyclical Letter the semantic space of 会 *huì*, 将 *jiāng*, and 将会 *jiāng huì* covers the areas of epistemic possibility and probability and participant-internal willingness and intention. However, the hypothesised correspondence between *will* (*shall*) and these Chinese expressions is only partial, as the data reveals that they also cover the meanings conveyed by the English verbs *can*, *end up*, *may*, *would* and *could*. Finally, the large number of cases in which the three Chinese modal markers do not translate any overt English modals may be due to typological differences between the two languages, to the translator's attempt to make such modal meanings more explicit, or to both.

6.3 Cannot and May not. Participant-Internal Ability and Participant-External Possibility

Table 7 below shows how the 55 instances of *cannot*[16] and the 2 instances of *may not* are translated into Chinese.

Table 7 The use of *cannot* and *may not* in the English version and their corresponding translations into Chinese

English	Freq.	Chinese	Freq.
		不能 *bù néng*	19
		无法 *wúfǎ*	12
		Ø	5
		不可 *bù kě*	4
		不应 *bù yīng*	4
cannot	55 →	不可能 *bù kěnéng*	2
		必须 *bìxū*	2
		不得不 *bù dé bù*	1
		不容 *bù róng*	1
		others	5
		Sub-total	**55**
may not	2 →	未必会 *wèibì huì*	1
		未必能 *wèibì néng*	1
		Grand total	**57**

If used epistemically, *cannot* can be paraphrased as 'it is <u>not</u> possible that […]'. Not only is it used to negate epistemic *can*, but also epistemic *must* and *may* (see § 3). By contrast, epistemic *may not* can be paraphrased as 'it is possible that […] <u>not</u>', that is, it negates the truth of the proposition (Coates 1983, 100-2). When *cannot* expresses participant-internal ability, it can be paraphrased as 'inherent properties [do not] allow me to do it', while it takes on the meaning 'external circumstances [do not] allow me to do it', if it expresses participant-external possibility (Coates 1983, 93).

---

16 The informal contracted form *can't* is not used in the Encyclical Letter.

The translation choices 不能 *bù néng* (19 occurrences), 不可 *bù kě* (4 occurrences), 不可能 *bù kěnéng* (2 occurrences) were expected, as they are among the direct Chinese equivalents of *cannot*, covering its main semantic areas (e.g. Abbiati 2014, 213-14). By contrast, the negated form of 应 *yīng* (不应 *bù yīng*) (3 occurrences), the modal verb 必须 *bìxū* (2 occurrences), the cases of zero translation (5 occurrences), and especially 无法 *wúfǎ* (12 occurrences) were less predictable and deserve some attention. In particular, 无法 *wúfǎ* is a verb composed of two morphemes: the classic Chinese negative form of the modern Chinese verb 有 *yǒu* 'have', that is 无 *wú*, followed by its object 法 *fǎ*. Literally, it means 'to have no means of (doing something)', and therefore it mainly indicates lack of participant-internal ability and participant-external possibility.

The four instances of 不应 *bù yīng* represent a translation choice whereby the ambiguous use of English *cannot* is interpreted as explicit participant-external necessity[17] (see example 21).

21. If an artist **cannot** be stopped from using his or her creativity […]
正如艺术家不应被禁止发挥他或她的创意 […]
zhèng rú yìshùjiā **bù yīng** bèi jìnzhǐ fāhuī
just as artist NEG should PASS forbid bring.into.play
tā huò tā de chuàngyì
3SG.M or 3SG.F LIG creativity

The marker 必须 *bìxū* makes the meaning of two other uses of *cannot* more explicit. For instance, in example (22) it spells out the meaning of *cannot* (*fail*) (with *fail* also having a negative meaning) as participant-external necessity:

22. We **cannot fail** to praise the commitment of international agencies and civil society organisations […]
我们必须赞扬一些国际机构和公民社会组织的努力 […]
wǒmen **bìxū** zànyáng yī xiē guójì jīgòu
1PL must praise one CLF international organisation
hé gōngmín shèhuì zǔzhī de nǔlì
and citizen society organisation LIG make.effort

The analysis of the concordance lines for 无法 *wúfǎ* suggests that in this case this compound verb unambiguously signals the sense of negative participant-internal ability of *cannot*, such as in example (23):

---

17 Participant-external necessity and obligation can be difficult to tell apart. If negated, necessity or obligation express a prohibition, like in this case (cf. Sparvoli 2012, 263 ff.).

23. [...] we **cannot** adequately combat environmental degradation unless [...]
    [...] 除非我们 [...], 否则无法抵抗环境的恶化。

chúfēi	*women*	*fǒuzé*	***wúfǎ***	*dǐkàng*	*huánjìng*
unless	1PL	otherwise	cannot	resist	environment

de	*èhuà*
LIG	deteriorate

Table 8 below presents the original sources of four of the most frequent translation equivalents of *cannot*: 无法 *wúfǎ*, 不能 *bù néng*, 不可 *bù kě* and 不可能 *bù kěnéng*. Not only does 无法 *wúfǎ* translate 12 instances of *cannot*, but it also renders several other expressions of negated participant-internal ability, such as the adjectives *incapable*, *irretrievable* and *unsustainable*, the verbs *fail* and *not succeed*, and the noun *inability*. These equivalent expressions confirm that the semantic space covered by 无法 *wúfǎ* is mainly lack of participant-internal ability.

Table 8 The use of 无法 *wúfǎ*, 不能 *bù néng*, 不可 *bù kě* and 不可能 *bù kěnéng* in the Chinese version and the corresponding source expressions in English

English	Freq.	Chinese	Freq.
neg. adjective	16		
cannot	12		
fail	6		
neg. will	6		
can + negative element	5	→ 无法 *wúfǎ*	58
could not	2		
inability	2		
lack	2		
others	7		
Sub-total	**58**		
cannot	19		
neg. adjective	6		
can + negative element	5	→ 不能 *bù néng*	40
Ø	5		
others	5		
Sub-total	**40**		

shall not	7			
cannot	4			
should not	3			
can + negative element	2	→ 不可 *bù kě*	24	
demand	2			
neg. adjectives	2			
others	4			
Sub-total	**24**			
cannot	2	不可能		
will not	2	→ *bù kěnéng*	8	
others	4			
Sub-total	**8**			
		Grand total	**130**	

Example (24) illustrates how the meanings of the morphemes in the de-verbal adjective *incalculable* are rendered into Chinese. As can be noted, the negative meaning of the prefix *in-* and that of the suffix *-able* are conveyed by the Chinese morphemes 无 *wú* and 法 *fǎ*, while the stem *calcula*(*te*) is rendered by the verb 计算 *jìsuàn* 'calculate'. These words are inserted in the '是 … 的 *shì … de*' construction, which literally means 'belonging to the class of things for which there is no way to calculate':

24. […] the values involved are **incalculable**.
    所涉及的价值是无法计算的。
    *suǒ   shèjí   de   jiàzhí   shì   **wúfǎ   jìsuàn**   de*
    NMLZ   involve   LIG   value   be   cannot   calculate   NMLZ

The item 无法 *wúfǎ* also renders some instances of *can* used in combination with negative elements (e.g. the negative quantifier *no* and the adverb *never*), such as in example (25):

25. There **can** be **no** renewal of our relationship with nature without a renewal of humanity itself.
    人类若不自我更新, 人类与大自然的关系则无法更新。
    rénlèi   ruò   bú   zìwǒ gēngxīn   rénlèi   yǔ   dàzìrán
    humanity   if   NEG   self renew   humanity   and   nature
    *de   guānxi   zé   **wúfǎ**   gēngxīn*
    LIG   relation   then   cannot   renew

Table 8 shows that 不能 *bù néng* is the most frequent translation equivalent of *cannot*. Like 无法 *wúfǎ*, it often translates negative deverbal adjectives and instances in which *can* collocates with a negative element, and, differently from it, it has the potential to express all of the meanings covered by *cannot*. It also shows that five occurrences of 不能 *bù néng* translate source co-texts with zero modality, thus making the target meaning more precise and explicit (see example (26)):

26. Man **does not** create himself.
人不能自我创造。
rén   ***bù***   ***néng***   *zìwǒ*   *chuàngzào*
man   NEG   can   self   create

不可 *bù kě* covers the field of participant-external necessity or obligation (prohibition). Its source expressions range from *cannot* and *can* plus a negated element, through *should not*, to *shall not*. Most of the instances of *shall not*, in particular, are quotations from the Bible, like the one in example (27):

27. "When you reap the harvest of your land, you **shall not** reap your field to its very border […]
"当你们收割田地的庄稼时, 你不可割到地边 [...]
dāng   *nǐmen*   *shōugē*   *tiándì*   *de*   *zhuāngjia*   *shí*   *nǐ*   ***bù***
When   2PL   reap   land   LIG   crops   time   2SG   NEG
kě   *gē-dào*   *dì*   *biān*
can   reap-RES   land   edge

Finally, 不可能 *bù kěnéng* represents a choice whereby the translator conveys an epistemic reading of the source modals *cannot*, *will not* and of other forms such as *impossible* and *not possible*. Extract (28) exemplifies how *impossible* is translated into Chinese:

28. It becomes almost **impossible** to accept the limits imposed by reality.
要接受现实的掣肘几乎是不可能的。
yào   *jiēshòu*   *xiànshí*   *de*   *chèzhǒu*   *jīhū*   *shì*
want   accept   reality   LIG   hold.back.by.the.elbow   almost   be
bù   ***kěnéng***   *de*
NEG   possible   NMLZ

To conclude, in *Laudato Si'*, 不能 *bù néng* straddles the areas of negative participant-external possibility and negative participant-internal ability expressed by *cannot*. By contrast, 无法 *wúfǎ* appears to be an indicator of negative participant-internal ability, 不可能 *bù kěnéng* of epistemic modality, and 不可 *bù kě*, 不应 *bù yīng*, 必须 *bìxū* of participant-external obligation, necessity or requirement (prohibition).

The selective uses of these last modal expressions can be viewed as attempts to explicate the source meanings of *cannot*.

6.4 CALL. Participant-External Necessity, Obligation, and Requirement

Castello and Gesuato define the specific pattern 'someone is called to do something', used in the English version of *Laudato Si'*, as "a near-modal expression of obligation, which represents yet another linguistic realisation of the Pope's call for commitment to ecology and ecological spirituality" (2019, 138-9). An examination of the concordance lines for the instances of the lemma CALL (verb) revealed the presence of other patterns in which CALL (verb) is used, the most important of which are 'someone/something call(s) for something' and 'someone/something call(s) someone to'. These uses of *call* are reminiscent of citations from the Letters of Paul, such as "Christians are called to be saints" (Romans 1: 7) and "[...] yourself who are called to belong to Jesus Christ" (Romans 1: 6). They also recall phrases from the Gospel, such as "the call to repentance" (Luke 10: 13) and "the call to be a disciple" (Luke 14: 25).[18]

Table 9 presents the renderings of the forms of CALL (verb) and CALL (noun) into Chinese. In the English version CALL (verb) totals 34 occurrences and CALL (noun) two. They are translated into Chinese as 召 *zhào* or its compound forms 召唤 *zhàohuàn*, 召叫 *zhàojiào* and 号召 *hàozhào* in twelve cases. Quantitatively speaking, therefore, in the Encyclical Letter 召* *zhào**[19] represents the nearest semantic equivalent of CALL, and its use adds to the biblical and pastoral register of the text. According to the 现代汉语词典 *Xiandai Hanyu Cidian* (2014, 545-6, 1645), 召 *zhào* and its variant forms mean "call together, convene, summon someone" (our translation). Also the core meaning of 呼吁 *hūyù* and 呼唤 *hūhuàn* is similar to that of 召 *zhào* and indicate "appeal, call on somebody" and "call or shout to someone" (our translation). The twenty-four other renderings of CALL (verb and noun) in the text clearly represent less direct ways of rephrasing its core meaning. As can be seen, they are all modal verbs or no modal expression at all.

---

18 The quotations from the Gospel and the New Testament Letters were found at http://www.vatican.va/archive/ENG0839/_INDEX.HTM.

19 The asterisk after 召* *zhào* is used to indicate the base form 召 *zhào* and the three compounds 召唤 *zhàohuàn*, 召叫 *zhàojiào* and 号召 *hàozhào*.

Table 9 The use of CALL as a semi-modal in the English version and the corresponding translations into Chinese

English CALL	Freq.	Chinese	Freq.
called	14	召 *zhào*	6
calls	12	召唤 *zhàohuàn*	3
call (verb)	6	召叫 *zhàojiào*	2
call (noun)	2	号召 *hàozhào*	1
calling	2	**Total 召* *zhào***	**12**
Total CALL	**36**	需要 *xūyào*	6
		要求 *yāoqiú*	4
	→	必须 *bìxū*	3
		要 *yào*	2
		应 *yīng*	2
		呼吁 *hūyù*	2
		Ø	2
		应该 *yīnggāi*	1
		呼唤 *hūhuàn*	1
		会 *huì*	1
		Grand total	**36**

The 14 instances of the verb form *called* are used as part of the passive construction 'someone is called to do something'. Only four of these are rendered in the passive voice in Chinese. It is interesting to note that in passive clauses only the monosyllabic form 召 *zhào* is employed after a passive marker, such as 被 *bèi* in example (29):

29. As Christians, we **are** also **called** "to accept the world as a sacrament [...]
    身为基督徒，我们被召「视世界为共融的圣事[...]
    shēn   wéi   jīdūtú   women bèi   zhào   shì   shìjiè   wéi
    self   be   Christian 1PL   PASS   summon watch world   be
    gòngróng   de   shèngshì
    common.harmony LIG   sacrament

By contrast, the other occurrences of *called* as well as the other forms of CALL (verb) are translated by using the active voice and either a compound form of 召 *zhào* or a modal verb indicating participating-external modality, as examples (30) and (31) show:

30. God, who **calls** us to generous commitment and to give him our all […]
天主, 祂召唤我们慷慨大方献上自己和给予一切 […]。
*Tiānzhǔ tā **zhàohuàn** women kāngkǎi dàfāng xiàn-shàng*
God 3SG summon 1PL generous liberal offer-DIR
zìjǐ hé jǐyǔ yīqiè
self and give all

31. Together with our obligation to use the earth's goods responsibly, we
are called to recognize that […]
除了要有责任地善用大地的产物外, 我们也必须明白 […]
chúle yào yǒu zérèn de shànyòng dàdì
besides must have responsibility LIG properly.use earth
*de chǎnwù wài women yě **bìxū** míngbai*
LIG product besides 1PL also must understand

The choice of the Chinese modal auxiliary verbs 需要 *xūyào*, 要求 *yāoqiú*, 必须 *bìxū*, 要 *yào*, 应 *yīng*, 应该 *yīnggāi* as translations of the other instances of CALL (verb and noun) stresses the participant-external nature of these 'religious' near-modal expressions.

Looking at how the lemmas CALL (verb) and CALL (noun) are translated as 召 *zhào* and its compound forms **[tab. 9]** does not provide a full picture of the meanings and functions they convey, as there could be other uses of them in the Chinese version which do not translate CALL (verb and noun) but other words. Table 10 explores this possibility:

Table 10 The use of 召* *zhào** in the Chinese version and the corresponding source expressions in English

English CALL	Freq.	Chinese	Freq.
call (noun)	2	召 *zhào*	7
called	7	召唤 *zhàohuàn*	6
calling	1	召叫 *zhàojiào*	2
calls (verb)	2	号召 *hàozhào*	2
Total CALL	**12** →	**Total 召* *zhào***	17
a summons (号召 *hàozhào*)	1		
vocation (召唤 *zhàohuàn*)	2		
beckons (召唤 *zhàohuàn*)	1		
carried up (召 *zhào*)	1		
Grand total	**17**		

The table shows that 召 *zhào* and its compound forms translate the source expressions *a summons*, *vocation*, *to beckon*, *carried up* as well, which arguably also encode a near-modal obligation meaning. Excerpt (32) illustrates the context of use of *a vocation* and is followed by its translation:

32. We were created with a **vocation** to work.
     人从受造开始以来, 就有工作的召唤。

rén	*cóng*	*shòu*	*zào*	*kāishǐ*	*yǐlái*	*jiù*
person	from	PASS	creation	start	from	right.away

yǒu	*gōngzuò*	*de*	***zhàohuàn***
have	work	LIG	summon

In short, in *Laudato Si'*, the 'religious' quasi-modal CALL (verb and noun) is either turned into 召* *zhào** or into an auxiliary verb conveying participant-external modality. Furthermore, four source 'religious' terms (e.g. *vocation*) are expressed with 召* *zhào*. Both the use of Chinese modal auxiliaries to render some instances of quasi-modal CALL and that of 召* *zhào* to translate specific Catholic religious terms can be viewed as instances of explicitation. That is, they can be interpreted as a way of spelling things out for the sake of clarity and for the benefit of the target Chinese readership, who might not be familiar with such concepts of the Catholic doctrine.

7 Conclusions

This paper has investigated the use of some of the most frequent modal expressions in the English and Chinese versions of the Encyclical Letter *Laudato Si'*, a document in which the Pope presents possible scenarios due to climate change and directs his readership to action. Using corpus-based methods, word lists for both versions were obtained and checked for the most frequent English and Chinese modal expressions. A general quantitative analysis brought to light that the Chinese version contains a larger variety of modal auxiliaries than the English one, and a selection was made of frequent items covering different areas of modality. Subsequently, meaningful translation correspondences were investigated with the aim of defining their semantic space (research question one) and of detecting possible cases of explicitation (research question two). The first areas that were explored are epistemic probability and possibility and participant-internal willingness and intention, as prototypically expressed by *will/shall* in English and by their hypothesised main equivalent 会 *huì*. The analysis revealed further translation correspondences: i.e. that between *will* and 将 *jiāng* and 将会 *jiāng huì* to signal epistemic possibility and probability, and the one between *will not* and 无法 *wúfǎ* to express lack of participant-

internal ability; finally, that between *end up* and 会 *huì* to indicate the end state of a situation. Furthermore, the frequent cases of 会 *huì*, 将 *jiāng* and 将会 *jiāng huì* that do not pair up with any overt modal expression in the original version lend support to the explicitation hypothesis. The second group of semantic areas investigated are lack of epistemic possibility or probability, lack of participant-internal ability, participant-external possibility and obligation conveyed by *cannot* and its predictable equivalents 不能 *bù néng*, 不可 *bù kě*, 不可能 *bù kěnéng*. The main finding in this respect is the extensive use of 无法 *wúfǎ* to render instances of *cannot* mainly indicating lack of participant-internal ability. On the one hand, 不可 *bù kě* translates English modals expressing participant-external obligation and necessity, including *shall not* from biblical quotations. The third area under scrutiny was participant-external necessity, obligation and requirement, as conveyed by the near-modal CALL (verb and noun). The verb 召 *zhào* has proved to be its main translation equivalent in passive constructions, while its compound forms occur only in the active voice. The translation of the other instances of CALL (verb and noun) by means of Chinese modal auxiliaries of participant-external obligation/necessity stresses the deontic nature of these religious near-modal items. Finally, the rendering of religious terms such as *summons* and *vocation* with 召 *zhào* can be considered as attempts to explicate their meaning.

Table 11 summarises the main results of the study and maps the most frequent English and Chinese modal expressions identified in *Laudato Si'* onto the semantic categories they belong to:

Table 11 The English and Chinese modal expressions discussed in this study mapped onto the semantic categories

English	Chinese	Categories
will, can, would, end up, may, Ø	会 *huì* 能 *néng* 将会 *jiāng huì* 将 *jiāng*	Epistemic possibility, probability or Participant-internal willingness, intention
cannot cannot fail can + negative element neg. adjective (e.g. not possible) could not inability lack	不可能 *bù kěnéng* 不能 *bù néng* 不能 *bù néng* 无法 *wúfǎ* Ø 不可 *bù kě* 不应 *bù yīng* 必须 *bìxū*	Epistemic lack of possibility Lack of participant-internal ability
shall not cannot should not can + negative element demand	不可 *bù kě* 不能 *bù néng* 不应 *bù yīng*	Participant-external necessity, obligation, requirement

CALL (verb and noun)	召 *zhào*	Participant-external
a summons	召唤 *zhàohuàn*	necessity
vocation	召叫 *zhàojiào*	obligation, requirement
beckons	号召 *hàozhào*	
carried up	需要 *xūyào*	
	要求 *yāoqiú*	
	必须 *bìxū*	
	要 *yào*	
	应 *yīng*	
	呼吁 *hūyù*	

This study has shown that even the translation of highly grammaticalised items like modal expressions need to undergo processes of interpretation and adaptation, which involve choosing a suitable expression or a combination of various linguistic resources to render a given meaning in the target text. This is especially true of the text type analysed in this study, i.e. a piece of writing about Catholic doctrine, with which the Chinese and the Taiwanese readerships might not be familiar. This study has also discussed cases of modal expressions in the target text that seem to explicate the modal meanings implicit in the source text. However, the extent to which this is not only due to typological differences between the two languages but also to specific translation choices is a matter of debate, and could be investigated further by other corpus-based studies.

The corpus-based analyses carried out in this study have revealed a network of semantically connected modal expressions which a close reading of the two versions of *Laudato Si'* would have hardly managed to bring to light. This method has helped us identify the linguistic choices made by the writer and the translator to convey the intended semantic meanings. Parallel concordancing software, such as the online corpus-analysis tool *Sketchengine*,[20] could help speed up this type of analysis, yet human scrutiny and judgement would still be needed. Future corpus-based research endeavours could explore modal expressions and other lexical, grammatical or semantic phenomena in larger corpora. Specifically, research on the translation/adaption of Catholic/religious writing into Chinese would benefit from the analysis of bigger parallel corpora of texts concerning the Catholic doctrine and the Holy Scriptures.

---

[20] https://www.sketchengine.eu/quick-start-guide/parallel-concordance-lesson.

Bibliography

Abbiati, M. (2014). *Grammatica di cinese moderno*. Venezia: Cafoscarina.

Anthony, L. (2018). *SegmentAnt* (Version 1.1.3) [Computer Software]. Tokyo: Waseda University. http://www.laurenceanthony.net.

Anthony, L. (2019). *AntConc* (Version 3.5.8) [Computer Software]. Tokyo: Waseda University. https://www.laurenceanthony.net/software.

Baker, M. (1996). "Corpus-Based Translation Studies. The Challenges that Lie ahead". Somers, H. (ed.), *Terminology, LSP and Translation. Studies in Language Engineering in Honour of Juan C. Sager*. Amsterdam; Philadelphia: John Benjamins, 175-86.

Baker, P. (2010). *Sociolinguistics and Corpus Linguistics*. Edinburgh: Edinburgh Sociolinguistics.

Biber, D. et al. (1999). *Longman Grammar of Spoken and Written English*. London: Longman.

Bybee, J.; Fleischman, S. (eds) (1995). *Modality in Grammar and Discourse*. Amsterdam: John Benjamins.

Carter, R.; McCarthy, M. (2006). *Cambridge Grammar of English*. Cambridge: Cambridge University Press.

Castello, E.; Gesuato, S. (2019). "Pope Francis's *Laudato Si'*. A Corpus Study of Environmental and Religious Discourse". Manca, E.; Bianchi, F.; Milizia, D. (eds), *Representing and Redefining Specialised Knowledge. Corpora and LSP, Lingue e Linguaggi*, 29, Special Issue, 121-45. https://doi.org/10.1285/i22390359v29p121.

Chappell, H.; Peyraube, A. (2016). "Modality and Mood in Sinitic". Nuyts, van der Auwera 2016, 296-329.

Chao, Y.R. (1968). *A Grammar of Spoken Chinese*. Berkeley; Los Angeles; London: University of California Press.

Chen, S.-K. (2017). "From Explicit to Implicit Orientation. Mapping Rank Scale to Modality in English and Chinese". *Functional Linguistics*, 4(15), 1-20. https://doi.org/10.1186/s40554-017-0049-1.

Coates, J. (1983). *The Semantics of the Modal Auxiliaries*. London and Canberra: Croom Helm.

Ghosh, A. (2016). *The Great Derangement*. Chicago: The University of Chicago Press.

Halliday, M.A.K. (1976). "Modality and Modulation in English". Kress, G. (ed.), *Halliday. System and Function in Language*. London: Oxford University Press, 189-213.

Halliday, M.A.K. (2004). *An Introduction to Functional Grammar*. 3rd ed. Revised by C. Matthiessen. London: Arnold.

Huddleston, R. (2002). "The Verb". Huddleston, R.; Pullum, G. (eds), *The Cambridge Grammar of the English Language: Selected Papers*. Cambridge: Cambridge University Press, 71-212.

Hsieh, C.-L. (2005). "Modal Verbs and Modal Adverbs in Chinese. An Investigation into the Semantic Source". *University System of Taiwan Working Papers in Linguistics*, 1, 31-58. http://web.ntnu.edu.tw/~clhsieh/2_Research/2.1_Publication/A02_2005.07_UST.pdf.

Kučera, H.; Francis, N. (1967). *Computational Analysis of Present-Day American English*. Providence: Brown University Press.

Laviosa, S. (2002). *Corpus-Based Translation Studies. Theory, Findings, Applications*. Amsterdam: Rodopi.

Lehmann, C. (2002). "Thoughts on Grammaticalization". 2nd revised ed. Arbeitspapiere des Seminars für Sprachwissenschaft der Universität Erfurt 9. Erfurt: Philosophische Fakultät Universität. `https://doi.org/10.17169/langsci.b88.98`.

Li, C.N.; Thompson, S.A. (1981). *Mandarin Chinese. A Functional Reference Grammar*. Berkeley: University of California Press.

Li, C.N.; Thompson, S.A. (1983). *Hanyu yufa* 漢語語法 (Chinese Grammar). Transl. by Huang X. 黃宣範. Taibei: Wenhe chuban youxian gongsi. Chinese transl. of: *Mandarin Chinese. A Functional Reference Grammar*. Berkeley: University of California Press, 1981.

Li, R. (2004). *Modality in English and Chinese. A Typological Perspective* [PhD Dissertation]. Antwerp: University of Antwerp. `https://search.proquest.com/docview/305290918?accountid=17274`.

Lian, Z.; Jiang, T. (2014). "A Study of Modality System in Chinese-English Legal Translation from the Perspective of SFG". *Theory and Practice in Language Studies*, 4(3), 497-503. `https://doi.org/10.4304/tpls.4.3.497-503`.

Lǚ S. 呂叔湘 et al. (2004). *Xiandai Hanyu babai ci* 现代汉语八百词 (800 Words of Modern Chinese). Beijing: Shangwu yinshuguan.

Lyons, J. (1977). *Semantics*, vol. 2. Cambridge: Cambridge University Press.

Nuyts, J. (2016). "Surveying Modality and Mood. An Introduction". Nuyts, van der Auwera 2016, 1-8.

Nuyts, J.; van der Auwera, J. (eds) (2016). *The Oxford Handbook of Modality and Mood*. Oxford: Oxford University Press.

Palmer, F. (2001). *Mood and Modality*. 2nd ed. Cambridge: Cambridge University Press.

Peng L. 彭利贞 (2005). *Xiandai Hanyu qingtai yanjiu* 现代汉语情态研究 (Research on Modern Chinese Modality). Shanghai: Fudan University.

Pierini, P. (2015). "Translating English Compound Adjectives into Italian. Problems and Strategies". *The International Journal for Translation & Interpreting Research*, 7(2), 17-29. `https://doi.org/10.12807/ti.107202.2015.a02`.

Pope Francis (2015). *Encyclical Letter Laudato Si' of the Holy Father Francis on Care for Our Common Home*. `http://www.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html`.

Portner, P. (2009). *Modality*. Oxford: Oxford University Press.

Quirk, R. et al. (1985). *A Comprehensive Descriptive Grammar of the English Language*. London; New York: Longman.

Smith, C.S.; Erbaugh, M.S. (2005). "Temporal Interpretation in Mandarin Chinese". *Linguistics*, 43(4), 713-56. `https://doi.org/10.1515/ling.2005.43.4.713`.

Spadaro, A. (2015). "Laudato Si'. Guida alla lettura dell'enciclica di papa Francesco". *La Civiltà Cattolica*, 3961(III), 3-22. `https://www.laciviltacattolica.it/articolo/laudato-si-guida-alla-lettura-dellenciclica-di-papa-francesco`.

Sparvoli, C. (2012). *Deontico e anankastico. Proposta di ampliamento della tassonomia modale basata sull'analisi dei tratti distintivi dei modali cinesi inerenti dovere e necessità* [PhD Dissertation]. Venice: Ca' Foscari University of Venice. `http://hdl.handle.net/10579/1228`.

Stibbe, A. (2014). "An Ecolinguistic Approach to Critical Discourse Studies". *Critical Discourse Studies*, 11(1), 117-28. `https://doi.org/10.1080/17405904.2013.845789`.

Tang T. 湯廷池 (2000). "Hanyu qingtai fuci. Yuyi neihan yu jufa gongneng" 漢語的情態副詞——語意內涵與句法功能 (Chinese Modal Adverbs. Semantic Connotation and Syntactic Function). *Zhongyang Yanjiuyuan Lishi Yuyan Yanjiusuo Jikan* 中央研究院歷史語言研究所集刊 (Collective volume of the 'Institute of History and Philology - Academia Sinica'), 71(1), 199-219.

Teubert, W. (2007). "Natural and Human Rights, Work and Property in the Discourse of Catholic Social Doctrine". Hoey, M.; Mahlberg, M.; Stubbs, M.; Teubert, W. (eds), *Text, Discourse and Corpora*. London; New York: Continuum, 89-126.

Tilche, A.; Nociti, A. (2015). "Laudato Si'. The Beauty of Pope Francis' Vision". *S.A.P.I.EN.S.*, 8(1), 1-5. http://journals.openedition.org/sapiens/1704.

Tognini-Bonelli, E. (1996). "Towards Translation Equivalence from a Corpus Linguistics Perspective". *International Journal of Lexicography*, 9(3), 197-217. https://doi.org/10.1093/ijl/9.3.197.

Tsang, C.-L. (1981). *A Semantic Study of Modal Auxiliary Verbs in Chinese* [PhD Dissertation]. Stanford, CA: Stanford University.

van der Auwera, J.; Plungian, V. (1998). "Modality's Semantic Map". *Linguistic Typology*, 2(1), 79-124. https://doi.org/10.1515/lity.1998.2.1.79.

von Wright, E.H. (1951). *An Essay in Modal Logic*. Amsterdam: North Holland.

Xiandai Hanyu Cidian 现代汉语词典 (The Contemporary Chinese Dictionary). 6th ed. (2014). Beijing: Shangwu Yinshuguan.

Xiao, R. (2010). "How Different Is Translated Chinese from Native Chinese? A Corpus-Based Study of Translation Universals". *International Journal of Corpus Linguistics*, 15(1), 5-35. https://doi.org/10.1075/ijcl.15.1.01xia.

Xiao, R.; Dai, G. (2014). "Lexical and Grammatical Properties of Translational Chinese. Translation Universal Hypotheses Reevaluated from the Chinese Perspective". *Corpus Linguistics and Linguistic Theory*, 10(1), 11-55. https://doi.org/10.1515/cllt-2013-0016.

Xiao, R.; Wei, N. (2014). "Translation and Contrastive Linguistic Studies at the Interface of English and Chinese. Significance and Implications". *Corpus Linguistics and Linguistic Theory*, 10(1), 1-10. https://doi.org/10.1515/cllt-2013-0015.