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# Modality analysis: a semantic grammar for imputations of intentionality in texts

Carl W. Roberts · Cornelia Zuell · Juliane Landmann ·  
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**Abstract** Modality analysis is a text analysis methodology that affords comparisons of how people from distinct cultural contexts differ in their accounts of why one or more of their numbers find specific activities possible, impossible, inevitable, or contingent. The technique is built around a two-part semantic grammar, the application of which involves the identification of modal clauses in texts, the classification of these clauses according to their modal forms, and the identification of rationales associated with the clauses' modalities. We show that with sufficient training the method affords high interrater agreement. After providing a few tips on data-collection strategies, results are presented from a modality analysis of editorials sampled from the Arab newspaper, *Al Riyadh*, and the Hindi newspaper, *Hindustan*. The analysis illustrates how modal expressions can be used in locating well-known (e.g., Islamic and Hindu) cultural characteristics from among the vast quantities of discourse that societies continuously generate.

**Keywords** Text analysis · Semantic grammar · Culture · Arab · Hindi · Discourse

## 1 Introduction

- “(D)espite of the monetary and mental differences between the past and present we find that a longing draws us to the past... And this is not but an attempt to go back to the

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origin of our moral roots in genuine culture; maybe this longing will make us connect the disjuncture which time has neglected under the fangs of the coup in our age.”<sup>1</sup>

- “To what extent will I be able to fulfill the expectations of the people, these thoughts surrounded my mind... (A person who had previously held the author’s job) sent me his best wishes via telegram but was not satisfied with this and wrote me a letter. His good wishes and blessings became my strength. Even today when I read his words I receive peace and inspiration to continue to do my duty with patience.”<sup>2</sup>

These are two motivational accounts—one drawing inspiration from past piety, the other from a role model’s good wishes; the former agonizing over morality lost, the latter indicating concern with contemporaries’ expectations. Even without checking this paper’s footnotes, a modestly sophisticated reader should be able to correctly guess that the author of the first quotation is Arab whereas the author of the second is East-Asian. (In fact they are, respectfully, Saudi and Indian.) One senses in these quotations expressions of distinctly Islamic versus Hindu values. Each embodies a different mode of reasoning, and thereby attributes different meanings to the motivations of those who adhere to these values. Yet where does one look amidst these adherents’ words for cultural differences in their rhetorical strategies for conveying their own and each other’s intentions? An answer to this question is clearly essential for the achievement of long-term successful intercultural communication.

This paper provides researchers with a methodological option that affords quantitative inferences about how behavioral intentions might be constructed in different social, cultural, and historical contexts. This methodology is based on the premise that fundamental cultural differences can be located in the “discursive space” where cultural participants use modal auxiliary verbs in their spoken and written discourse. Our suggestion is that in conjunction with their use of modal auxiliary verbs (e.g., want, must, ought, etc.), people explain why certain activities are possible, impossible, inevitable, or contingent (i.e., not inevitable). Since so little has been written about modality (even among linguists<sup>3</sup>), our discussion of linguistic structure will err on the side of detail. Given the lack of consistency within their respective fields, we shall cite linguists and modal logicians in our context, rather than attempt situating ours within theirs.

Given their neglect in fields more closely aligned to the study of language, it is not surprising that modal auxiliary verbs have received virtually no attention from social scientists who do quantitative research on how language is used differently in various social contexts. (See [Popping \(2001\)](#) for what is likely the single exception to this statement.) For example, text analysts who use the Harvard IV-4 or Lasswell Value Dictionaries will note that ought, can, may, hope, refuse, etc. are classified under a variety of disparate categories, including “positive” or “negative,” “passive” or “active” orientation, “strength” or “feeling of uncertainty,” “moral imperative” or “transaction/exchange,” among others ([Stone 1969, 1986; Kelly and Stone 1975](#)). After modals and other words have been classified in this

<sup>1</sup> Asma’a Al-Aqaail. “Culture has a longing which connects the disjuncture under the fangs of the coup in our era.” (*Al Riyadh*, February 25, 1986, no. 6455/22, p. 10).

<sup>2</sup> Yashwant Rao Chavan. “Rajendra Babu: A Rare Combination of Heart and Mind.” (*Hindustan*, December 7, 1983, no. 367, p. 4).

<sup>3</sup> Within linguists’ scant literature on the topic, no consensus exists on how modality might be defined or analyzed. Whereas some linguists infer structures from sentences having specific “modal markers” ([Palmer 1979, 1986; de Haan 1997](#)), others identify modality with speakers’ intentions—as opposed to the propositional content of their utterances ([Lyons 1977](#)). Given that our interest is not in debating linguistic universals but in analyzing depictions of intentionality, we need not choose between these camps. Nonetheless, as spelled out in the following pages, rigorous specification of “modal markers” and sensitivity to speaker’s intentions are both required if applications of modality analysis are to have acceptably high interrater agreement.

way, analyses based on these dictionaries typically proceed via multidimensional scaling or cluster analysis to evaluate how similar (i.e., how close in Euclidean space) occurrences within these categories are to each other and to the dictionaries' other meaning categories (Namenwirth and Weber 1978; Eisner 1991; Kabanoff 1993; Gloeckner-Rist and Mohler 1988; Kabanoff and Daly 2000). When texts are analyzed as networks, main verbs rather than modals tend to be used in identifying how nouns are interrelated (Carley 1986, 1993; Kleinnijenhuis and Rietberg 1995; Kleinnijenhuis and de Ridder 1998). Although Roberts (1989, 1997) "makes room" for modal auxiliary verbs in his generic semantic grammar, neither he nor other developers of semantic grammars (Markoff et al. 1974; Shapiro and Markoff 1998) discuss potential research questions that might be addressed of data generated via the application of a modality-based semantic grammar. Our purpose here is to introduce just such a grammar.

Modal auxiliary verbs usually appear in texts as a discursive device whereby the text's source (i.e., its speaker or author) conveys the intentions of a verb's subject. Typically these expressions are accompanied by rationales that explain why this subject can, must, may, etc. act in a particular way. Our position is that these rationales reflect values that are likely to differ from one cultural context to another. Modality analyses can thus be used to make explicit "what rationales" are used to legitimate "which activities" in different cultural contexts, and thereby to gain insights into cultural differences in how peoples' motivations are discursively maintained.

Much analytic spadework is needed to familiarize the reader with how modalities are conceptually interrelated, and to provide a basis for the two-part grammar minimally required in any modality analysis. The grammar is later expanded into a five-part semantic grammar for an analysis of English translations of editorials sampled from 1983 to 1987 editions of the Arab newspaper, *Al Riyadh*, and the Hindi newspaper, *Hindustan*. Along the way we address methodological challenges associated with the grammar's use. Inspired by Chavan's motivation (cited at the outset of this paper) "to continue to do my duty," we use the verb, "to continue," as the main verb in most of the following sections' illustrative sentences.

## 2 Recognizing modality

We begin by setting out a procedure for identifying modal clauses. Paragraphs within this section are headed by questions to be addressed sequentially during this procedure. The section ends with a flow chart for addressing these questions.

*Is there a modal auxiliary verb?* A grammatical clause is characterized by modality whenever it was written (or spoken) to convey the intentions of the clause's subject. Typically expressions of modality contain modal auxiliary verbs, as in the following illustrations:

Chris *wants* to continue. (1)

Chris *hopes* to continue. (2)

Chris *ought* to continue. (3)

Chris *refuses* to continue. (4)

Note how in each sentence there are two verbs associated with the subject (Chris), namely a modal auxiliary verb (e.g., wants, hopes, ought, refuses) and a main verb in infinitive form (here, to continue). As a result, there are numerous sentences inconsistent with any one of

these sentences:

- There is no person/thing named Chris included in the set,  
 “things that *want* to continue”. (1a)
- Chris does *not want to* continue. (1b)
- Chris *wants not* to continue. (1c)
- Chris does *not want not* to continue. (1d)

In communicating Sentence 1, the source might have intended to convey to its audience a denial of any of Sentences 1a–d. And so, it becomes reasonable to ask, what did the source of Sentence 1 intend to convey to its audience? Or, put differently, in response to what question was the sentence formulated? Was the question “who wants to continue,” “does Chris want to continue,” “what does Chris want,” or “is Chris ambivalent about continuing”?

Of course, when it is removed from its discursive context one might argue that Sentence 1 answers all four of the questions listed. Yet in everyday discourse the vast majority of such sentences are used with the intention of answering only one such question (or, equivalently, of denying only one inconsistent form like those illustrated in Sentences 1a–d.<sup>4</sup> To grasp this point one need only recall the proverbial conversation between the boss who exclaims, “You’re fired,” only to have the erstwhile employee respond, “You can’t fire me, I quit.” That is, it is not that I, as employee, am “not able” to work for you; I am “able not” to work for you. Thus at a prior job interview, the meaning of “The employee is able to work for the employer” is likely to have been interpreted on the one hand by the employer as a denial of the statement, “You are not able to work for me,” but on the other hand by the employee as a denial of the statement, “I am able not to work for you.” Ambiguities in the original statement become explicit as the pronouns, “I” and “you,” are substituted in accordance with the sentence’s discursive context (specifically, given who is addressing whom).

*Is there a legitimate transformation from the clause into one that contains a modal auxiliary verb?* A modal clause is recognizable whenever it conveys intentionality in a way that can be transformed (in a manner agreeable to a native speaker) to a form that includes a modal auxiliary verb. For example, English speakers frequently use “have to” instead of “must” when indicating compulsion despite one’s intentions.

*I have to* go home. (5)

*I must* go home. (6)

*Is the modal auxiliary verb used in a way that conveys intentionality?* The converse of the previous case occurs when modal verbs are used in ways entirely unrelated to modality. Probably the best example here is the tendency among English speakers to convey future possibility rather than permission in their usage of the modal, “may.”

*I may* go home. (7)

*I shall possibly* go home. (8)

<sup>4</sup> Two limiting cases should be mentioned here. First, in this paper intentionality refers to what the source of a speech act intends its audience to understand. Thus although the source’s manipulative or deceptive intentions may be grist for others’ methodological mills (cf. Burke (1969, pp. 35–37), and Gergen (1997, pp. 275–290), for extensive discussions along these lines), they are not our focus here. Second, some literary genres (e.g., poetry, political satire, etc.) characteristically have multiple interpretations intentionally “embedded” amidst their words. Although such cases add complexity (e.g., via multiple encodings of some clauses), such multiplicity remains fundamentally unproblematic as long as one can identify each interpretation as a denial of a specific inconsistent statement like those listed in Sentences 1a–d.

*Is the semantic subject of the clause a person?*<sup>5</sup> A clause is only characterized by modality when it is about a particular human subject. Thus, for example, Sentence 1 would not be a modal clause if its source intended to convey with it a denial of Sentence 1a. If one merely wishes to acknowledge that Chris belongs to the set of “things that want to continue,” this by itself does not comprise an attempt to convey information about intentions specific to Chris. Likewise, the sentence would not comprise a modal clause if Chris were a battery-powered ambulant device, because (unless the source wishes its audience to sincerely accept its anthropomorphism) intentions can only be imputed to sentient creatures such as people. Yet even here there are exceptions.

The refrigerator *cannot* cool food. (9)

The patient *cannot* move his leg. (10)

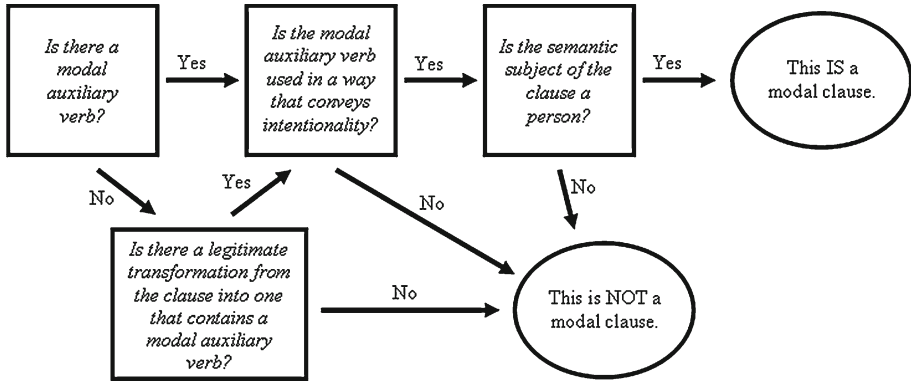
Terry *cannot* graduate. (11)

Modal auxiliary verbs (especially, can and must) are occasionally used to convey characteristics beyond the subject’s control. If a refrigerator is broken, it is thereby no longer able to cool food. Yet to say that a refrigerator is able not to cool food suggests that it has a mind of its own. Thus, the intentionality of a clause’s subject is only implied if the clause makes sense when its main verb but not its modal auxiliary verb is negated. Moreover, in a context in which two doctors discuss a person “as if he were a thing” by noting that he cannot move his leg, Sentence 10 would not comprise a modal clause. However, if one of the doctors were to clarify that “the patient is able not to move his leg,” this context would switch from a strictly diagnostic one between doctors to one that incorporates the patient’s intentionality. It is for precisely these reasons that Sentence 11 can only be recognized as a modal clause once additional contextual cues are available. If it were uttered in an exclusively diagnostic manner during a conversation between professors (or academic administrators), it would not comprise a modal clause; if the conversation involved considerations of Terry’s motives regarding his graduation, it would.

To summarize, *a modal clause always conveys a judgment by its source about the motivations of the modal clause’s semantic subject*. Modal clauses are never descriptive (as per Sentence 9) or diagnostic (as per Sentence 10). For example, the direct quotation, “Yeltsin said, ‘Putin wants what is best for Russia’,” simply reports another person’s words, and conveys nothing about the source’s (here, the journalist’s) judgments regarding Putin’s motives. In modality analysis, the coder’s challenge is to learn more about how the author understands others’ motivations (i.e., to get into the mind of someone who is getting into someone else’s mind, as it were).

Figure 1 is a flow chart that summarizes the preceding discussion by spelling out the steps involved in identifying modal clauses within texts. One examines each grammatical clause by first noting whether it either conveys intentionality or contains a modal auxiliary verb. Even if a grammatical clause contains no modal auxiliary verb, as long as it conveys “the source’s judgment regarding the semantic subject’s intentionality,” one should be able to find a transformation acceptable to a native speaker that reformulates the original clause into one that does contain a modal auxiliary verb. Once a modal auxiliary verb is located (possibly

<sup>5</sup> The phrase “semantic subject” is used here to allow for instances of passive voice (i.e., when the grammatical subject is semantically the verb’s object). For example, in “Joe was hit by Mary,” Joe is the grammatical subject but it is Mary (not Joe) who, semantically, did the hitting. Thus an important initial step in the process of identifying modal clauses is to transform any clause in passive voice to active voice before deciding whether the clause’s subject is referred to as a person. In our experience with modality analysis, forgetting to do this has been the downfall of many a coder-in-training.



**Fig. 1** Flow chart for identifying modal clauses in texts

via a transformation) and once this modal is judged to have been used to convey something about the intentions of a person, its clause has been identified as a modal clause.

### 3 A modality-based semantic grammar

In contrast to traditional methods of analyzing texts, text analysis methods that employ semantic grammars do not involve analyses of word or phrase counts. Rather than “text blocks,” one’s sample consists of “semantically interrelated units.” Instead of themes (or meaning categories), the columns of one’s data matrix correspond to the potential relations among the themes in one’s texts as defined in one’s semantic grammar (Roberts 2001). For example, in a modality analysis, a semantic grammar is applied to paired texts sampled at random from some known population. This semantic grammar always has the following two parts at its core:

$$\text{Rationale} + \left\{ \begin{array}{l} \text{Possible} \\ \text{Impossible} \\ \text{Inevitable} \\ \text{Contingent} \end{array} \right\}$$

As mentioned at the outset, it is always reasonable for the source of a modal clause to be queried as to the rationale (or explanation of “why”) the subject has wants, hopes, etc. regarding the clause’s predicate. Less intuitive is that when one samples modal clauses, one only identifies clauses that one believes were intended to convey the possibility, impossibility, inevitability, or contingency (i.e., noninevitability) of the clauses’ predicates for their semantic subjects.<sup>6</sup> These assertions regarding the likelihood of a subject–predicate link are either inferences about the subject’s beliefs (regarding her or his wants, hopes, attempts, or refusals), or about the source’s presumably unmotivated claims (regarding the subject’s abilities, compulsions, permissions, or obligations).

In the former case (i.e., when the source makes an inference about the intentions of a specific subject), this subject is presumed to believe that “what is intended” (i.e., the predicate) is either possible or contingent. For example, a speaker might use Sentences 12 or 13 to

<sup>6</sup> Since modal clauses contain two verbs (i.e., a modal auxiliary verb and its infinitive), negation can be of one, the other, or both of these verbs. Modal logicians often conceptualize this 4-fold character of modal expressions (i.e., no negation, negated modal, negated infinitive, and double negation) as the “Square of Oppositions” (Horn 1989; van der Auwera 1996). Greimas (1987) uses an analogous “semiotic square” for distinguishing among characters in narratives.

convey Chris's belief in the possibility of her continuing and Sentences 1c and 14 to convey Chris's belief in the contingency of her continuing.<sup>7</sup>

Chris *wants* to continue. (12)

Chris *hopes* to continue. (13)

Chris *wants not* to continue. (1c)

Chris *hopes not* to continue. (14)

Where the modal, "to hope," differs from "to want" is in its representation of continuing as a process independent of Chris.<sup>8</sup> Yet even if continuing depends on Chris' engagement, asserting that Chris wants to continue conveys nothing about whether her continuing is or is not in process. Finally, if Chris's continuing is in process, she may or may not be depicted as engaged with this process. For example, Sentences 15 and 18 convey Chris's belief in the possibility of her continuing, whereas Sentences 16 and 17 convey her belief in the contingency of her continuing. Yet in Sentences 15 and 16 Chris's attempts suggest her engagement, whereas in Sentences 17 and 18 her refusals suggest her nonengagement in the act of continuing.

Chris *tries* to continue. (15)

Chris *tries not* to continue. (16)

Chris *refuses* to continue. (17)

Chris *refuses not* to continue. (18)

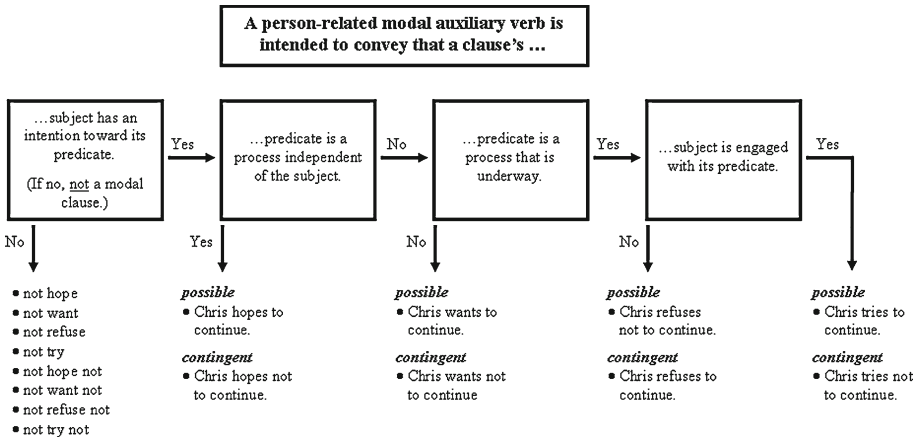
As depicted in Fig. 2, the *person-related modalities* (i.e., eight forms of the modal auxiliary verbs hope, want, refuse, and try) can be thought of sequentially as conveying various levels between the subject's independence from a predicate to its active engagement with it. Engagement in a process implies a process that is underway. And such engagement may be dependent on or independent of its modalized subject.

Note that intentionality is not conveyed by sentences that include forms of hope, want, refuse, and try in which the modal is negated (e.g., as with "to want" in Sentences 1b and 1d). This is because when any of these four verbs is negated in discourse, its meaning reverts to a special case of Sentence 1a. That is, references to what Chris does not hope, not want, not refuse, or not try convey that Chris does not belong to the respective sets of "things that hope (or hope not) to continue," "things that want (or want not) to continue," etc. In contrast, when nonnegated forms of hope, want, refuse, and try appear in discourse, each modal usage asserts its semantic subject's belief that the modal's predicate is either possible or contingent for the subject. Thus it would be nonsensical for a speaker to refer (in earnest) to someone who both truly believes a predicate to be impossible and simultaneously wants, hopes, or

<sup>7</sup> Of course, it is possible that Chris wants or hopes for something that is impossible, or wants or hopes that something inevitable will not occur. However, at issue here is not whether Chris's continuing is "in fact" possible or inevitable but whether or not the source of these sentences seeks to convey to its audience that Chris believes that his continuing is possible or contingent. One should keep in mind that the source might convey such statements to the audience with a knowing wink, suggesting that Chris's belief is "obviously" a false one. More on this in a moment.

<sup>8</sup> Goffman (1974, p. 22) alluded to this difference with his distinction between social and natural frameworks. By choosing "hope" over "want" the source applies a rhetorical strategy that frames a predicate (e.g., continuing) as a process independent of Chris, as distinct from a "guided doing" (i.e., a predicate wanted by Chris, the enactment for which Chris would be given credit).





**Fig. 2** Forms of person-related modalities intended to convey “to continue” as a predicate that is either possible or contingent for the subject, “Chris”

attempts (or refuses not) to do it. A statement would be equally nonsensical if it referred to someone who both truly believes a predicate to be inevitable and simultaneously refuses (or wants not, hopes not, or attempts not) to do it. For example, although one might want to be “like” Bill Gates, one does not (given its impossibility) “really want” to be him; and only the truly criminally-minded “really want not” to pay their (otherwise inevitable) taxes. The claim here is not that it is nonsensical “to want the impossible” or “to want not to do something that is inevitable.” What is nonsensical is that one wants something that *one truly believes is impossible* or that one wants not to do something that *one truly believes is inevitable*, irrespective of whether or not these predicates prove to be impossible or inevitable in fact.

In contrast, *context-related modalities* (i.e., 16 forms of the modal auxiliary verbs can, must, may, and ought) might be used to convey that predicates are not only possible or contingent but also impossible or inevitable for some people. Instead of depicting predicates in accordance with a specific subject’s intentions, these modalities depict them in accordance with a reality beyond such intentions.<sup>9</sup> For example, Sentences 19a and 19b, both indicate the possibility of Chris’s continuing. Likewise, impossibility is indicated in both Sentences 20a and 20b; inevitability is indicated in both Sentences 21a and 21b; and contingency is indicated in both Sentences 22a and 22b.

Chris *can* (or *is able to*) continue. (19a)

Chris *is not compelled not* to continue. (19b)

Chris *cannot* (or *is not able to*) continue. (20a)

Chris *must not*(or *is compelled not to*) continue. (20b)

Chris *is not able not* to continue. (21a)

Chris *must* continue. (21b)

<sup>9</sup> A rough parallel might be drawn here to Jespersen’s (1924, pp. 320–321) mood categories “containing an element of will” versus “containing no element of will”—categories later linked to von Wright’s (1951, pp. 1–2) distinction between deontic and epistemic modalities. Also see Lyons (1977, pp. 793–823).

Chris *can not* (or *is able not to*) continue. (22a)

Chris *is not compelled* to continue. (22b)

According to modal logicians (e.g., Chellas 1980, p. 7), the modal auxiliary verbs, “can” (to be able) and “must” (to be compelled) are redundant. If one is not compelled not to continue, one can continue, and vice versa. Also, if one is able not to continue, one is not compelled to continue (and again, vice versa). Palmer (1979, p. 65) suggests a parallel redundant relation between “may” (to be permitted) and “ought” (to be obligated). Referring to Sentences 23a and 23b, note that anything that is permitted comprises a possibility that is not something that ought not to be done. Continuing as above, impossibility is indicated in both Sentences 24a and 24b; inevitability is indicated in both Sentences 25a and 25b; and contingency is indicated in both Sentences 26a and 26b.

Chris *may* (or *is permitted to*) continue. (23a)

Chris *is not obligated not to* continue. (23b)

Chris *is not permitted* to continue. (24a)

Chris *ought not* (or *is obligated not*) to continue. (24b)

Chris *is not permitted not to* continue. (25a)

Chris *ought* to continue. (25b)

Chris *may not* (or *is permitted not to*) continue. (26a)

Chris *is not obligated* to continue. (26b)

Where Sentences 23a–26b differ from Sentences 19a–22b is in the consensual nature of “may” and “ought” in contrast to the empirical nature of “can” and “must.” In stating, “Chris ought to continue,” the speaker clearly does not mean that the sensory experience of Chris’s continuing is inevitable. Instead, what is being conveyed is that such a sensory experience (whether or not it is imminently sensed) inevitably belongs to the set of things that Chris ought to do. The utterance is simply a reminder to Chris of a social consensus regarding this inevitability (by virtue of her identity). Whereas one’s sensory experiences might convince one that Chris can or must continue, no sensory experience could provide evidence that continuing is permitted or obligated of Chris. Moreover, note that in the former cases, possibility and inevitability are associated with the subject (e.g., Chris’s continuing is possible); in the latter ones, they are associated with the predicate, “continue” (e.g., the permission acknowledged in Sentence 23a implies that continuing is a possibility independent of Chris’s abilities).<sup>10</sup>

Table 1 summarizes this discussion of context-related modalities. Whereas with a person-related modality, the source conveys an evaluation of a predicate *by the modality’s subject*; with a context-related modality, the source conveys an evaluation *of the modality’s subject* in accordance with consensual or empirical factors that the source associates with the predicate. In these latter cases, the modality serves as a rhetorical device whereby the source presents itself as either a disinterested representative of the subject’s community or an objective

<sup>10</sup> The claim in this paragraph of a lack of redundancy between can/must and may/ought is at odds with standard deontic logic, according to which, for example, “ought implies can” (see Chellas 1980, pp. 190–203 and especially Exercise 6.6). As argued below, our position is that “may” and “ought” differ from “can” and “must” in terms of their reference points, namely social consensus and sensory experience, respectively. These reference points, or contexts, are distinct, leaving it perfectly intelligible for one to state, “Although I ought to do it, I am nonetheless unable to do so.”

**Table 1** Forms of context-related modalities intended to convey “to continue” as a predicate that for either consensual or empirical reasons is possible, impossible, inevitable, or contingent for the subject, “Chris”

	Chris’s continuing is . . .			
	Possible	Impossible	Inevitable	Contingent
<i>Consensual</i> (How appropriate is Chris’s continuing?)	Chris may continue or	Chris is not permitted to continue or	Chris is not permitted not to continue or	Chris may not continue or
	Chris is not obligated not to continue	Chris ought not continue	Chris ought continue	Chris is not obligated to continue
<i>Empirical</i> (How likely is Chris’s continuing?)	Chris can continue or	Chris is not able to continue or	Chris is not able not to continue or	Chris is able not to continue or
	Chris is not compelled not to continue	Chris must not continue	Chris must continue	Chris is not compelled to continue

observer of the empirical world. Both Fig. 2 and Table 1 are organized to afford quick references to the variety of forms of modality that a source might use in conveying to an audience the possibility, impossibility, inevitability, or contingency of a subject–predicate link.<sup>11</sup>

Given access to enough of the discourse in which a modal clause is embedded, the clause can usually be “paired” with its rationale. In this way a sample of such pairs could be assembled and encoded according to our semantic grammar. Minimally, three steps are involved in performing a modality analysis on such a sample of texts: first, modal clauses’ modalities are categorized as intended to convey the possibility, impossibility, inevitability, or contingency of their subject–predicate links. Second, each clause’s rationales are grouped within each of these four categories. Third, within-category rationales are contrasted among cultural contexts.

Yet there is much potential for expanding this “minimal semantic grammar.” For example, one might also encode modal clauses according to their specific subjects and predicates, and thereby be able to draw inferences about who’s (or which) activities are more likely than whose (or which) to be referred to as possible, impossible, inevitable, or contingent. Given sufficient theoretical justification, one might also expand the semantic grammar based on a typology of motivational rationales. Thus our relatively simple grammar has sufficient flexibility for undertaking a broad range of cultural comparative studies on intentionality.

#### 4 Methodological considerations

Content analysts are held to a higher standard than are those researchers who analyze quantitative data consisting of established numeric measures generated by reputable sources. Their

<sup>11</sup> No claim is being made here that this section provides an exhaustive list of all modalities. Moreover, instead of choosing to exclude eight modal forms (“not hope,” “not want,” etc.) as in the lower left-hand corner of Fig. 2, one might find that in particular text populations instances of such forms are commonly linked with rationales that account for subjects’ transcendence of their motivations toward predicates. (e.g., “I don’t want to join you, because you’re being foolish.”) We have also not dealt directly with conditional modal forms (could, would, might, and, when conditionally applied, should) that often appear in the subjunctive and that usually afford hypothetical rationales for which consistent coding rules must be developed. Instead of claiming to have the “definitive” list of modalities, our position is that the list provided here affords a useful basis from which to develop a semantic grammar for the analysis of cultural differences in intentionality.

translation of nonnumeric data into numeric form must pass the “intersubjectivity test” in addition to tests of statistical and theoretical soundness. With modality analysis, this test calls for high interrater agreement in coders’ independent judgments of the following:

- Do coders agree on whether a text contains a modal clause? (100%,  $\kappa = 1$ ,  $p < 0.01$ )
- When a modal clause is identified, do coders identify the same one? (86%,  $\kappa = 0.73$ ,  $p < 0.01$ )
- Once coders have identified the same modal clause, do they agree on the clause’s modal form (i.e., as possible, impossible, inevitable, or contingent)? (89%,  $\kappa = 0.79$ ,  $p < 0.01$ )
- Once coders have identified the same modal clause, do they agree on its rationale? (89%,  $\kappa = 0.79$ ,  $p < 0.01$ )

Interrater agreement on these questions was evaluated in comparisons of evaluations by two native German speakers, who had trained for about 35 h prior to separately evaluating all 27 political editorials published in the *Frankfurter Allgemeine Zeitung* during June 2004. Of these 27 they both identically identified five “editorials” as entirely descriptive, and thus devoid of modal clauses. They identified the same modal clause within 19 of the remaining 22 editorials, and of these 19 they identified the same modal form within 17 and the same rationale within 17. The associated agreement percents, kappa statistics, and  $p$ -values are listed above at the end of each bulleted question. Accordingly, we argue that modality analysis affords sufficient interrater agreement to justify its use in social scientific research.<sup>12</sup>

Nonetheless, one should have fair warning that modality analysis requires considerable familiarity with the grammar of the language in question—almost without exception, the intuitive familiarity of native speakers. Before even considering the possibility that a clause is a modal clause, coders must ensure that the clause is in active voice. Thus, all coders must be able to make the passive-voice to active-voice conversion in the texts’ language. This is important so that coders can determine if a clause’s semantic subject is a person. Yet, here too this determination might only be possible after another transformation has been made.

Consider the sentence, “The law should ensure that small entrepreneurs can still make a profit.” Clearly, it is not literally a law that ought to ensure something. Instead, coders will need to develop transformation rules such as the following:

- Transformation: Convert “law should ensure” to “politicians (via their work on this law) should ensure...”

Coders should also be able to transform rhetorical questions into their semantic equivalents in declarative form:

- Transformation: Convert “Why should one try to...?” to “One ought not try to...”
- Transformation: Convert “Why should it be unacceptable to...?” to “It ought not be unacceptable to...”

Coder training is a two-phase activity. First, each coder must separately identify modal clauses, rationales, and modal-form classifications in the same texts. Second, coders must

<sup>12</sup> If one assumes that identifications of modal form and rationale are independent judgments, overall coder agreement across the coding process was 68%—a number that may seem less than impressive until one considers the nature of what is being encoded. Coder disagreement was not about what (countable) words appeared in the editorials but about how to interpret the intentions and associated rationales imputed within them. In nearly every disagreement, both coders agreed that the other’s discrepant interpretation was a defensible reading of the editorialist’s intended meaning. Given this lack of clarity in the texts themselves, it is not at all trivial to report that when using the coding scheme, two coders interpreted the editorials *identically* 68% of the time.

jointly develop a set of coding rules (like those just mentioned) for making these identifications. This second step requires considerable discussion (and consultation with their supervisors). Rules that emerge from these discussions should be explicit. For example, although a modal clause need not initially contain a modal auxiliary verb, there must be a transformation from the original text into a form that does contain one. If one were to develop a rule for transforming “have to” into “must,” it might be appended with an associated exception as follows:

- Transformation: Convert “have to” and “has to” to the modal auxiliary verb, “must,” only if compulsion is implied (but not when “have to” is used in the sense of “have available to” as in “These are the tools you have to work with.”)

More generally, any clause that neither contains a modal auxiliary verb nor avails itself to one of these transformation rules should not be considered a modal clause. When coders follow their “instincts” instead of the rules, interrater agreement inevitably suffers.

It is not uncommon that a sampled text is entirely descriptive or diagnostic, and thereby devoid of modal clauses. One style of editorial writing is to “organize the facts” in ways that allow readers to draw their own conclusions. Coders should consider such writings to be descriptive unless the author explicitly draws conclusions about her own or others’ intentionality. An author’s style is “diagnostic” if she (like doctors regarding a patient as in Sentence 10) speaks as an expert who merely conveys her expertise on how persons, groups, or societies “work.”

Modality analyses also require the location of clauses that convey rationales associated with modal clauses. In the Saudi newspaper, *Al-Riyadh*, editorials typically end with disclaimers like the following:

After this short explanation I hope that I have clarified to brother Khalid Al-Muraiss and other dear brothers the appropriate justification in not taking these suggestions, and regards to everyone (*Al-Riyadh*, July 14, 1986, p. 8).

In this newspaper such disclaimers are ritually given with no explicit rationale for why the author harbors such hope. Since in a modality analysis the sampling unit is the “modal clause plus rationale” pair, such isolated uses of modal auxiliary verbs should not be considered as conveying modality.

Like modal clauses, rationale clauses should also contain an inflected verb. Here too transformations may be called for. For example, many languages have prepositional or gerund forms that indicate why something is the case. An associated coding rule might look as follows:

- Transformation: Convert “in order to Y something” or “for Y ing something” (where Y is the root form of any transitive verb, and is used to convey a rationale) to “because something will be Yed”

After locating a modal clause’s rationale, it is useful for coders to paraphrase the clause and its rationale as a compound sentence. Not infrequently, these paraphrases turn out to be tautologies when revisited in this way (e.g., “One ought to do X,” because “X ought to be done.”). In such cases, one must look further for the author’s rationale. Yet such “further looking” might conceivably result in one’s rationale being located far in the text from where the modal clause was identified. Our experience is that interrater agreement on rationales is inversely associated with this “distance.” Thus, a possible additional rule for coders is that rationales be sought only within a specific number of paragraphs before and after the paragraph in which the modal clause is located.

Unfortunately, there are also factors beyond coders' control that can undermine interrater agreement. For example, this can happen when texts' sources use anaphoric, elliptical, or otherwise convoluted constructions. The inherent complexities of some languages are also likely to impede coder agreement. Nonetheless, sufficient interrater agreement can almost certainly be attained given that coders train carefully.

## 5 Intentionality in Arab and Hindi editorials

Newspaper editorials are a convenient source of texts appropriate for modality analysis, because they typically contain arguments in which modality-rationale text-pairs are embedded.<sup>13</sup> In this study, the process of sampling editorials began by sampling one weekday at random from each distinct 4-week period between July 1983 and December 1987. It was our hope that sampling across this long period (for which parallel newspaper copy was available) might have afforded us more-or-less typical depictions of intentionality between Saudi and Indian cultures—depictions having little to do with relatively short-term but coincident political events. Of the 58 dates produced in this way, 47 issues of the Arab newspaper, *Al Riyadh*, and 46 issues of the Hindi newspaper, *Hindustan* were located on microfilm available from the Center for Research Libraries in Chicago. One editorial was sampled at random from each of these issues.<sup>14</sup> Each editorial's last modal-clause-plus-rationale pair was encoded according to an expanded version (v. below) of the semantic grammar described in the previous sections.<sup>15</sup> Cognizant of potential translation problems involved in comparative research (Ervin and Bower 1952), each clause-pair was independently translated as literally as possible by two native speakers, and differences in translation were resolved through their joint consultation with the first author.

<sup>13</sup> In fact, the use of modal clauses seems to be a good indicator of how some newspaper editors differentiate editorials from other news items. In applying the modal-clause identification criteria described in Fig. 1, a trained coder conducted an area sample of one modal clause within each of the first sections (Section A) of *The New York Times* in 15 issues systematically sampled from among all issues published in 1990–1997. Of the 15 modal clauses identified in this way, all were located either on the section's editorial page or on its facing Op-Ed page. Not all newspapers restrict modal usages to a few editorial pages, however. For example, during the same time period an article with a modal clause was likely to appear on most any page within first sections of the Hungarian newspaper, *Népszabadság*.

<sup>14</sup> In both newspapers editorials were listed under clear headings around page 6 or 7 within the first section of each issue. In *Al Riyadh*, these sections were entitled either "Everybody's Opinion" or "Letters and Ideas"; in *Hindustan* editorial pages were clearly identifiable from the newspaper's name in the upper left-hand corner followed by place (New Delhi), date, plus a short quotation from some venerable Hindu personage. An area sampling strategy was used to identify one editorial per newspaper, whereby random positions on editorial-containing pages were obtained until a position was located within an editorial (i.e., not within an advertisement, descriptive article, etc. but within an article containing a "modal clause plus rationale" pair). Texts from sampled editorials were encoded with assistance of Textual Content Analysis, or TCA (Metatext, Inc.)—a general purpose text analysis aide, written in Visual C++<sup>®</sup> for Windows XP<sup>®</sup>.

<sup>15</sup> Our last-pair-per-editorial strategy has two advantages. First, sampling only one modal-rationale pair per editorial avoids nesting problems in subsequent statistical analyses. Second, in both newspapers editorials' authors usually saved their summary opinions for the ends of their editorials. Of course, the intentionality conveyed in an editorial's last modal-clause-plus-rationale pair might be an isolated afterthought, peripheral to the author's argument throughout the rest of the editorial. Although true, this is nonproblematic given the type of research questions to which modality analysis affords answers. Modality analysis is not intended to afford summary statements of positions taken in texts; it is a method for distinguishing the rationales used to depict predicates that are possible, impossible, inevitable, or contingent for members of the author's culture. For this reason, summary statements are less important than statements that reflect ideas characteristic of the cultures under study.

**Table 2** Possible, impossible, inevitable, and contingent modal forms in editorials within *Al Riyadh* and *Hindustan*

	Modal form				Total
	Possible	Impossible	Inevitable	Contingent	
<i>Al Riyadh</i>	53% (25)	6% (3)	32% (15)	9% (4)	100% (47)
Person-related	43% (20)			4% (2)	
Context-related	11% (5)	6% (3)	32% (15)	4% (2)	
<i>Hindustan</i>	26% (12)	17% (8)	43% (20)	13% (6)	100% (46)
Person-related	15% (7)			7% (3)	
Context-related	11% (5)	17% (8)	43% (20)	7% (3)	

Table 2 breaks down the editorials’ last modal clauses according to whether they convey intentions that are possible, impossible, inevitable, and contingent (i.e., according to their respective modal forms). The chi-square for the eight main cells of this table is 8.13 ( $p = 0.043$ ), indicating evidence of significant variation between the Saudi and Hindi newspapers in the types of modal forms used in their editorials on weekdays during the period of study. Most notably whereas Saudi editorialists were more likely to refer to the “possibility” of a person’s intentions, Hindi editorialists were more likely to refer to intentions that are “impossible.”

Once parsed in accordance with a semantic grammar, a matrix of modal-rationale pairs can be read in accordance with a consistent logic. For example, in our semantic grammar the modal clause is parsed into its subject (M-subject) and predicate (M-predicate) and then is arranged along with the rationale clause in accordance with the following form:

$$Rationale \text{ makes } M\text{-predicate} \left\{ \begin{array}{l} \text{possible} \\ \text{impossible} \\ \text{inevitable} \\ \text{contingent} \end{array} \right\} \text{ for } M\text{-subject} \left\{ \begin{array}{l} \text{according to M-subject} \\ \text{in fact} \end{array} \right\} .$$

For example, each of the following texts contains a modal-rationale pair and is followed directly by its rendering according to this semantic grammar:

**Original text:** How beautiful it is to live a life with our hearts corrected by our minds. I *want* (lit.: prefer) for you (tr.: the reader) to realize this truth (tr.: that a life corrected by one’s mind is beautiful) for at this hour sadness will not exist. (*Al Riyadh*, July 17, 1984, p. 6)

**Rendering:** *That “there will be no sadness when life is corrected by mind” makes the reader’s realization of a truth possible for the author according to himself.*

**Original text:** In the course of the last few years Karunakaran (tr.: a politician) has made it clear through his work and leadership that the United Front government in Kerala *can* only be saved (tr.: kept united) and run by him. (*Hindustan*, May 21, 1986, p. 4)

**Rendering:** *Karunakaran’s recent work and leadership make exclusively his saving and running a provincial coalition possible for a politician (Karunakaran) in fact.*

In the former text note that use of the person-related modal, “want,” conveys the predicate’s possibility according to the subject. That is, the author’s wanting the reader’s realization conveys that the author believes such realization to be a possibility. In contrast, the later text’s context-related modal, “can,” conveys nothing about Karunakaran’s beliefs. Instead

it comprises an assertion that Karunakaran’s saving and running a provincial coalition is possible as a clear matter of fact.

Consistent with arguments made in conjunction with Fig. 2 (namely, that intentionality is only meaningfully conveyed via person-related modals when they indicate possibility or contingency), each sampled clause with a person-related modal (i.e., want, hope, attempt, or refuse) conveyed the subject’s belief that the clause’s predicate is either possible or contingent for this subject. Differently put, it is due to our research design that no person-related modal usages are to be found among the impossible and inevitable modal forms listed in Table 2.<sup>16</sup> Thus it is only within the possible and contingent categories in the table that modal forms are further broken down according to whether they involve person- or context-related usages. And so what began as a 2-by-4 contingency table can now be expanded into a 2-by-6 table—a table with a larger chi-square of 9.99 (albeit now nonsignificant at  $p = 0.075$ ).

This increase in chi-square seems entirely due to the much greater ratio of “person-related references to possibility” to other modal usages within *Al Riyadh* than within *Hindustan* (respectively, 0.74:1 versus 0.18:1). To evaluate this, we performed a one degree of freedom test of whether the effect of this inflated ratio within *Al Riyadh* yields a significant reduction in the larger chi-square (i.e., in the chi-square for a loglinear model in which only the main effects of newspaper and six-level modal form are estimated).<sup>17</sup> We found a significant drop ( $p = 0.003$ ) from a chi-square of 9.99 in the main-effects-only model to one of 1.28 in a model estimating main effects plus the effects of a covariate in which “person-related references to possibility” versus other modality usages in *Al Riyadh* are contrasted with all types of modal usages in *Hindustan*. We also found these models’ BIC values to drop (from  $-12.67$  to  $-16.85$ ), indicating that we have not overfit the data by adding to our model a parameter for estimating this additional effect.<sup>18</sup>

In brief, our analysis provides evidence that when an editorial within *Al Riyadh* contains a concluding modal reference to a possibility, it is more likely than an editorial within *Hindustan* to indicate what people “want,” “hope,” “attempt,” and “refuse not” to do. Within *Hindustan* such references are relatively more likely to use modal forms indicating what people “can” do.<sup>19</sup> Yet it is the theoretical implications of this finding that make it most interesting.

More than merely indicating what modal auxiliary verbs tend to be used in Saudi versus Hindi editorials, the results of our analysis suggest that in their editorials Saudis are more likely than Indians to rhetorically link “what is possible for a person” with the person’s belief in this possibility. In contrast, Hindi editorialists are significantly more likely than their Saudi counterparts to rhetorically link “what is possible for a person” to facts independent of the

<sup>16</sup> Accordingly, empty cells associated with person-related modals’ impossible and inevitable forms should be considered structural zeros within all statistical procedures performed during a modality analysis.

<sup>17</sup> The loglinear model referred to here and in the next two sentences is as follows:  $\log(F_{ij}) = \eta + \lambda_i^N + \lambda_j^M + D_{ij}\delta$ , where  $i$  represents the newspaper (N),  $j$  represents the modal form plus person/context relation (M), and  $D_{ij}$  equals...

1 if  $i = 1$  (i.e., *AlRiyadh*) and  $j = 2$  (i.e., possible and person-related),  
 -1 if  $i = 1$  (i.e., *AlRiyadh*) and  $j = 1, 3, 4, 5$ , or 6 (i.e., either not possible or context-related), and  
 0 otherwise.

Thus,  $\delta$  estimates the increase in the log odds of a modality/rationale having (versus not having) a both possible and person-related modal form, given that it appeared in *Al Riyadh* (and not in *Hindustan*)

<sup>18</sup> For more on the Bayesian information criterion (or BIC) see Raftery (1986a,b).

<sup>19</sup> In *Hindustan* all context-related modal references to possibility were usages of “can” (or to be able).



person's beliefs. So why might this be the case? And what does this finding convey about cultural differences between Indians and Saudis?

One of few comparative studies relevant to our data can be found in Geertz (1983) essay on differences in juridical forms between Islamic and Indic societies. Here Geertz argues that for Muslims, reality is "a thing of imperatives to be responded to, a world of wills meeting wills, and that of Allah's meeting them all" (1983, p. 187). Accordingly, Islamic "adjudication consists in a willed disciplining of wills" (1983, p. 218), such that decisions of guilt or innocence hinge on obtaining testimony from sufficiently pious witnesses. The idea here is that among those with some relation to an alleged crime, the most righteous witness will give the most accurate testimony of what happened. As a consequence, institutions of witnessing have been established that search for and enlist such witnesses.

The search has not been for knowledgeable individuals sufficiently detached to retail empirical particulars (that) an empire judge can weigh in legal scales but for perceptive individuals sufficiently principled to produce righteous judgments an exegete judge can cast into quranic rhetoric (1983, p. 191).

Thus, although there may be many witnesses to an act, testimony regarding the act will have credibility only to the extent that it is from someone who is believed (by virtue of her or his righteous character) to utter words that cohere with what is written in the *Qur'ān*.

The abundance in the *Al Riyadh* data of person-related modal usage regarding "the possible" might best be interpreted as a means whereby the Islamic subject's will (or intentionality) is rhetorically linked to its behavioral options. A statement that someone wants, hopes, tries, or refuses to do something links this person's intentionality with possibility, whereas to say that someone can, must, may, or ought do something conveys no such linkage. As Geertz (1983, p. 192) explains, "(T)he normative and the actual are ontologically conjoined" such that "oral testimony (or the record of oral testimony) is virtually the sole way in which what transpires in the world...is represented juridically." To know the facts is to know that right or wrong has transpired. Yet the written and spoken discourse through which facts are revealed is routinely called into question (nowhere more apparently than in the Islamic courts). Thus to garner credibility, every act of will—and, by extension, every subject–predicate linkage via a person-related modality—requires justification, not so much that the facts are accurate but that the linkage coheres with the normative order.

Fully 70% of the rationales given in the *Al Riyadh* data for the presumed-possible objects of persons' wants (10 cases), hopes (8 cases), and attempts (2 cases) consisted of precisely these sorts of normative justifications. Here are a few illustrations:

- "(W)e married so as to have children and because children are the decoration of this life, and they are the pillar of the future," is the reason why our parents "wanted a happy life for us." (*Al Riyadh*, March 27, 1985, p. 7)
- Drivers' "recklessness with/toward traffic regulations" is the reason why the author hopes "from traffic authorities to tighten the noose on" them. (*Al Riyadh*, December 4, 1987, p. 8)
- The fact that "brother Al-Yousif" (who wrote an editorial critical of a previous editorial by the present author) did not "look at things meticulously and review yourself and your conscience in what you have said knowing that that does not change the integrity (tr.: purity or correctness or absence of ulterior motive) of my meaning and intent at all" is the reason why for Al-Yousif "what you tried to do is much more towards the end of aggravating and exciting to the point that one is ashamed to respond to, except for the need to clarify and as long as there is someone (tr.: implicitly, Allah) who will understand and contemplate, then Allah is the judge of what we all have said..." (*Al Riyadh*, August 14, 1984, p. 6)

Not one of the *Hindustan*'s rationales regarding possibility was a normative justification. Overall 57% of the Saudi rationales and 25% of the Hindi ones were of this type.

According to Geertz (1983, p. 205), "Where the classical Islamic court...sought to establish fact by sorting out moral character and was obsessed with testimony, the Indic one sought to establish it by sorting out moral kind and was obsessed with verdicts." Indic reality is one "in which each sort of being in the universe, human, transhuman, inhuman alike, has, by virtue of its sort, an ethic to fulfill and a nature to express—the two being the same thing" (1983, p. 196). Unlike the Islamic case in which the judge divines facts regarding a litigant's actions based on testimony from persons of reputable status, here the judge legislates litigants' statuses based on facts regarding their actions. Moreover, whereas Islamic juridical acts are ones of stronger over weaker wills, Indic legislations are supposed to constitute "a settled justice of principle rather than an arbitrary one of will" (1983, p. 202). Because the king, princes, lords, and local officials involved in such legislation might decide according to will rather than in accordance with their high statuses, clerics would routinely prevail upon each "to rein his passions and selflessly follow the path of *dharma*"—morally appropriate actions in accordance with one's transcendently defined position in the social order.

Whereas only one (2%) among all Saudi rationales appealed to persons' natures (or statuses), 25% of the Hindi rationales were of this type. Two illustrations follow:

- That "along with being compassionate and nonviolent," women "are motherly, hopegivers, and unconquerable" is the reason why "women assert (tr.: attempt expressing) their natural will power." (*Hindustan*, January 6, 1984, p. 4)
- That "some people" have an "obsession with things foreign" is the reason why they "tried to appear scholarly by speaking in English (lit.: visited with English learning/scholarship [tr.: said in a sarcastic tone])" when interviewed on Indian television. (*Hindustan*, January 28, 1986, p. 4)

Both cases refer to the natures of fellow Indians (namely, compassionate women and "scholarly" interviewees). In the former case, when intentions are according to one's nature (i.e., women's expressing their compassion), good things follow. Yet intentions counter to one's nature appear unnatural (e.g., some Indians' affecting their speech). As stated in the Code of Manu, "destroyed *dharma* destroys, protected (it) protects" (Geertz 1983, p. 199).

## 6 Conclusion

One of the most important philosophical insights of the 20th century is that language structures human experiences (Husserl 1972[1913]; Wittgenstein 1970[1953]; Jameson 1974; etc.). Even the passive "seeing" of an object requires prior knowledge of a concept that enables one to organize one's sensory experiences into a perception of some of these experiences "as" an object (Hamlyn 1970, p. 163). When one adds to this the fact that people are perpetually involved in reproducing language for each other, it follows that we are all implicated in the process of influencing how we and others perceive the world and—of central interest in this paper—ourselves in it. Social theorists have developed a litany of catchy phrases for such reciprocal construction: Simmel's "sociation," Thomas's "defining the situation," Mead's "social behaviorism," Bakhtin's "poetics," Goffman's "keying of social activity," Gergen's "rhetorical accomplishment," to name but a few. Yet despite thousands of provocative illustrations and anecdotes of how people "socially construct" each other's behavioral limits and directions, none of these theorists offers specific guidance on where to look, amongst the

billions of words uttered in our everyday lives, for phrases that systematically yield these widely theorized, reality-constructing effects.

Reiterating and expanding our position as set forth at the outset, the text analysis method introduced in this paper is based on the premise that fundamental cultural differences can be identified within cultural participants' use of modal auxiliary verbs in their spoken and written discourse. Our argument is that through modality people rhetorically parse their worlds into possible, impossible, inevitable, and contingent domains. Long-term exposure to consistent depictions within these domains is what, we suggest, leads people to accept that intended behavioral forms are restricted to ones commonly depicted as possible but not inevitable.

Based on texts from editorials that appeared in a Saudi and a Hindi newspaper between 1983 and 1987, we have provided evidence suggesting discursive techniques within each for maintaining their distinct understandings of intentionality. In particular, we report findings that Saudis are disproportionately more likely than Indians to depict their fellows' beliefs in the possibility of their actions. Moreover, the rationales that Saudis give for such possibility tend to be justifications that show its coherence with the Islamic normative order. Finally, rationales that link persons' possible actions to their natures, are more common in the Indian than in the Saudi editorials. These findings were shown throughout to be consistent with distinctions Geertz (1983) has drawn between Islamic and Indic societies.

Our modest substantive findings will come as no surprise to anthropologists and other writers who have studied Hindi and Arab societies. Works of countless novelists rest on a cultural backdrop of Islamic peoples depicted as ontologically willed creatures, whose wills vary in degree from Allah's will (as inscribed in the *Qur'ān*). Equally familiar is Hindu emphasis on eschewing selfish, willful pursuits in favor of abandonment to one's personal obligations to act in accordance with one's nature. Yet this paper's purpose is primarily a methodological one. In particular, our hope is to have demonstrated that modality analysis provides a means for studying such international differences in the values, or rationales, underlying intentional behavior. Applications of the method can afford insights not only into temporal shifts in such cultural characteristics, but also into comparative rhetorical mechanisms whereby possibility, impossibility, inevitability, and contingency are socially constructed within culturally disparate societies.

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