



universität
wien

MASTERARBEIT / MASTER'S THESIS

Titel der Masterarbeit / Title of the Master's Thesis

The Croatian habitual-like 'know' in
a cross-linguistic context
A decomposition approach

verfasst von / submitted by

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angestrebter akademischer Grad / in partial fulfilment of the requirements for the degree of
Master of Arts (MA)

Wien, 2023 / Vienna, 2023

Studienkennzahl lt. Studienblatt/
degree programme code as it appears on
the student record sheet:

A 066 867

Studienrichtung lt. Studienblatt/
degree programme as it appears on the
student record sheet:

Allgemeine Linguistik: Grammatiktheorie und
kognitive Sprachwissenschaft

Betreut von / Supervisor:

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Abstract

The Croatian verb *znati* (lit. ‘know’) when combined with an infinitive may yield a habitual-like interpretation, stating roughly that the event denoted by the embedded predicate occasionally takes place (see, e.g., Hellman 2005). This thesis provides an in-depth investigation of this configuration and compares it with other complex habitual-like expressions in Croatian, English, German, and Hebrew (e.g., the English *used to* or the German *pflanzen*, lit. ‘cultivate’). The main conclusion emerging from this comparison is that the concept of habituality cannot be reduced to a single universal feature (see also Boneh & Jędrzejowski 2019) but needs to be decomposed into more basic properties if a comprehensive classification of habitual-like expressions is to be achieved. The decomposition approach is reflected in the syntactic implementation as well. Building on Cavirani-Pots’ (2020) analysis of semi-lexicality and supplementing it with the cartographic clause structure proposed in Cinque (1999, 2006), the habitual-like expressions are analysed as arising from combinations of more elementary building blocks: lexical roots and functional heads. The analysis is shown to extend to other readings of the Croatian *znati* (e.g., attitude or mental ability) and it is suggested that inspecting verbs in other languages which have similar denotations (roughly, ‘know’) and ranges of readings from the perspective of semi-lexicality may help isolate the contribution of the lexical roots, potentially leading to novel insights about the syntax and semantics of such verbs.

Zusammenfassung

Das kroatische Verb *znati* (wtl. ‘wissen’) kann in Kombination mit einem Infinitiv eine habituell-artige Lesart annehmen, welche ungefähr besagt, dass das vom eingebetteten Prädikat denotierte Ereignis gelegentlich stattfindet (siehe z.B. Hellman 2005). Die vorliegende Masterarbeit analysiert diese Konstruktion im Vergleich mit anderen komplexen habituell-artigen Ausdrücken im Deutschen, Englischen, Hebräischen und Kroatischen (z.B. das englische *used to* oder das deutsche *pflügen*). Die Hauptschlussfolgerung, die aus diesem Vergleich hervorgeht, ist, dass das Konzept der Habitualität auf kein universell gültiges Merkmal reduziert werden kann (siehe auch Boneh & Jędrzejowski 2019), sondern in grundlegendere Eigenschaften zergliedert werden muss, um zu einer umfangreichen Klassifikation von habituell-artigen Ausdrücken zu gelangen. Der auf Zergliederung basierte Zugang spiegelt sich auch in der syntaktischen Implementation wider. Aufbauend auf Cavarani-Pots’ (2020) Konzept von Semilexikalität und Cinques (1999, 2006) kartografischer Satzstruktur werden die habituell-artigen Ausdrücke als Kombinationen von elementaren Bausteinen, im Speziellen lexikalischen Wurzeln und funktionalen Köpfen, analysiert. Die Analyse wird auch an andere Lesarten des kroatischen *znati* (z.B. Einstellung oder mentale Fähigkeit) angewendet. Dies deutet darauf hin, dass eine Untersuchung aus der Perspektive der Semilexikalität von Verben in anderen Sprachen, die ähnliche Bedeutungen (ungefähr ‘wissen’) und Anwendungen aufweisen, den Beitrag der lexikalischen Wurzeln isolieren und somit zu neuen Einsichten in die Syntax und Semantik von solchen Verben führen könnte.

Acknowledgements

First and foremost, I would like to thank my advisor Susi Wurmbrand—for her support, encouragement, and trust, for productive, inspiring, and fun discussions, for her contagious enthusiasm and timeless pieces of wisdom, for making me laugh so many times, and helping me grow not only as a linguist but also as a person. Danke vom Herzen, Bossin!

Many people have generously shared their time and knowledge with me at various stages of this project and provided valuable feedback on both its empirical and its theoretical aspects, among them (in alphabetical order) Rajesh Bhatt, Maarten Bogaards, Ronny Boogaart, Shannon Bryant, Daniel Buring, Irina Burukina, James Gray, Laura Grestenberger, Dalina Kallulli, Srećko Kovač, Idan Landau, Anikó Lipták, Bojan Marotti, Paul Meisenbichler, Lidiya Milković, Adrian Ommundsen, Roumi Pancheva, Gabriel Pantillon, Ante Petrović, Viola Schmitt, Tim Stowell, Kriszta Szendrői, Jad Wehbe, and the audience of the Comparative Syntax lecture series at the University of Leiden. This thesis, as well as its author, has benefited immensely from your input. Thank you.

Finally, a big heartfelt *hvala* to my parents for their ceaseless support, love, and genuine interest in what I do, and to Aron—for countless judgements on German sentences that required brain acrobatics of varying degrees, for co-suffering through the daily soundtrack of drilling machines (which accompanied me in the final stages of writing this thesis and made us start our days much earlier than we would have wanted to), for supporting me in general throughout the *znati*-adventure, and much, much more.

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1 Introduction

The Croatian verb *znati* ‘know’ has four basic readings, depending on the type of its complement. When combined with a nominal object as in (1a), it denotes familiarity with (certain properties of) a person or an object. When combined with a finite complement clause as in (1b), it functions as a factive attitude verb: the truth of the complement is presupposed (i.e., Viki’s bicycle is in fact red) and the sentence as a whole states that Viki is aware of that fact. Combining *znati* with an infinitival complement introduced by *kako* ‘how’ as in (1c) yields a mental ability reading: Viki possesses the knowledge that is needed in order to be able to ride a bicycle (and is able to do so). Unlike in English, the ‘how’ is optional, and a combination with an infinitival clause as in (1d) may have the ability reading as well. In addition, (1d) may also have what I will call the *habitual-like* reading, best translated by means of adverbs such as *occasionally*, *from time to time*, *now and then*, and labelled by Hellman (2005) as *habitual/characteristic/sporadic*.

- | | | | |
|-----|----|--|---------------|
| (1) | a. | <i>Viki zna Marina.</i>
Viki know.3SG Marin.ACC
‘Viki knows Marin.’ | FAMILIARITY |
| | b. | <i>Viki zna da je njezin bicikl crven.</i>
Viki know.3SG that is her bicycle red
‘Viki knows that her bicycle is red.’ | ATTITUDE |
| | c. | <i>Viki zna kako voziti bicikl.</i>
Viki know.3SG how drive.INF bicycle
‘Viki knows how to ride a bicycle.’ | ABILITY |
| | d. | <i>Viki zna voziti bicikl.</i>
Viki know.3SG drive.INF bicycle
‘Viki knows how to ride a bicycle.’ | ABILITY |
| | | ‘Viki occasionally rides a bicycle.’ | HABITUAL-LIKE |

The common core of all these readings can be described as *mental acquaintance*: with (the properties of) a person or object (1a), a proposition (1b), or a skill (1c). This meaning might not be immediately apparent in the habitual-like reading of *znati* in (1d), but I will show in the course of this thesis that this meaning is indeed present, applying to the speaker rather than the subject, and manifesting itself as evidentiality. Thus, in (1d), it is not (necessarily) Viki who knows something, but the speaker: based on direct or indirect evidence, the speaker can use their knowledge about the world to conclude that Viki riding a bicycle is a recurring event.

This thesis compares the habitual-like *znati* with other *complex* habitual-like expressions (i.e., habitual-like expressions that include a verb- or auxiliary-like element in addition to a lexical predicate) within and beyond Croatian. The core conclusion emerging from this comparison is that habituality is not a homogeneous concept—it may be informally described as conveying that a certain state of affairs holds for a longer period of time but it eludes a universal definition in terms of a single grammatical feature. It is thus best treated as a broad term, encompassing subclasses that display different clusters of more basic properties. This decomposed (or, rather, decomposable) nature of habitual-like expressions is reflected in the syntactic analysis. Building on Cavarani-Pots' (2020) approach to semi-lexicality and supplementing it with the cartographic clausal functional sequence proposed in Cinque (1999, 2006), the different habitual-like expressions are analysed as arising from combinations of elementary building blocks—lexical roots and functional heads, whose individual properties unite to yield the range of habitual-like results observed on the surface. Integrating Cinque's functional hierarchy into Cavarani-Pots' framework provides a promising direction for investigating other phenomena, such as the syntax and semantics of modal expressions and verbs denoting knowledge in other languages. By way of example, this approach is applied to derive the readings of the Croatian *znati* illustrated in (1), tying the core meaning of mental acquaintance to the lexical root $\sqrt{\text{zna-}}$ and the different flavours to the functional heads that this root merges with.

The thesis proceeds as follows. Chapter 2 delineates the concept of habituality, providing a survey of definitions from the existing literature, which link habituality to categories including aspect, iterativity, genericity, modality, and evidentiality. An initial inspection of the habitual-like *znati* shows that it combines iterativity and evidentiality while lacking, for instance, properties associated with genericity. This indicates that a single habitual-like expression may display a combination of properties related to a selection of the aforementioned categories (*viz.*, aspect, iterativity, etc.) and speaks against reducing habituality to any one of them.

This conclusion is reinforced in Chapter 3, which compares complex habitual-like expressions within and beyond Croatian with respect to properties related to aspect, iterativity, genericity, modality, and evidentiality. Three broad subclasses of complex habitual expressions emerge—aspectual, generic, and iterative—instantiating three distinct but overlapping clusters of properties. Therefore, in order to capture both the observed similarities among habitual-like expressions and the range of variation, habituality cannot be treated as a monolithic concept but needs to be dissected into more basic components, reconciling, in a sense, the various definitions of habituality discussed in Chapter 2.

Chapter 4 scrutinises the three classes more closely. Special attention is devoted to the habitual-like *znati*, showing, among other things, that the core meaning of mental acquaintance common to the flavours of *znati* illustrated in (1) is present in the habitual-like reading as well but manifested in a more abstract manner, giving rise to inferential evidentiality. More

generally, *znati* is not the only complex habitual-like expressions that is not restricted to its habitual-like use. For instance, the English *would*, which has a habitual-like use, appears in counterfactual conditionals as well. These expressions thus seem to be underspecified in a way, assuming different flavours according to the syntactic environment they find themselves in.

This insight is implemented in Chapter 5, which turns to the syntactic analysis. The complex habitual-like expressions forming the aspectual, generic, and iterative classes are analysed as combinations of roots and functional heads, combining Cavirani-Pots' (2020) approach to semi-lexicality with Cinque's (1999, 2006) cartographic clause structure. This captures the distinct clusters of properties which define the three classes as well as the various grades of grammaticalisation of complex habitual-like expressions and makes correct predictions with respect to their ordering. For instance, the habitual-like *znati* is argued to reflect the combination of the lexical root $\sqrt{zna-}$ and an iterative functional head. This complex is merged above the subject, which causes the mental acquaintance meaning of $\sqrt{zna-}$ to apply to the speaker, resulting in the evidential flavour, while the iterative head ultimately gives rise to the habitual-like reading ('occasionally', 'now and then') by contributing iterativity.

Chapter 6 extends this approach to the other readings of *znati* (familiarity, attitude, mental ability), analysing them as combinations of the root $\sqrt{zna-}$ with different functional heads, and provides connections to diachrony as well as verbs denoting knowledge in other languages.

Finally, Chapter 7 summarises the main findings and outlines some possible directions for future research.

2 What is habituality?

Hellman (2005) describes the configuration with *znati* and an infinitive as *habitual/characteristic/sporadic* and I have hitherto referred to this use of *znati* as ‘habitual-like’ as well. The notion of habituality, while intuitively graspable, is a very diverse concept: it has been used to describe a range of constructions with different properties and is related to a number of categories, among them aspect, event plurality or iterativity, genericity, modality, and evidentiality. In order to understand to what extent the configuration with *znati* can be described as habitual and in order to be able to systematically compare it with other expressions that have been classified as habitual in the literature, this chapter reviews some of the existing definitions and delineations of habituality (Section 2.1) and illustrates how the aforementioned categories interact by providing an initial description of the habitual-like configuration with *znati* (Section 2.2).

2.1 Definitions

Definitions of habituality differ mostly in terms of their focus: some see it as an aspectual category (e.g., Comrie 1976), some attribute a crucial role to iterativity (e.g., Van Geenhoven 2003), others treat modality as its defining feature (e.g., Dahl 1975, Boneh & Doron 2010), linking it to genericity (e.g., Krifka et al. 1995) or evidentiality (e.g., Carlson 1977). The present survey reveals that individual habitual-like expressions display different clusters of properties, combining aspects of some of the above categories while entirely lacking traits that are characteristic of others. This leads to the conclusion that habituality cannot be reduced to any of these categories but is better understood as a diverse concept allowing various combinations of properties.

Starting with *aspect*, Comrie (1976) classifies habituality as a subtype of imperfective aspect, and thus as belonging to the larger category of viewpoint aspect. He defines habituality as “describ[ing] a situation which is characteristic of an extended period of time” (Comrie 1976: 28).¹ The described situation may occur multiple times or simply hold without interruption

¹ Comrie notes that the definition of such a ‘characteristic situation’ is external to language and eludes an exact delineation in many cases (e.g., it is difficult to determine exactly how many smoked cigarettes constitute a smoking habit; see also the discussion in Dahl 1975). What is important is that if the speaker has deemed a certain situation characteristic, (s)he may use the habitual aspect to describe it; conversely, if a speaker uses the habitual aspect, (s)he conveys that (s)he considers the described state of affairs characteristic.

for the duration of the characterised period. Thus, both *Lewis used to arrive late* and *Alice used to live in London* may be described as habitual, even though the former involves repeated occurrences of Lewis being late, and the latter describes a continuous state that Alice was in. In fact, Comrie argues that *iterativity*, or event recurrence, is neither sufficient nor necessary for habituality. To illustrate, example (1a) involves an iterated action (coughing) but is not habitual, showing that iterativity is not sufficient. Example (1b) describes a period in the past during which Simon held the belief that ghosts exist, without iteration of this belief, but can nevertheless be described as habitual, showing that iterativity is not necessary either.

- (1) a. *The lecturer stood up, coughed five times, and said...* (Comrie 1976: 27)
 b. *Simon used to believe in ghosts.* (Comrie 1976: 27)

Comrie's (1976) view of habituality thus combines two core components: viewpoint aspect (imperfectivity) and the 'characteristic' nature of the described property, while iterativity is treated as orthogonal to habituality. Nevertheless, iterativity plays an important role for at least some habitual(-like) expressions. For instance, Van Geenhoven (2003) analyses the habitual reading of the West Greenlandic morpheme *-tar-* as a special case of its iterative semantics, and a number of other researchers attribute a decisive role to iterativity or event recurrence (e.g., Krifka et al. 1995, Lenci 1995, Boneh & Doron 2010).² A number of complex habitual expressions, including the habitual-like *znati*, require iterativity as well (see Chapter 3).

The tight connection between imperfectivity and habituality is acknowledged by Boneh & Doron (2010), who show that complex habitual expressions such as *used to* can in fact only be interpreted as imperfective: in (2), the habit of working in the garden can only be understood as including the eighties, and is therefore incompatible with the adverbial *for three years*, which would require a perfective interpretation with respect to the frame adverbial *in the 80s*.

- (2) *(In the 80s) #I used to work in the garden for three years.* (Boneh & Doron 2010: 347)

Nevertheless, Boneh & Doron argue against equating habituality and imperfectivity, both in languages that mark viewpoint aspect overtly and in those that do not. They show that perfective forms, too, can have a habitual reading, while retaining their core property of being included into a certain time frame. An example from French, a language that marks viewpoint aspect, is given in (3) (taken from Kleiber 1987). Despite the verb being perfective, the sentence can have a habitual interpretation: for five years, Paul had the habit of working at Renault.

- (3) *Paul a travaillé chez Renault (pendant cinq ans).*
 Paul has worked at Renault for five years

² Van Geenhoven (2003) uses the term *pluractional* (or, in Van Geenhoven 2004, *frequentative*), and Boneh & Jędrzejowski (2019) note a difference among *iterativity*, *frequentativity*, and *multiplicativity* (following, in part, Xrakovskij 1997, whose division is into *iterativity*, *multiplicativity*, and *distributivity*). I do not make a distinction among these terms here and use *iterativity* throughout to describe repeated occurrences.

‘Paul worked at Renault for five years.’

(Boneh & Doron 2010: 342)

Boneh & Doron (2010) therefore shift the focus to *modality*, describing habituality as “primarily a modal category, which can only indirectly be characterized in aspectual terms” (Boneh & Doron 2010: 339). Modality has played a prominent role ever since the earliest discussions of habituality (see, e.g., Dahl 1975). One reason for including modality into the definition of habituality is that, according to Dahl (1975), habitual expressions express nomic or rule-like generalisations, and thus exclude accidental event recurrence (see also Boneh & Doron 2010, Boneh & Jędrzejowski 2019). This resonates with Comrie’s (1976: 28) view of situations described by habitual sentences as not “incidental” but “characteristic”.

Boneh & Jędrzejowski (2019) echo this view and figure in event recurrence as a crucial property of habituality as well, characterising habituality as “modal event recurrence” (Boneh & Jędrzejowski 2019: 3). This view of habituality is hence different from that of Comrie (1976) and, as a consequence, encompasses a different empirical domain. In particular, Boneh & Jędrzejowski (2019) do not seem to treat *used to* as habitual, but as a complex aspectual category (see also Binnick 2005), drawing a clear line between aspect and habituality.

The distinction between recurring events and prolonged states is also present in Krifka, Pelletier, Carlson, ter Meulen, Chierchia, and Link’s (1995) division of what they call *characterising sentences* into *habitual* and *lexical* ones. The lexical (i.e., non-habitual) type includes predicates such as *know*, *weigh*, or *love*, and, according to them, describes properties of individuals, rather than events or situations (e.g., *Alice loves books*). The habitual type includes episodic predicates such as *smoke* or *roar* and “generalize[s] over patterns of events” (Krifka et al. 1995: 17) which individuals (may) engage in (e.g., *Lewis smokes*).

Krifka et al. (1995) treat habitual sentences as quantificational, belonging to the category of *genericity* (see also Dahl 1975), and note that modality might be a necessary ingredient in capturing habituality. For instance, a sentence such as the one in (4a), which they include into the habitual category, can be truthfully uttered even if the machine in question has never crushed oranges and will never do so (e.g., it will break before put into action); the mere fact that it was built to crush oranges—i.e., that there is a *disposition*—suffices, and the activity of crushing oranges itself may happen in possible worlds only. This is true at least for machines; it would be odd to utter (4b) if Mary had never smoked, a difference that Krifka et al. (1995: 54) tie to world knowledge, noting that we may need evidence of typical behaviour for humans (since humans cannot be made for, e.g., smoking in the same way that machines can be made for, e.g., crushing oranges). In other words, there is nothing in the grammar of habitual sentences that requires actualisation, a conclusion that receives support from examples such as (4c). Even though this example involves a human being, it does not require her to have ever actually handled any mail from Antarctica; it suffices that she was in charge of such mail but no mail ever arrived (Krifka et al. 1995: 9f.).

- (4) a. *This machine crushes oranges.* (Krifka et al. 1995: 54)
 b. *Mary smokes cigarettes.* (Krifka et al. 1995: 54)
 c. *Mary handled the mail from Antarctica.* (Krifka et al. 1995: 9)

Boneh & Doron (2013: 362) make no difference among the sentences in (4) in the grammar either and suggest that *dispositional* readings (as in (4a) and (4c)) and those that require actualisation (as in (4b)) are due to different circumstances, noting that the former is very restricted. Thus, while *Alice speaks French* may in principle be uttered without Alice having ever actually spoken French, it disappears with locative modifiers: *Alice speaks French in the car* can only be true if events of Alice speaking French (in the car) are indeed actualised. In a similar vein, Krifka et al. (1995) note that if an adverb like *usually* is added to (4c), the dispositional reading disappears and Mary needs to have actually engaged with mail from Antarctica for the sentence to be true.

Taking these distinctions seriously, Van Geenhoven (2003) does not treat the sentences in (4) uniformly but divides them into two types: *modal* ones, including (4a) and (4c), which express dispositions or prescriptions, and *pluractional* or *true habitual* sentences, including (4b), which express event recurrence (at least partly) in the actual world. She bases this distinction on the distribution of the West Greenlandic morpheme *-tar-*, which occurs in the pluractional/habitual, but not the modal type, indicating that these two types of sentences do not belong to a uniform class. This distinction may be precisely what Carlson (1995: 237) is hinting at when he notes that “[i]t may well be possible that there is no single successful analysis of the domain of generics *in toto*, and that the domain must be split for the sake of arriving at tractable semantic analyses.” This remark is made in the context of a discussion of the strengths and shortcomings of what Carlson (1995) calls *inductive* and *rules-and-regulations* approaches to habitual sentences. Van Geenhoven’s (2003) modal sentences seem to correspond to the rules-and-regulations approach (they are true by virtue of some rules operative in the world, for which mere indications or dispositions suffice) whereas the pluractional sentences might lend themselves to an analysis in terms of induction, being true by virtue of (a number of recurring) actual events.

The views of Krifka et al. (1995), Van Geenhoven (2003), Boneh & Doron (2010), and Boneh & Jędrzejowski (2019) converge in requiring recurrence of episodic events or iterativity, but diverge in the role they assign to modality: a crucial one in Boneh & Doron (2010), Boneh & Jędrzejowski (2019), different depending on the type of habitual sentence in Van Geenhoven (2003), and a potentially important one in Krifka et al. (1995), whose focus is on *genericity*.

A treatment of habitual sentences as a subtype of genericity is challenged by Lenci (1995), who argues that not all habitual expressions are quantificational (*pace* Krifka et al. 1995). Boneh & Doron (2013), building on Lenci (1995), refer to non-quantificational habitual sentences as *habitual*, and to quantificational ones as *generic*, divorcing habituality from genericity. A

habitual sentence such as the one in (5a) states that there are multiple events (potentially unlimited in number) of smoking by Lewis. It does not state that Lewis *always* smokes (in fact, it is unclear which situations ‘always’ would quantify over). A *generic* sentence such as the one in (5b), on the other hand, is quantificational, expressing universally valid generalisations (all situations of Alice after dinner are situations of Alice smoking a cigarette after dinner) and as such requires an explicit restrictor (*after dinner*). If the restrictor is absent, the only way in which this sentence can be understood is as a habitual one. Since habitual sentences are not quantificational and there is no element that can outscope or bind the indefinite *a cigarette*, the sentence can only be interpreted as including a single cigarette that takes part in multiple smoking events, which, given the perishable quality of cigarettes, is not possible (compare (5b) with *Alice smokes a pipe*, which is a perfectly fine habitual sentence).

- | | | | |
|-----|----|---|----------|
| (5) | a. | Lewis smokes. | HABITUAL |
| | b. | Alice smokes a cigarette #(after dinner). | GENERIC |

Lenci (1995) argues that the non-quantificational—i.e., habitual—type is intimately linked to iterativity, denoting a “potentially unlimited set of events” (Lenci 1995: 149). Boneh & Doron (2013) frame this observation in terms of a modal component and argue that habitual and generic sentences share the modal-like quality. Both types of sentences make a claim not only about the actual world but also about possible worlds (i.e., those in which habitual behaviour continues once it started, or those in which generalisations hold without exceptions). As will be shown in Chapters 3 and 4, modality plays a role for complex habitual expressions as well: for a number of these expressions (though not all), a limited number or even a single occurrence of the described event in the actual world suffices, as long as repetition occurs in modal worlds (Boneh & Doron 2010, 2013, Boneh & Jędrzejowski 2019).

The interaction between actualised events and their continuation in modal worlds draws a connection to induction and *evidentiality*, concepts that are related to habituality (see, e.g., Carlson 1977: 108f., Klimek-Jankowska 2012, Boneh & Jędrzejowski 2019).³ Evidentiality requires observations of actual eventualities (or, more broadly, states of affairs), which function as evidence, either direct or indirect, and a basis for inductive inference (see, e.g., Cornillie 2009). In at least some habitual expressions—*viz.*, those classified as *pluractional* by Van Geenhoven (2003)—observations of events in the actual world license the formation of generalisations, which in turn (may) apply in modal worlds. For instance, in order to utter (5a), it suffices that the speaker observe a limited number of smoking events by Lewis, or even a single one (Lenci 1995). Sentences such as (4a), in contrast, classified as *modal* by Van Geenhoven (2003), do not require actual instances of the described event and are thus less obviously related to evidence and induction. Nevertheless, a weaker kind of evidentiality might be at play even in such sentences. Klimek-Jankowska (2012), in her study of habituality

³ Boneh & Jędrzejowski (2019: 10) even conjecture that these two categories have a “common modal feature”.

in Polish, differentiates between *descriptive* and *dispositional* habituality, both of which show elements of evidentiality. Descriptive habituality (cf. Van Geenhoven’s 2003 pluractional class) corresponds roughly to Carlson’s (1995) *inductive* generalisations based on observations of individuals or events in the actual world. It requires that at least one event that forms the habit be actualised, forming a close link to evidentiality. Dispositional habituality (cf. Van Geenhoven’s 2003 modal class) is akin to Carlson’s (1995) *rules-and-regulations* generalisations, and requires not the actualisation of the habit, but rather indications of or dispositions for it, which might be treated as indirect evidence.

The different classifications of simple *characterising sentences* (to borrow an all-encompassing term from Krifka et al. 1995) are summarised in Table 2.1, together yielding a four-way split. Since the remainder of this thesis is concerned with *complex* habitual-like expressions (those involving an additional verb- or auxiliary-like element), I leave the debate about the exact split among Krifka et al.’s (1995) habitual/generic sentences open and adopt Boneh & Doron’s (2013) division for compactness, referring to Van Geenhoven’s (2003) split into modal and pluractional habituality when appropriate.⁴

	<i>Alice is intelligent.</i>	<i>This machine crushes oranges.</i>	<i>Lewis smokes.</i>	<i>Lewis smokes a cigarette after dinner.</i>
Krifka et al. (1995)	lexical	habitual/generic		
Van Geenhoven (2003)	inalienable	modal	pluractional	
Boneh & Doron (2013)	lexical	habitual	generic	
Four-way split ⁵	lexical	modal	pluractional	generic

Table 2.1. Characterising sentences

To sum up, habituality shows properties overlapping with (imperfective) aspect, iterativity, modality, genericity, and evidentiality, but does not seem to be reducible to any of these categories. Habitual readings arise in both perfective and imperfective aspect (Boneh & Doron 2010), speaking against a purely aspectual analysis. At least some habitual expressions are not purely modal in that they require actualisation or iterativity (Van Geenhoven 2003), but neither pure iterativity (Comrie 1976) nor pure inferential evidentiality (Carlson 1995) suffice for a habitual interpretation either. Finally, there are important differences between habituality and genericity (Lenci 1995, Boneh & Doron 2013). Habituality is thus a very diverse category; so much so that Boneh & Jędrzejowski (2019: 12) express their uncertainty about “the larger question of whether habituality is indeed a category in its own right”. I would like to suggest

⁴ Boneh & Doron (2013) do not mention sentences of the lexical type explicitly, but since they treat habituality as iterativity (in modal worlds), such sentences have to be treated as a separate category.

⁵ The definition in Lenci (1995: 149) might be interpreted as implicitly making the four-way split. The main aim of his article is to distinguish between non-quantificational and quantificational sentences, establishing the latter as a separate category (*generic* in the table). Event recurrence is central, requiring a treatment of *lexical* sentences a separate class. Finally, at least one event needs to be instantiated, excluding the *modal* type from the definition and leaving only the *pluractional* type as corresponding to his definition.

2.2 Habitual-like *znati*: A first approximation

Before addressing the properties which lead to the habitual-like flavour in more detail, note that the habitual-like reading of *znati* requires an infinitive: a finite complement as in (6a) can only have an attitude factive reading. However, as shown in (6b), an infinitive makes the configuration ambiguous between a mental ability reading and a habitual-like one.

- The ambiguity between the habitual-like and the mental ability reading breaks down with inanimate subjects. One of the crucial properties of the habitual-like configuration is that *znati* behaves like a raising verb: it is compatible with weather predicates (7a), idiom chunks (7b), and inanimate subjects (7c). These examples license only the habitual-like reading.

- (7) a. *U travnju zna sniježiti.*
in April know.3SG snow.INF
‘It occasionally snows in April.’ WEATHER PREDICATE
- b. *Vrag zna odnijeti šalu.*
devil know.3SG take.away.INF joke.ACC
‘Things occasionally get serious.’
(lit. The devil occasionally takes away the joke.) IDIOM CHUNK
- c. *Ove ladice znaju zapeti.*
these drawers know.3PL get.stuck.INF

‘These drawers occasionally get stuck.’

INANIMATE SUBJECT

The subject thus need not possess any knowledge, (mental) ability, or even (conscious) habit. This is further supported by the examples in (8), with animate subjects: neither being accused nor tripping require ability (unless meant ironically—or perhaps more broadly, as capability).

- (8) a. *Često sam znao biti optužen za nešto što i nisam napravio ...*
 often AUX.1SG know.PTCP.SG.M be.INF accused for something what and
 NEG.AUX.1SG do.PTCP.SG.M ...
 ‘I was often accused of something that I hadn’t in fact done ...’ (Hellman 2005: (76))
- b. *Znala se spotaknuti o prvu stepenicu.*
 know.PTCP.SG.F SE trip.INF over first step
 ‘She occasionally tripped over the first step.’

Returning to the properties related to habituality that were discussed in Section 2.1, all the above examples with *znati* denote event recurrence or iterativity: (7a) states that there are multiple instances of snowing in April; according to (7c), there are more occasions at which the drawers get stuck; the ‘she’ in (8b) (has) had several unfortunate encounters with the first step. The recurrence may, but need not, be regular (see also Hellman 2005): very few occurrences of rain in April are needed in order for (7a) to be true, the drawer in (7c) need not have got stuck regularly and ‘she’ could have tripped over the first step only a few times (cf. Lenci 1995, who notes that a single smoking event by a person may suffice to state that this person smokes). Hellman (2005), based on corpora, notes that *adverbs of cyclicity* are very rare in this configuration. For instance, the most natural interpretation of (9a) is that the ‘she’ in question occasionally read three books per week (i.e., including some but not all weeks), even though it does not exclude a scenario according to which, in some periods, she read three books every week (on a regular basis). The example in (9b) describes a habit that holds every second year and involves (possibly irregular) visits to the gym on Mondays.

- (9) a. *Znala je pročitati tri knjige tjedno.*
 know.PTCP.SG.F AUX.3SG read.INF three books weekly
 ‘She had the habit of reading three books per week.’
- b. *Svake druge godine je znao ponedjeljkom ići u teretanu.*
 every second year AUX.3SG know.PTCP.SG.M Monday.INSTR go.INF in gym
 ‘Every second year, he used to go to the gym on Mondays.’

Recurrence thus may be irregular or *sporadic* (Hellman 2005) and, unlike what is the case with modal expressions, accidental repetitions are allowed (i.e., repetitions that are not tied to any rule or law-like regularity). The fact that the configuration with *znati* does not require an explicit restrictor and allows for exceptions (periods or occasions at which the event does not occur) makes it different from generic expressions. Another difference to (purely) modal

expressions is that at least one event of the kind denoted by the lexical verb needs to occur in the real world (cf. sentences such as *This machine crushes oranges* discussed in Section 2.1). A comparison with the modal verbs *moći* ‘can’ and *morati* ‘must’ in (10) (borrowing a famous example from Kratzer 1991) supports this conclusion. The sentence in (10a) expresses pure (circumstantial) possibility (e.g., the soil looks good and the speaker judges it possible that hydrangeas sprout here), and the one in (10b) expresses pure (circumstantial) necessity (e.g. the soil is perfect and the speaker considers it very likely that hydrangeas sprout here). Neither of these sentences requires actual instances of hydrangeas, but the sentence in (10c), with *znati*, can only be true if events of hydrangeas sprouting here exist in the actual world. In addition, the speaker needs to have reliable evidence of hydrangeas sprouting at that particular place (cf. Hellman 2005: 95f.). That is, the speaker may consider the soil and general conditions as perfect as they get, (s)he still may not utter (10c) unless (s)he has either seen hydrangeas sprout here or has reliable evidence (e.g., has heard about it from a trustworthy friend).

- (10) a. *Ovdje mogu niknuti hortenzije.*
 here can.3PL sprout.INF hydrangeas
 ‘Hydrangeas can sprout here.’
 b. *Ovdje moraju niknuti hortenzije.*
 here must.3PL sprout.INF hydrangeas
 ‘Hydrangeas must sprout here.’
 c. *Ovdje znaju niknuti hortenzije.*
 here know.3PL sprout.INF hydrangeas
 ‘Hydrangeas occasionally sprout here.’

This makes a connection to the lexical meaning of the Croatian verb *znati*, which may be described as mental acquaintance. In the habitual-like configuration, this meaning does not affect the subject (see the examples in (7)), but appears to apply to the speaker in the form of evidentiality. I postpone the discussion of evidentiality to Chapter 4, where I show that it interacts with event recurrence in interesting ways. Anticipating somewhat, the speaker does not need to have evidence of iteration—one instance of the event denoted by the infinitive is enough as long as recurrence is in principle possible. In (10c), it suffices that the speaker has reliable (direct or indirect) evidence of hydrangeas sprouting at that place, and that their repeated sprouting there is possible. The evidentiality that is at play with *znati* is hence not (necessarily) direct, but better described as inferential.

Regarding (viewpoint) aspect, *znati* can be interpreted as both imperfective and perfective. In (11), Ivan’s habit of going to work by bus can be interpreted as including the reference time (the eighties—Ivan went to work by bus in the eighties and possibly longer) or it can be interpreted as being included into the eighties (highlighted by the adverbial ‘for some time’—e.g., from 1984 to 1987). *Znati* therefore cannot be an instantiation of viewpoint aspect.

- (11) *U osamdesetima je Ivan (jedno vrijeme) znao ići na posao autobusom.*
 in eighties AUX.3SG John one time know.PTCP.SG.M go.INF on work
 bus.INSTR
 ‘In the 80s, John had the habit of going to work by bus for some time.’

Finally, the habitual-like *znati* resists immediate negation. As illustrated in (12), negating *znati* shifts its meaning to mental ability (and is thus a test with the effect that is the opposite of the raising cases in (7), which disambiguate in favour of the habitual-like reading). Since drawers are not sentient, (12a) gives an infelicitous result, as does (12b) if the adverbial ‘in the evening’ is included—even though the subject is a sentient being, the ability to close the windows does not normally vary according to the time of day.

- (12) a. *#Ove ladice ne znaju zapeti.*
 these drawers NEG know.3PL get.stuck.INF
 Lit. ‘These drawers don’t know to get stuck.’ #ABILITY, *HABITUAL-LIKE
 b. *Viktor ne zna zatvoriti prozore (#navečer).*
 Viktor NEG know.3SG close.INF windows in.the.evening
 ‘Viktor does not know how to close the windows (#in the evening).’ ABILITY
 Lit. *‘Viktor doesn’t know to close the windows (in the evening).’ *HABITUAL-LIKE

As for the infinitive, it is compatible with both active and passive voice (see (8a) above) and transparent for operations such as scrambling (13a) and clitic climbing (13b), which classifies the construction as a restructuring configuration (see, e.g., Cinque 1997, Wurmbrand 2001).

- (13) a. *Markova majka slatkiše_i zna sakriti t_i pod jastuk.*
 Marko.POSS mother sweets know.3SG hide.INF under pillow
 ‘Marko’s mother sometimes hides sweets under the pillow.’
 b. *Markova {ih_i} majka {ih_i} zna sakriti t_i pod jastuk.*
 Marko.POSS them mother them know.3SG hide.INF under pillow
 ‘Marko’s mother sometimes hides them under the pillow.’

Summarising the properties of the habitual-like *znati*, this initial inspection has shown that *znati* behaves like a raising verb and as such imposes no restrictions on the subject (knowledge or other). Iterativity or (occasional) event recurrence is a prominent part of the meaning of this configuration, and the core lexical meaning of *znati*, roughly mental acquaintance, does not affect the subject but is shifted to the speaker, yielding an evidential flavour. These properties, in particular the iterative and the evidential component as well as the incompatibility with negation, are considered in more detail in Chapters 3 and 4, which embed the habitual-like configuration with *znati* into a broader context, comparing it with other habitual-like expressions in Croatian and beyond.

3 Dissecting habituality

This chapter compares a number of habitual-like expressions from different languages with respect to properties that have been linked to habituality, such as aspect, modality, or genericity (see Chapter 2). The focus lies on *complex* habitual-like expressions, *viz.*, those that contain a verb- or auxiliary-like element in addition to a lexical predicate. The expressions compared in this chapter are English *used to* (1a) and habitual *would* (1b), Croatian *znati*, lit. ‘know’, (1c) and *bi* ‘would’ (1d), Hebrew *hyy* ‘be’ (1e), and German *pfliegen*, lit. ‘cultivate, nurse’, (1f).

- (1) a. *John **used to** work here.* (Comrie 1976: 25)
 b. *And occasionally a window **would** get broken.* (Tagliamonte & Lawrence 2000: 340)
 c. *Ove ladice **znaju** zapeti.*
 these drawers know.3PL get.stuck.INF
 ‘These drawers occasionally get stuck.’
 d. *Tata **bi** nam prije spavanja otpjevao uspavanku.*
 dad would us.DAT before sleeping sing.PTCP.SG.M lullaby
 ‘Dad would sing us a lullaby before going to sleep.’
 e. *ya’el **hayt-a** ‘oved-et ba-gina*
 Yael HYY.PST-3SG.F work-SG.F in.the-garden
 ‘Yael used to work in the garden.’ (Boneh & Doron 2013: 344)
 f. *Simon **pfllegt** zu spionieren.*
 Simon PFLEG.3SG to spy.INF
 ‘Simon has the habit of spying.’ (Jędrzejowski 2021: 1480)

All these constructions have been described as habitual, but they do not display uniform behaviour, and comparing them requires decomposing the category of habituality into smaller building blocks. While this decomposition leads to the conclusion that there seems to be no single universal property of habituality shared by all these complex expressions, three broad subclasses of complex habitual expressions emerge (refining and extending Boneh & Doron 2010, 2013): *aspectual* habituality (encompassing the English *used to* and the Hebrew *hyy*), *generic* habituality (exemplified by the English habitual *would* and its Croatian counterpart *bi*), and *iterative* habituality (including the Croatian *znati* and the German *pfliegen*).

3.1 Iterativity

As outlined in Chapter 2, the literature disagrees on whether event recurrence or iterativity is a defining property of habituality and, as a consequence, which expressions should be described as habitual. Comrie (1976) argues that iterativity is neither sufficient nor necessary for habituality, while Krifka et al. (1995) and Boneh & Jędrzejowski (2019), among others, only treat those expressions as habitual that do display iterativity. This section reconciles these seemingly opposing views in opting for a broader concept of habituality while at the same time distinguishing between habitual expressions which require iterativity and those that are merely compatible with it. In order to see whether a given expression requires the embedded event to be iterated, I use the availability of stative and individual-level predicates as a test, both of which can hold for an extended period of time without being repeated.^{1,2}

As noted by Comrie (1976) and Tagliamonte & Lawrence (2000), English *used to* is compatible with both iterated (dynamic) events (2a) and (non-iterated) states (2b), including individual-level predicates (2c).³ In other words, predicates embedded under *used to* may denote either iterated events, as in (2a), or a prolonged, non-iterated state, as in (2b–c).

- (2) a. *I used to dance, but I don't dance now.* (Tagliamonte & Lawrence 2000: 331)
 b. *One of the teachers actually used to live two doors away from me.*
 (Tagliamonte & Lawrence 2000: 339)
 c. *It used to be called VernAir.* (Tagliamonte & Lawrence 2000: 338)

A similar state of affairs can be observed with Hebrew *hyy* (which corresponds to the auxiliary 'be' but assumes a habitual reading in the past; Boneh & Doron 2008, 2010): both recurring eventive predicates (3a) and stative predicates holding over a period of time (3b) are licensed.⁴

- (3) a. *ya'el hayt-a 'oved-et ba-gina*
 Yael HYY.PST-3SG.F work-SG.F in.the-garden
 'Yael used to / would work in the garden.' (Boneh & Doron 2010: 344)
 b. *horey-ha hay-u gar-im bi-yrušalayim*
 parents-her HYY.PST-3PL live-PL in-Jerusalem
 'Her parents used to live in Jerusalem.' (Boneh & Doron 2010: 345)

1 I use the term *individual-level* to describe predicates that are intrinsic to an individual and mostly immutable (e.g., having a certain eye colour); they contrast with *stage-level* predicates, which are transient (e.g., writing a thesis). Note that while individual-level predicates are all stative (i.e., describe a state rather than a dynamic event), not all statives are individual-level predicates (e.g., *live in Villach* is a stative stage-level predicate); see, e.g., Kratzer (1995) for discussion.

2 Note that an iterated event can be seen as describing a (derived) state as well (see, e.g., Vendler 1957: 150f.); however, what I am interested in is the compatibility of the expressions under scrutiny with predicates that are inherently stative and do not consist of iterated events (e.g., *love, live, weigh*).

3 Tagliamonte & Lawrence (2000) note that dynamic events prevail with *used to*, but nevertheless cite a number of examples involving stative verbs.

4 Unlike *used to*, *hyy* is incompatible with individual-level predicates (Boneh & Doron 2008).

In contrast to *used to* and *hyy*, the English habitual *would* is incompatible with stative and individual-level predicates unless they are iterated—i.e., unless they apply to multiple occasions or individuals (Boneh & Doron 2010, 2013). To illustrate, the example in (4a), where the stative *know* applies to a single teacher, is ungrammatical (cf. the grammatical *used to* in (4b)). Substituting the plural *teachers* for the singular *teacher* as in (4c) licences repeated application (*viz.*, to multiple teachers) and makes the example grammatical.

- (4) a. **In the fifties, my French teacher would know Latin.* (Boneh & Doron 2013: 177)
 b. *In the fifties, my French teacher used to know Latin.* (Boneh & Doron 2013: 177)
 c. *In the nineteenth century, French teachers would know Latin.*
 (Boneh & Doron 2013: 190)

A similar point can be made by the examples in (5) from Tagliamonte & Lawrence (2000), who, based on a corpus study of recorded conversations, note that *would* is compatible with stative predicates. Upon closer inspection, the examples they give seem to involve repetition. That is, *stand* in (5a) or *be* in (5b) do not seem to be interpreted as holding uninterruptedly for a certain period of time; rather, the ‘he’ in (5a) needs to have stood there singing a number of times and the train in (5b) was boarded by more Sunday schools on multiple occasions.

- (5) a. *He’d stand there and sing a little hymn.* (Tagliamonte & Lawrence 2000: 336)
 b. *And then there was a special train. It wouldn’t just be our Sunday school, I imagine. It would be other Sunday schools.* (Tagliamonte & Lawrence 2000: 339)

It is thus not sufficient for *would* that the embedded state holds for an extended period of time (in contrast to, e.g., *used to*); it needs to iterate, applying either to multiple occasions as in (5) or to multiple individuals as in (4c).⁵ If iteration is understood in a more abstract, atemporal way and eventualities are defined in a broad sense, as including individuals, the restriction can be described as iterativity.

The Croatian counterpart of *would—bi*—behaves in the same way: stative predicates are impossible (6a) unless distributed among individuals (6b) or occasions (6c).

- (6) a. **U pedesetima bi moj učitelj francuskoga znao latinski.*
 in fifties would my teacher French.GEN know.PTCP.SG.M Latin
 Intended: ‘In the fifties, my French teacher used to know Latin.’
 b. *U devetnaestom bi stoljeću učitelji francuskoga znali latinski.*
 in nineteenth would century teachers French.GEN know.PTCP.PL Latin
 ‘In the nineteenth century, French teachers would know Latin.’
 c. *Petra bi uvijek prva znala odgovor.*
 Petra would always first know.PTCP.SG.F answer

⁵ This is reminiscent of Kleiber’s (1983) distinction between *habitual* and *referential* sporadicity, referring to recurring occasions and individuals, respectively (on sporadicity, see Section 4.3.3).

‘Petra would always be the first to know the answer.’

Habitual-like *znati* patterns with *would* and *bi*. As shown in (7), no non-iterated states or individual-level predicates are allowed, even if they hold for an extended period of time—temples do not normally change their places and a particular animal is either a cat or not.

- (7) a. #*Dijanin hram je znao stajati u Efezu.*
 Dijana.POSS temple AUX.3SG know.PTCP.SG.M stand.INF in Ephesus
 Intended: ‘The Temple of Diana used to stand at Ephesus.’
 b. #*Flekica zna biti mačka.*
 Flekica know.3SG be.INF cat
 #‘Flekica is occasionally a cat.’

In parallel to *would* and *bi*, applying the embedded predicate to multiple occasions or individuals yields a felicitous outcome. The example in (8a) can only mean that Marin changed his mind a number of times and oscillated between loving and not loving peanuts—it cannot mean that there is a single extended period of time in the past during which Marin loved peanuts. Similarly, (8b) means that some Nobel prize winners are blond and applies the property of being blond to several individuals. The example in (8c) allows for both possibilities: if the property of costing four euros per kilo is applied to multiple occasions, we arrive at a reading where apricots vary in cost; if it is applied to multiple individuals, the interpretation is rather that some (kinds of) apricots cost four euros, while others might cost more or less. A combined interpretation—different kinds of apricots with varying cost—is possible as well.

- (8) a. *Marin je znao voljeti kikiriki.*
 Marin AUX.3SG know.PTCP.SG.M love.INF peanuts
 ‘Marin occasionally loved peanuts.’
 b. *Nobelovci znaju biti plavokosi.*
 Nobel.prize.winners know.3PL be.INF blond
 ‘Nobel prize winners are sometimes blond.’
 c. *Marelice znaju koštati četiri eura po kili.*
 apricots know.3PL cost.INF four euros per kilogram
 ‘Apricots sometimes cost four euros per kilogram.’

The German habitual-like *pflügen* (lit. ‘cultivate, nurse’) follows the same pattern (Colomo 2011, Jędrzejowski 2021): the embedded event needs to be iterated.

- (9) a. #*Der Dodo pflegte ein seltsamer Vogel zu sein.*
 the dodo PFLEG.PST a strange bird to be
 Intended: ‘The dodo used to be a strange bird.’ (Colomo 2011: 249)
 b. *Linguisten pflegen seltsam zu sein.*
 linguists PFLEG.3PL strange to be.INF
 ‘Linguists tend to be strange.’ (A. Ludwig, p.c.)

The criterion of iterativity yields a two-way split, summarised in Table 3.1 (the properties shared by more expressions are highlighted in light gray). The English *used to* and the Hebrew *hyy* are compatible with non-recurring stative predicates and do not require the embedded predicate to be iterated while *would*, *bi*, *znati*, and *pflegen* all require the predicate they embed to be applied multiple times, either to occasions or to individuals.⁶

	Hebrew	English		Croatian		German	English
	<i>hyy</i>	<i>used to</i>	<i>would</i>	<i>bi</i>	<i>znati</i>	<i>pflegen</i>	SIMPLE ⁷
Non-iterative	ok	ok	*	*	*	*	*
States	ok	ok	*	*	*	*	*
ILPs	*	ok	*	*	*	*	*

Table 3.1. Iterativity

In a way, this split reconciles the different views discussed in Chapter 2 on the role of iterativity for habituality. Comrie's (1976) definition does not treat iterativity as decisive, allowing for the inclusion of both groups into the domain of habituality. The views of, e.g., Krifka et al. (1995) or Boneh & Jędrzejowski (2019), who see iterativity is central, are reflected in the more fine-grained distinction. In sum, both more general and more restrictive approaches seem to be needed in order to capture the observed variation. As will be shown presently, the expressions that require repeatability of the embedded event do not behave in an entirely uniform manner; other properties divide the complex habitual expressions differently.

3.2 Aspect

Boneh & Doron (2010, 2013) show that viewpoint aspect is separate from habituality in that the simple habitual form may be interpreted in either an imperfective or a perfective manner. The two interpretations can be distinguished by a number of tests, among them the frame adverbial test: perfective situates the described eventuality *within* the frame described by the adverbial, and imperfective has the opposite effect, leading to an interpretation whereby the described eventuality *includes* the time frame given by the adverbial. To illustrate, the example in (10a) allows for both interpretations: the reference time (the eighties) may be included into John's habit of going to work by bus (e.g., he started going to work by bus in, say, 1976 and stopped in 1997), yielding an imperfective interpretation. Alternatively, the reference time may includee

⁶ Regarding the incompatibility of Hebrew *hyy* with individual-level predicates, note that application to multiple individuals does not yield a grammatical result (I. Landau, p.c.), in contrast to the other group of habitual expressions, suggesting that this property is not due to an iterativity requirement but a different factor.

⁷ In addition to complex habitual expressions, the table includes the (English) simple habitual (e.g., *Lewis smokes*) as a reference point. Following Krifka et al. (1995), the simple habitual is treated as distinct from *lexical characterising sentences* such as *Alice is adventurous* (which are not only compatible with statives and individual-level predicates but crucially include them), and following Boneh & Doron (2013), it is treated as distinct from *generic sentences* such as *Lewis smokes a cigarette after lunch*. See Section 2.1 for details.

John's habit (e.g., he went to work by bus from 1982 to 1987), which corresponds to a perfective interpretation. The forms with *used to* and *would*, on the other hand, can only be interpreted imperfectively—that is, both versions of (10b) are infelicitous in the latter scenario, where John only took the bus to work for one portion of the eighties (Boneh & Doron 2010 supplement the frame adverbial test with the durative adverbial test and punctual when-clauses, all of which yield the same results).

- (10) a. *In the eighties, John went to work by bus.*
 b. *In the eighties, John used to/would go to work by bus.*

The Hebrew *hyy*, similarly to *used to* and *would*, does not license a perfective interpretation. In (11), the durative adverbial 'for three years' cannot encompass the whole habit, which needs to extend throughout Dani's youth. The only available interpretation is that the habit encompasses multiple events of working in the garden for three years (i.e., the adverbial modifies every (iterated) working event rather than the habit as a whole), which is too long a period for a single episode of working in the garden (replacing three years with three hours yields a felicitous result; Boneh & Doron 2008).⁸

- (11) **bi-ne'ur-av dani hay-a 'oved b-a-gina be-mešex šaloš šanim.*
 in-youth-his Dani HYY.PST-3SG.M work.SG.M in-the-garden in-duration three years
 *'In his youth, Dani used to work in the garden for three years.'
 (Boneh & Doron 2008: 333)

The Croatian *bi* 'would' forces an imperfective interpretation as well: similarly to the Hebrew example in (11), (12) only allows an interpretation in which, during the eighties, Zrinka was involved in multiple working-in-the-garden events that lasted for three years, an infelicitous interpretation. As in Hebrew, replacing years with hours yields a felicitous outcome in that it allows the adverbial to modify the embedded (iterated) event.

- (12) #*U osamdesetima bi Zrinka pune tri godine radila u vrtu.*
 in eighties would Zrinka full three years work.PTCP.SG.F in garden
 #'In the eighties, Zrinka would work in the garden for three whole years.'

Finally, *znati* licenses both an imperfective and a perfective interpretation (see also Chapter 2): the three years in (13a) can describe the duration of the habit rather than the individual episodes, yielding a perfective interpretation. At the same time, leaving out the adverb makes an imperfective interpretation accessible, according to which Zrinka occasionally worked in

⁸ I have adopted Boneh & Doron's (2008) marking of the example as ungrammatical, even though their description suggests that a # might be more appropriate, and would in addition fit the judgements that they give in subsequent work for parallel examples in English.

the garden throughout the eighties and possibly beyond. The German *pflügen* is similarly permissive: the sentence in (13b) allows both interpretations as well.

- (13) a. *U osamdesetima je Zrinka (pune tri godine) znala raditi u*
 in eighties AUX.3SG Zrinka full three years know.PTCP.SG.F work.INF in
vrtnu.
 garden
 ‘In the eighties, Zrinka occasionally worked in the garden (for three whole years).’
- b. *In den achtziger Jahren pflegte Nora (drei Jahre lang) im Garten zu*
 in the eighties years PFLEG.PST.3SG Nora three years long in.the garden to
arbeiten.
 work.INF
 ‘In the eighties, Nora had the habit of working in the garden for three years.’
- (A. Ludwig, p.c.)

Just like iterativity, viewpoint aspect splits the complex habitual expressions into two groups, but with a different distribution, shown in Table 3.2 (as before, the property shared by more expressions is highlighted in light gray). This time, *used to* and *hyy* pattern together with *would* and *bi* in only allowing an imperfective interpretation, while *znati* and *pflügen* are more flexible and, just like the simple habitual aspect, license both interpretations. Taken together, iterativity and viewpoint aspect yield a three-way split (ignoring the incompatibility of *hyy* with individual-level predicates): *hyy* and *used to*, *would* and *bi*, and *znati* and *pflügen*, which pattern with the simple habitual.

	Hebrew	English		Croatian		German	English
	<i>hyy</i>	<i>used to</i>	<i>would</i>	<i>bi</i>	<i>znati</i>	<i>pflügen</i>	SIMPLE
Non-iterative	ok	ok	*	*	*	*	*
States	ok	ok	*	*	*	*	*
ILPs	*	ok	*	*	*	*	*
Viewpoint	IPFV	IPFV	IPFV	IPFV	IPFV & PFV	IPFV & PFV	IPFV & PFV

Table 3.2. Aspect

3.3 Genericity

Another category that has been linked to habituality is genericity: Krifka et al. (1995), for instance, treat habituality as a subtype of genericity (see also Dahl 1975). Boneh & Doron (2013), building on Lenci (1995), argue for a distinction between the two, noting that (simple) generic sentences are different from (simple) habitual ones in that they are quantificational and require an overt restrictor ((14), repeated from (5) in Chapter 2).

- (14) a. *Lewis smokes.* HABITUAL
 b. *Alice smokes a cigarette #(after dinner).* GENERIC

Would, just like generic sentences, requires a restrictor, which may be either overt (15a) or contextually salient (Boneh & Doron 2013), and the same is true of the Croatian *bi* (15b). Similarly to simple generic sentences, *would* and *bi* are quantificational: in (15a) and (15b), all events of people going to the opera in the good old days are also events of people dressing elegantly to go to the opera in the good old days.

- (15) At the opera.
 a. *Look at how sloppily people are dressed. In the good old days, people would dress elegantly #(to go to the opera).* (Boneh & Doron 2013: 177)
 b. *U dobra stara vremena, ljudi bi se #(za operu) obukli elegantno.*
 in good old times people would SE for opera dress.PTCP.PL elegantly
 ‘In the good old days, people would dress elegantly to go to the opera.’

The Croatian *znati* and the German *pfliegen* are not universal quantifiers; as evident from examples throughout this thesis, they do not require a (contextual or explicit) restrictor and can be uttered out of the blue, similarly to the English *used to* and Hebrew *hyy*. This is summarised in Table 3.3, revealing the third (and final) two-way split among complex habitual expressions: only *would* and *bi* require an overt restrictor, none of the other expressions do.

	Hebrew	English		Croatian		German	English
	<i>hyy</i>	<i>used to</i>	<i>would</i>	<i>bi</i>	<i>znati</i>	<i>pfliegen</i>	SIMPLE
Non-iterative	ok	ok	*	*	*	*	*
States	ok	ok	*	*	*	*	*
ILPs	*	ok	*	*	*	*	*
Viewpoint	IPFV	IPFV	IPFV	IPFV	IPFV & PFV	IPFV & PFV	IPFV & PFV
Restrictor	/	/	yes	yes	/	/	/

Table 3.3. Genericity

3.4 Modality & evidentiality

As shown in Chapter 2, simple habitual sentences in principle require no more than a disposition: for (16) to be true, no event of crushing oranges needs to take place; it suffices that the machine is constructed to crush oranges. The simple habitual can therefore be characterised as modal (Boneh & Doron 2010, 2013): the event described does not need to occur in the real world, but may occur only in modal worlds (those in which dispositions get actualised).

(16) *This machine crushes oranges.*

None of the complex habitual expressions behave in such a ‘purely’ modal way. They all require actualisation of at least one event of the kind denoted by the embedded predicate and differ with respect to the extent to which the embedded (recurring) event needs to be instantiated in the real world.

Actualization of a single *initiating event* suffices for *would* (and *bi*), but not for *used to* or *hyy*, which require that an event be iterated (or a state hold) in the actual world (Boneh & Doron 2010, 2013). In a scenario such as (17), *would* (17a) and *bi* (17b) allow the speaker to extrapolate to possible worlds: if Ruti had not died, she would have continued to go to work by bus (at least in worlds in which she keeps to her decision), and it is enough for Ruti to continue going to work by bus in (ideal) modal worlds in which she does not die for (17a,b) to be true. In contrast, in order for the sentences in (17c) (with *used to*) and (17d) (with *hyy*) to be uttered truthfully, Ruti needs to have gone to work by bus multiple times in the actual world. (The exact number of Ruti’s trips to work by bus which licenses the use of these expressions is difficult to determine and depends on extralinguistic factors; see Section 2.1 and the discussion in Comrie 1976: 28.)

(17) Ruti started a new job. She decided to go to work by bus. She only went there once, and shortly after that she died. In a eulogy, one could say:

a. *Ruti was such a modest person. She would go to work by bus.*

(Boneh & Doron 2013: 188)

b. *Ruti je bila tako skromna. Išla bi na posao autobusom.*
 Ruti was be.PTCP.SG.F so modest go.PTCP.SG.F would on work bus.INSTR
 ‘Ruti was so modest. She would go to work by bus.’

c. *Ruti was such a modest person. #She used to go to work by bus.*

(Boneh & Doron 2013: 188)

d. *#ruti hay-ta nosa’ a-t la-a’ voda ba-otobus*
 Ruti HYY.PST-3SG.F go-SG.F to-work by-bus
 ‘Ruti used to go to work by bus.’

(Boneh & Doron 2010: 355)

The habitual-like *znati* and *pfliegen* display behaviour that places them between *used to/hyy* and *would/bi*. In particular, a configuration with *znati* cannot be used in the scenario in (17), but may describe a scenario in which at least one event is actualised and, from the speaker’s perspective, there is nothing that would speak against recurrence in the actual world. Seen slightly differently, if modality is involved, it is tied to the worlds that are compatible with what the speaker knows about the actual world. For instance, in a modified context such as (18), a configuration with *znati* can be used truthfully. *Pfliegen* behaves in a similar way: the possibility of repetition in the real world (in light of Ruti’s decision) makes a decisive difference.⁹

9 For some speakers, (18b) might be uttered in the described scenario, but if it later turns out that Ruti had in

(18) Ruti started a new job. She decided to go to work by bus. I know that she took the bus to work at least once (e.g., I met her on the bus, she called me from the bus, ...), but I do not know whether she took the bus again. She died shortly after that.

a. *Ruti je znala ici na posao autobusom.*
 Ruti AUX.3SG know.PTCP.SG.F go.INF on work bus.INSTR
 ‘Ruti (occasionally) went to work by bus.’

b. *Ruti pflegte mit dem Bus in die Arbeit zu gehen.*
 Ruti PFLEG.PST.3SG with the bus in the work to go.INF
 ‘Ruti had the habit of going to work by bus.’

(A. Ludwig, p.c.)

The different behaviour of complex habitual-like expressions brings to mind the category of (inductive) evidentiality, already mentioned in connection with *znati* in Section 2.2. Evidentiality is related to habituality as well (see Carlson 1995, Klimek-Jankowska 2012, and the discussion in Section 2.1): at least some simple habitual sentences involve an evidential-like component in that they express generalisations that emerge by means of induction based on limited observations about the real world.

As one would expect if induction based on evidence is involved in configurations with *znati* and *pflegen*, at least one event needs to be actualised in the real world—a disposition is not enough. In order to describe a brand new vacuum cleaner robot that has never been used, one can utter (19a) but not (19b), the latter only being felicitous if the robot has actually engaged in vacuuming. That is, (19a) may be interpreted in a purely modal way (involving at most inferences based on indirect evidence such as the machine’s anatomy), whereas (19b) requires evidence of the robot’s behaviour in the real world.

(19) a. *Dieser Roboter saugt staub.*
 this robot draws dust
 ‘This robot vacuums.’

(A. Ludwig, p.c.)

b. *Dieser Roboter pflegt staub zu saugen.*
 this robot pflegen.3SG dust to draw
 ‘This robot has the habit of vacuuming.’

(A. Ludwig, p.c.)

Znati, too, requires actualisation. While (20a) can be used to describe a machine that is made for crushing oranges but has never done so, (20b) is false if the machine has never crushed an orange, and only true if the machine in fact occasionally crushes oranges.

(20) a. *Ovaj stroj gnječi naranče.*
 this machine crushes oranges

reality taken the bus only once, (18b) would be judged false in retrospect, suggesting that there are pragmatic factors at play (D. Buring, p.c.). As for *znati*, I hesitate to judge (18a) as false in retrospect under the described conditions. This suggests that the infelicity of *znati* in (17) might be due to pragmatic, rather than semantic reasons, and that there are differences between *znati* and *pflegen* with respect to the actualisation requirement. I leave these observations aside for the time being and return to them in Section 4.3.1.

‘This machine crushes oranges.’

- b. *Ovaj stroj zna gnječiti naranče.*
 this machine know.3SG crush.INF oranges
 ‘This machine occasionally crushes oranges.’

Note that (20b) can be interpreted in two ways: either as an ironic comment on a machine that is supposed to crush oranges but is broken and only manages to fulfill its function occasionally, or as a statement about a machine that is made for something other than crushing oranges. That is, one would not use the sentence in (20b) to describe a working orange-crushing machine.¹⁰ This is different from the German *pflügen*: whether the robot is made for vacuuming or not does not play a role for the felicity of the example in (19b).

I suggest that this difference between *znati* and *pflügen* may provide insights about the evidential aspect of *znati* in comparison to other habitual-like expressions. The inferential component of the simple habitual (as well as *would*, *bi*, and *pflügen*) is directed towards inferring *regularities* and is thus modal-like (cf. the reference to a “characteristic” feature in Comrie 1976 or to nomic/non-accidental generalisations in Dahl 1975 and Carlson 1995). The configuration with *znati*, on the other hand, might best be described as requiring evidence *against* a (default) state of affairs and inferring towards *exceptions*.¹¹ I return to this point and discuss it in more detail in Chapter 4.

The actualisation requirement, coupled with the possibility of extrapolation, yields a three-way split among complex habitual-like expressions, illustrated in Table 3.4. (The simple habitual is special in that it is licensed by a mere disposition as well.) English *used to* and Hebrew *hyy* require actualisation of the described state or recurring event, pointing towards the absence of modality. For *would* and *bi*, a single initiating event suffices if recurrence happens in ideal modal worlds, suggesting that modality is involved. Finally, the requirements of *znati* and *pflügen* can be described as requiring at least one occurrence in the actual world. Descriptively, a single occurrence suffices if recurrence (in the real world) is possible, either because the observed event indicates the existence of a regularity which would lead to recurrence or because, from the speaker’s perspective, nothing speaks against recurrent instantiation. I return to these observations in Chapter 4.

¹⁰ Nevertheless, the sentence is not false in such a scenario, but at most deviant. Similarly to the observations in footnote 9, this seems to point towards a pragmatic component (see Section 4.3.2 for discussion).

¹¹ I thank S. Kovač for pointing me into this direction.

	Hebrew	English		Croatian		German	English
	<i>hyy</i>	<i>used to</i>	<i>would</i>	<i>bi</i>	<i>znati</i>	<i>pflegen</i>	SIMPLE
Non-iterative	ok	ok	*	*	*	*	*
States	ok	ok	*	*	*	*	*
ILPs	*	ok	*	*	*	*	*
Viewpoint	IPFV	IPFV	IPFV	IPFV	IPFV & PFV	IPFV & PFV	IPFV & PFV
Restrictor	/	/	yes	yes	/	/	/
Actualisation	yes	yes	INIT	INIT	≥ 1	≥ 1	INIT/disp

Table 3.4. Actualisation

3.5 Summary

The properties hitherto investigated yield three subcategories of habituality, summarised in Table 3.5. The first subcategory, which I will call *aspectual* habituality (to reflect the analysis in Boneh & Doron 2010, 2013; see Chapter 4), comprises the Hebrew *hyy* and English *used to*. These expressions do not require the embedded predicate to be iterated and are hence compatible with both dynamic and stative predicates. They can only be interpreted imperfectively, do not require a restrictor, but do require that the embedded state or repeated event be instantiated in the actual world. English *would* and its Croatian counterpart *bi* form the subcategory of *generic* habituality and display properties which are almost entirely the opposite when compared to the first class: the embedded predicate obligatorily needs to be iterated, but may occur in the real world only once, shifting recurrence to modal worlds. They require an overt restrictor, a property that they share with simple generic sentences (see Section 2.1) and, just like *used to* and *hyy*, they only allow an imperfective interpretation. Finally, the Croatian *znati* and German *pflegen*, members of the class I will call *iterative*, pattern with *would* and *bi* in requiring iterativity and are like *used to* and *hyy* in not requiring a restrictor. They require the embedded event to be actualised at least once and, unlike the other groups, they may be interpreted either perfectly or imperfectively.

	Hebrew	English		Croatian		German	
	ASPECTUAL <i>hyy</i>	<i>used to</i>	GENERIC <i>would</i>	<i>bi</i>	ITERATIVE		
			<i>would</i>	<i>bi</i>	<i>znati</i>	<i>pflegen</i>	
Non-iterative	ok	ok	*	*	*	*	
States	ok	ok	*	*	*	*	
ILPs	*	ok	*	*	*	*	
Viewpoint	IPFV	IPFV	IPFV	IPFV	IPFV & PFV	IPFV & PFV	
Restrictor	/	/	yes	yes	/	/	
Actualisation	yes	yes	INIT	INIT	≥ 1	≥ 1	

Table 3.5. Three types of complex habitual expressions

The different clusters of properties displayed by the complex habitual-like expressions make

it difficult to settle for a universal definition of habituality. Treating iterativity as the defining property would exclude the aspectual class from the domain of habitual-like expressions, but would not yield a uniform category, since the generic and the iterative class behave differently with respect to, e.g., the actualisation requirement. A view of habituality as a subtype of imperfectivity, on the other hand, would exclude the iterative class, begging the question of why the remaining two classes (aspectual and generic) differ with respect to the iterativity requirement—and why the (included) generic and (excluded) iterative class share this property. An aspect of meaning that all these expressions appear to share and that thus may be used to characterise habituality in an informal way is that a given state of affairs holds for an extended period of time—a characterisation very similar to Comrie's (1976) (see Section 2.1) modulo the requirement that the state of affairs be 'characteristic' of this period. It is left open, however, how long a period needs to be to count as extended, as well as whether the state of affairs in question must consist of recurring events or may be a temporally extended (non-derived) state, whether it may be accidental or has to be rule-like, whether it includes or is included into a given reference time, or to which extent it must be realised in the actual world. I thus suggest that habituality be treated as a heterogeneous category consisting of several subclasses: simple habitual expressions (with possible further divisions; see Section 2.1) and complex habitual expressions, comprising the aspectual, generic, and iterative class.

4 Three types of complex habitual expressions

The previous chapter established three classes of complex habitual expressions: *aspectual* (English *used to* and Hebrew *hyy*, lit. ‘be’), *generic* (English *would* and Croatian *bi* ‘would’), and *iterative* (Croatian *znati*, lit. ‘know’, and German *pflegen*, lit. ‘cultivate’). This chapter explores the three classes in more detail and discusses the analyses that have been proposed in the literature for (expressions belonging to) each class. For the aspectual class (Section 4.1), I adopt the analysis of Boneh & Doron (2010) (based on Binnick 2005) in terms of retrospective aspect. Section 4.2 turns to the generic class, largely relying on the analysis in Boneh & Doron (2013), which involves a combination of a habitual and a generic operator. Finally, Section 4.3 puts the iterative class under the microscope. The properties of *znati* and *pflegen* are compared in more detail (Section 4.3.1), in particular with respect to the role of modality. While iterativity is central for both *pflegen* and *znati*, I show that *pflegen* is more modal-like and, building on Jędrzejowski (2021), propose that it combines with a habitual operator. As for *znati*, I conclude that it is not modal but that the possibility of extrapolation arises due to its lexical meaning (roughly, mental acquaintance), which applies to the speaker and yields an evidential-like flavour (Section 4.3.2). The discussion of the iterative class closes with remarks on the sporadic use of English *can* (e.g., Boyd & Thorne 1969) and its French counterpart *pouvoir* (e.g., Kleiber 1983), which behave very much like the habitual-like *znati* (Section 4.3.3). Section 4.4 concludes.

4.1 The aspectual class

Following Binnick (2005), Boneh & Doron (2010) analyse *used to* and *hyy* as markers of complex retrospective aspect—hence *aspectual* habituality. In addition to speech time, reference time, and event time, complex aspects introduce a fourth category, *perspective time*, and determine its relation to reference time. An example of a complex aspect is the perfect, which includes perspective time into reference time. Boneh & Doron (2010: 49f.) propose that the habitual retrospective aspect shifts the reference time to precede perspective time—much like the past tense shifts the reference time to precede speech time. This shift is illustrated with the help of the adverb *now*, shown in (1). Following Kamp & Reyle (2013), Boneh & Doron (2010) take *now* to pinpoint perspective time and imply that the sentence in which it occurs “describes a state holding at [perspective time]” (Kamp & Reyle 2013: 599)—the ‘now’. In (1a), such an interpretation is possible: past tense requires that the reference time be before speech time,

but makes no requirement with respect to the relation between reference and perspective time. These two points thus may overlap, and the sentence may describe a state which holds at perspective time ('now'), yielding a felicitous result. In contrast, *used to* requires reference time to precede perspective time. The sentence in (1b) thus states that the habit of going to work holds at reference time, *prior to* and not *at* perspective time. This is at odds with 'now', yielding an ungrammatical result.

- (1) a. *Mary was very happy. She now went to work by bus.* (Boneh & Doron 2010: 49)
 b. *Mary was very happy. *She now used to go to work by bus.* (Boneh & Doron 2010: 49)

Boneh & Doron (2010) propose that what looks like past morphology is in fact a reflection of retrospectivity—shifting the reference time with respect to perspective, rather than speech time. This is in line with the inability of *used to* to be shifted in sequence of tense contexts: only (2a), but not (2b), is compatible with a scenario in which Mary has the habit of playing tennis at the time of John's utterance.

- (2) a. *John assured us that Mary played tennis twice a week.* (Boneh & Doron 2010: 50)
 b. *John assured us that Mary used to play tennis twice a week.* (Boneh & Doron 2010: 50)

Regarding the properties of *used to* and *hyy* described in Chapter 3, the requirement that the embedded event (or state) be actualised and the lack of a restrictor follow because these expressions are neither modal nor quantificational. The lack of an iterativity requirement is also accommodated, since there is nothing about retrospective aspect that would require repeatability: both states and repeated events may hold at a given time. As for the restriction to imperfectivity, Boneh & Doron (2010) seem to propose that retrospective aspect selects imperfective predicates (either states or iterated events). It is thus not *used to* itself that is interpreted as imperfective, but the embedded predicate, and the role of *used to* is to shift the reference time with respect to perspective time, leaving the viewpoint aspect intact.

4.2 The generic class

Boneh & Doron (2013) analyse *would* as a type of generic operator. Since its Croatian counterpart, *bi*, behaves identically with respect to all the properties discussed in Chapter 3, I suggest that it can be analysed in the same way. For Boneh & Doron (2013), a simple generic operator at work in sentences such as (3) is a modal universal quantifier and as such, requires a restrictor. It quantifies over the individuals (including events) in its restrictor and is true iff all individuals in its restrictor are, in a given set of modal worlds, also individuals to which the property denoted by the predicate in the matrix applies. Put differently, if the predicate in the restrictor is P and the main predicate is Q, then a generic sentence is true iff all P-individuals

are also Q-individuals in a given set of modal worlds. Thus, (3) is true iff all events of Alice after dinner are also events of Alice smoking a cigarette after dinner in a given set of modal worlds.

(3) *Alice smokes a cigarette after dinner.*

Boneh & Doron (2013) propose that *would* is similar to the generic operator, but allows the restrictor to be provided by the context. In particular, for the habitual *would*, the restrictor corresponds to a “contextually given” habit (Boneh & Doron 2013: 183). Just like the simple generic operator, *would* universally quantifies over individuals or occasions in its restrictor, but also over (ideal) modal worlds: a sentence with habitual *would* is true iff every event or individual in their restrictor is also, in a given set of modal worlds, an event or individual to which the property denoted by the main predicate applies (as above, every P-individual is also a Q-individual in a given set of modal worlds). The sentence in (4) is then true iff all events of people going to the opera in the good old days are also events of people dressing elegantly to go to the opera in the good old days, in a given set of modal worlds.

(4) *In the good old days, people would dress elegantly to go to the opera.*

(Boneh & Doron 2013: 176)

Chapter 3 established that *would* and *bi* are restricted to an imperfective interpretation, that they require the embedded predicate to apply to multiple occasions or individuals (i.e., be iterated), and that a single initiating event suffices in order for a proposition with *would* or *bi* to be true. Starting from the end, this last property (i.e., that a single actual occurrence of the habit is sufficient) follows from *would* having access to (ideal) modal worlds. In (5) (repeated from (17) in Chapter 3), *would* has access to worlds in which Ruti does not die: the sentence is true iff every event of Ruti going to work is also an event of Ruti going to work by bus *in a given set of modal worlds*—those in which Ruti does not die (and keeps to her decisions).

(5) Ruti started a new job. She decided to go to work by bus. She only went there once, and shortly after that she died. In a eulogy, one could say:

Ruti was such a modest person. She would go to work by bus. (Boneh & Doron 2013: 188)

That an initiating event nevertheless needs to occur in the actual world (and a mere disposition does not suffice) may be tied to the restrictor, which includes a contextually given habit. Even if habitual expressions alone may be true in virtue of a mere disposition, the habit in the restrictor of *would* needs to be contextually (or explicitly) given, and as such, needs to have at least started in the actual world (it is unclear how something could be contextually given without being actualised).

Turning to the iterativity requirement, Boneh & Doron (2013) account for it by postulating

that the generic operator and, by extension, *would*, requires an *episodic* restrictor (which excludes states and individual-level predicates per definition). A similar assumption is made by Krifka et al. (1995), who propose that the generic operator needs to bind a situation variable, lacking in stative and individual-level predicates. Statives and individual-level predicates thus must either be coerced into an episodic (i.e., repeatable) reading or applied to multiple individuals. This analysis, while correctly accounting for the behaviour of *would*, remains stipulative: Boneh & Doron (2013) do not give a reason why the restrictor of *would* should be episodic, nor do Krifka et al. (1995) explain why the generic operator would be sensitive to situation variables. Recall, however, that Boneh & Doron (2013) propose that the restrictor of habitual *would* includes a contextually given habit, encoded by means of the habitual operator. Now, the habitual operator in Boneh & Doron's (2013) analysis is iterative; as such, it requires events (or individuals) to be repeated (in modal worlds).¹ I thus suggest that the culprit responsible for the iterativity requirement is the habitual operator in the restrictor: by requiring repetition, it forces *would* to quantify over repeated occurrences of events of individuals. As a consequence, the predicate embedded under *would* also needs to be iterated. That is, there is nothing about *would* itself that forces iterativity; rather, *would* inherits this property from the habitual operator in its restrictor.

Strictly speaking, then, there is no habitual *would* (or *bī*) under this analysis; rather, its habitual flavour results from the habitual operator in its restrictor. In other words, *would* can be seen as underspecified—as a modal universal quantifier that assumes different interpretations depending on the context, as also noted by Boneh & Doron (2013: 177) (e.g., as is well known, *would* also appears in counterfactual conditionals). This property is reminiscent of the various uses of the Croatian *znati* noted at the very outset of this thesis, and will be taken up in the syntactic analysis in Chapter 5.

The restriction to imperfective aspect does not follow from any part of the analysis, however. The habitual operator in the restrictor is of no avail here, since simple habitual sentences are compatible with either a perfective or an imperfective interpretation (Boneh & Doron 2010). I thus tentatively suggest that, analogously to *used to*, *would* selects for imperfective aspect and leave this issue open here.

4.3 The iterative class

According to the properties investigated in Chapter 3, habitual-like configurations with the Croatian *znati*, lit. 'know', and the German *pflügen*, lit. 'cultivate, nurse', pattern almost exactly like simple habitual sentences: the embedded predicate needs to be iterated, they are

¹ The notion of *iterativity* is perhaps not best suited to describe the fact that individual-level predicates become acceptable if applied to multiple individuals, but the connection perhaps becomes more intuitive if iterativity is conceived of as event *plurality* (as in fact done by Boneh & Doron 2010; see also Van Geenhoven 2004), a term more easily applicable to individuals (see also Chapter 3).

free with respect to viewpoint aspect, and they require no restrictor. Indeed, Jędrzejowski (2021) analyses *pflegen* identically to Boneh & Doron's (2013) analysis of the simple habitual operator.² In addition to requiring a disposition or an initiating event, Boneh & Doron's (2013) habitual operator involves an iterative component as well. Including the habitual operator in the analysis of *pflegen* thus makes iterativity central to it, and I propose that habitual-like *znati*, too, crucially involves an iterative component (see Section 4.3.2 and Chapter 5 for details). The requirement that the embedded predicate be applied to multiple events or individuals then follows straightforwardly: due to the iterative component, it needs to describe recurring occasions or (in a more abstract sense) individuals.

In sum, the core property of *znati* and *pflegen* is iterativity, which they share with simple habitual expressions. As for the other shared properties, the compatibility of *pflegen* and *znati* with either a perfective or an imperfective interpretation may be captured if they are situated below the functional head responsible for viewpoint aspect and can thus be manipulated, and the absence of a restrictor follows from these expressions not being quantificational. The sole property that distinguishes the iterative class from the simple habitual is actualisation: the simple habitual only requires a disposition for the habit to be instantiated in the actual world, whereas *znati* and *pflegen* both require at least one occurrence of the actual recurring event. In addition, *znati* and *pflegen* diverge between themselves with respect to the regularity of repetition. Scrutinising these properties in more detail is the task of this section, inspecting first the similarities and differences between *znati* and *pflegen* (Section 4.3.1), and then zooming in on *znati* (Section 4.3.2), with a particular focus on its modal and evidential properties.

4.3.1 *Pflegen* vs. *znati*

Event recurrence with *znati* can be not only irregular and accidental (*sporadic* in Hellman's 2005 terms) but also scarce. The German *pflegen*, in contrast, requires more regular recurrence. For instance, as shown in (6), seeing a single green-eyed mathematician licenses a conclusion involving *znati*, but not one involving *pflegen*.

- (6) I meet a mathematician and notice that she has green eyes. Based on this, I can conclude:
- a. *Matematičarke znaju imati zelene oči.*
 mathematicians know.3PL have.INF green eyes
 'Mathematicians occasionally have green eyes.'
 - b. *#Mathematikerinnen pflegen grüne Augen zu haben.*
 mathematicians PFLEG.3PL green eyes to have
 '#Mathematicians usually have green eyes.'
- (A. Ludwig, p.c.)

As a further illustration, consider the scenario in (7). A German-speaking flatmate can

² In Section 4.3.1, I suggest a slightly different analysis of *pflegen*—as *including*, but not being reduced to, the habitual operator.

answer both (7a) and (7b) (depending, of course, on Viki's eating habits). If the conversation is taking place in Croatian, the flatmate may utter (7c), but will utterly confuse Nora by uttering (7d)—fine, Viki occasionally eats vegetarian, but why should this speak against preparing a meat dish? In fact, (7d) seems to imply that Viki is *not* vegetarian, but sometimes eats vegetarian food (in contrast to the German (7b), which, despite being compatible with Viki sometimes eating meat, conveys that she normally eats vegetarian).

(7) Viki is coming over for dinner and Nora asks her flatmate whether it's a good idea to prepare a meat dish for her.

- a. *Ja klar, Viki pflegt Fleisch zu essen.*
yes clear Viki PFLEG.3SG meat to eat
'Sure, Viki usually eats meat.' (A. Ludwig, p.c.)
- b. *Lieber nicht, Viki pflegt vegetarisch zu essen.*
rather NEG Viki PFLEG.3SG vegetarian to eat
'Rather not, Viki usually eats vegetarian.' (A. Ludwig, p.c.)
- c. *Zašto ne, Viki zna jesti meso.*
why NEG Viki know.3SG eat.INF meat
'Why not, Viki occasionally eats meat.'
- d. *#Bolje ne, Viki se zna hraniti vegetarijanski.*
better NEG Viki SE know.3SG feed.INF vegetarian
'#Rather not, Viki occasionally eats vegetarian.'

Finally, both *znati* and *pflegen* are incompatible with individual-level predicates applied to a single individual (see Chapter 3). The sentences in (8) provide a further illustration: anyone with a rudimentary knowledge of chess rules knows that the bishop moves across the chessboard diagonally—and, crucially, *exclusively* diagonally, making this an individual-level property of the bishop and thereby incompatible with *pflegen* and *znati*. However, given a context in which a learner of chess moves the bishop to the right, the more experienced player might utter (8a) in order to remind the learner of the rule in a playful, slightly ironic, or evaluative way (A. Ludwig & S. Wurmbrand, p.c.), but such a usage is not possible for the Croatian sentence in (8b).

- (8) a. *#Der Läufer pflegt diagonal zu ziehen.*
the bishop pflegen.3SG diagonally to move.INF
'#The bishop usually moves diagonally.' (Jędrzejowski 2021: 1478)
- b. *#Lovac se zna kretati dijagonalno.*
bishop SE know.3SG move.INF diagonally
'#The bishop moves diagonally now and then.'

All these examples point towards the (descriptive) conclusion that the German *pflegen* is more rule-like than *znati*. Colomo (2011) treats *pflegen* as a stereotypical modal expressing regularities, and Jędrzejowski (2021), in analysing *pflegen* as entirely equivalent to the sim-

ple habitual, includes a modal component in his analysis as well, in addition to iterativity (which, as noted above, causes incompatibility with non-iterated states and individual-level predicates). However, *pflegen*, while largely overlapping with the simple habitual, differs from it in (at least) one important respect: unlike the simple habitual, *pflegen* requires that the iterated event be instantiated (possibly even multiple times; see footnote 9 in Chapter 3) and is not satisfied with a simple disposition (see also Colomo 2011). I therefore propose that Jędrzejowski's (2021) analysis should be slightly modified: *pflegen* is not equivalent to the habitual operator; rather, it *combines* with the habitual operator. The rule-like modal quality of expressions with *pflegen* (as well as iterativity) is then due to the habitual operator, and *pflegen*, almost fully grammaticalised, requires that the habit be at least partly instantiated in the real world. Regarding the evidential-like behaviour (inferring regularities from limited observations), I suggest that no evidential component as such is involved; rather, it is the presence of the simple habitual operator that, just like in the simple cases, licenses inductive inference of rule-like generalisations based on limited evidence (in the sense of Carlson 1995, Klimek-Jankowska 2012; see Section 2.1).

4.3.2 How modal is *znati*?

Znati, in contrast to *pflegen*, does not require the iteration of the embedded event to be either regular or rule-like. This speaks against both a modal component and the presence of the habitual operator à la Boneh & Doron (2013). Moreover, including *znati* into the domain of habituality runs counter to the view that habitual expressions express nomic or law-like generalisations (e.g., Dahl 1975, Carlson 1995). However, not all researchers treat modality as central for habituality and the iterative component makes *znati* similar to Van Geenhoven's (2003) class of *pluractional* (or *true*) habituals, aligning with her view of habituality as a special case of iterativity (see also Lenci 1995). Nevertheless, *znati* displays some properties that make it akin to modal expressions, in particular its resistance to negation and the evidential component, which I address in turn. Despite this superficial similarity, *znati* is shown to behave differently from other modal expressions, supporting the conclusion that *znati* is not modal. The only potentially modal component present in habitual-like *znati* is related to its evidential flavour and the use of *znati* as an attitude verb, if attitude verbs are treated in the classical way, as quantifiers over the attitude holder's belief worlds (Hintikka 1969).

4.3.2.1 Negation & positive polarity

Recall from Section 2.2 that the habitual-like *znati* cannot be negated, as shown in (9).³ With animate subjects, negated *znati* may in principle be understood as a mental ability modal: the sentence in (9a) may mean that Irena does not know how to be late, a very curious (in)ability.

³ Low negation as in (i) is possible, but this might be constituent negation. Since differentiating between sentential and constituent negation is notoriously difficult, I set this issue aside.

A similar problem arises in (9b): drawers are not sentient, so stating that they do not know how to get stuck is odd unless we are in a fictional world where drawers have mental abilities.

- (9) a. #*Irena ne zna zakasniti.*
 Irena NEG know.3SG be.late.INF
 Lit. ‘Irena does not know to be late.’ #ABILITY, *HABITUAL-LIKE
- b. #*Ove ladice ne znaju zapeti.*
 these drawers NEG know.3PL get.stuck.INF
 Lit. ‘These drawers don’t know to get stuck.’ #ABILITY, *HABITUAL-LIKE

Resistance to negation can be found in the modal domain as well. Iatridou & Zeijlstra (2013) examine modal polarity items in a number of languages, including English, Dutch, Greek, and Spanish. They show that there are modals that behave like *Negative Polarity Items* (NPIs) and those that behave like *Positive Polarity Items* (PPIs). Examples of modal NPIs are the English *need* (with a bare infinitive) or its Dutch counterpart *hoeven*, illustrated in (10a). Both of them are necessity modals and need to appear in the scope of negation. Modal PPIs include, for instance, the English *must* and its Greek counterpart *prepi*, illustrated in (10b). These necessity modals show the opposite behaviour in that they may appear in positive contexts (i.e., without negation) and if negation is present, they scope over it. This latter class is different from *neutral* modals such as English *may*, which do not require negation either, but if negation is present, as in (10c), they take narrow scope with respect to it.

- (10) a. *Je hoeft *(niet) weg te gaan.*
 you need NEG away to go
 ‘You need *(not) leave.’ NPI: $\neg > \square$ (Iatridou & Zeijlstra 2013: 531)
- b. *Dhen prepi na to kanume afto.*
 NEG must NA it do this
 ‘We must not do this.’ PPI: $\square > \neg$ (Iatridou & Zeijlstra 2013: 530)
- c. *John may (not) leave.* NEUTRAL: $\neg > \diamond$ (Iatridou & Zeijlstra 2013: 530)

The habitual-like *znati* tracks the behaviour of modal PPIs (as in (10b)). Iatridou & Zeijlstra (2013) list three negative contexts tolerated by PPIs. One of them includes metalinguistic or contrastive negation and contrastive focus. As illustrated in (11a), *znati* is compatible with contrastive negation, and the example in (11b) shows that it may co-occur with negation if contrastively focused.

- (11) a. *Nije Viktor znao naručiti limunadu, nego Vedrana.*
 NEG.AUX.3SG Viktor know.PTCP.SG.M order.INF lemonade but Vedrana
-
- (i) *Znao je danima ne izlaziti.*
 known aux days not go.out.INF
 'He used to not go out for days.'

‘It wasn’t Viktor who occasionally ordered a lemonade but Vedrana.’

- b. *Nije ZNALA dolaziti petkom; bila je samo jednom.*
 NEG.AUX.3SG KNOW.PTCP.SG.F come.INF Friday.INSTR be.PTCP.SG.F AUX only
 once
 ‘She didn’t OCCASIONALLY come on Friday; she was here only once.’

The second environment where PPIs may co-occur with negation is in the presence of intervening scope-taking elements. In (12a), it is the *because*-clause that intervenes, and in (12b), the universal quantifier (‘all classmates’).

- (12) a. *Ne zna Luka jesti zdravo jer želi nego jer mora.*
 NEG know.3SG Luka eat.INF healthily because want.3SG but because have.to.3SG
 ‘Luka doesn’t occasionally eat healthily because he wants to but because he has to.’
 $\neg > \text{because} > \text{znati}$
- b. *Nisu svi iz razreda znali igrati šah s nama (ali neki jesu).*
 NEG.AUX.3PL all from class know.PTCP.PL play.INF chess with us but some
 EMPH.AUX.3PL
 ‘Not all classmates occasionally played chess with us (but some did).’ $\neg > \forall > \text{znati}$

Finally, PPIs are also licensed if negation appears external to their clause, illustrated in (13).

- (13) a. *Ne mislim da Vedrana zna naručiti limunadu.*
 NEG think.1SG that Vedrana know.3SG order.INF lemonade
 ‘I don’t think that Vedrana occasionally orders lemonade.’ $\neg > [\text{CP} \dots \text{znati}]$
- b. *Nije točno da Viktor zna kasniti.*
 NEG.be.3SG correct that Viktor know.3SG be.late.INF
 ‘It is not true that Viktor is occasionally late.’ $\neg > [\text{CP} \dots \text{znati}]$

Iatridou & Zeijlstra (2013) make a more fine-grained distinction and split modal PPIs into weak PPIs, those of medium strength, and strong ones, corresponding to the different strengths of PPIs in the domain of individuals (such as *somebody*). The following tests reveal that *znati* is a weak PPI. PPIs of the weak kind are only blocked in antimorphic contexts (i.e., sentential negation). However, they are fine in antiadditive contexts (e.g., with quantifiers such as *nijedan* ‘not one’; (14a)) and other downward entailing contexts (e.g., *samo* ‘only’; (14b)). Both weak and medium strength PPIs may occur under negation if negation is itself embedded in a downward-entailing context (15).

- (14) a. *Nijedna ladica ne zna zapeti.*
 not.one drawer NEG know.3SG get.stuck.INF
 ‘No drawer occasionally gets stuck.’ (antiadditive)

- b. *Samo je Marko znao pjevati pod tušem.*
 only AUX.3SG Marko know.PTCP.SG.M sing.INF under shower
 ‘Only Marko occasionally sang under the shower.’ (downward entailing)
- (15) a. *Samo Zrinka nije znala igrati šah s nama.*
 only Zrinka NEG.AUX.3SG know.PTCP.SG.F play.INF chess with us
 ‘Only Zrinka didn’t occasionally play chess with us.’ only > $\neg$ > *znati*
- b. *Ako taj čovjek nije znao naručiti limunadu, onda to nije on.*
 if that man NEG.AUX.3SG know.PTCP.SG.M order.INF lemonade then that
 NEG.be.3SG he
 ‘If that man didn’t occasionally order a lemonade, then that isn’t him.’ if > $\neg$ > *znati*

Not all complex habitual-like expressions behave in this way. Though rare, negation is possible with *used to* (Tagliamonte & Lawrence 2000: 337f.), as well as with habitual *would* (16a). The Hebrew *hyy* (16b) and the Croatian *bi* (16c) may co-occur with negation as well.

- (16) a. *In these days, Mary didn’t use to / wouldn’t smoke.* (Boneh & Doron 2013: 183)
- b. *Nora lo hayta shota kafe axrey aruxat cohorayim.*
 Nora NEG was.3SG.F drink.PTCP.SG.F coffee after meal noon
 ‘Nora didn’t use to drink coffee after lunch.’ (I. Landau, p.c.)
- c. *U studentskim danima Marija ne bi pušila na proslavama.*
 in student days Mary NEG would smoke.PTCP.SG.F on parties
 ‘Back then when we were students, Mary wouldn’t smoke at parties.’

With respect to German *pflügen*, there is speaker variation, but context usually helps (17).

- (17) We are at a party and a couple of us are going out to smoke. Our friend Peter used to join us in the past and it was always fun with him, but he stopped smoking recently, so he is not joining us this time.

Schade, dass Peter nicht mehr pflegt zu rauchen.
 pity that Peter NEG more PFLEG.3SG to smoke
 ‘It’s a pity that Peter doesn’t have the habit of smoking anymore.’ (G. Pantillon, p.c.)

Iatridou & Zeijlstra (2013) propose that modal PPIs can escape negation by undergoing quantifier raising. With modals such as English *must*, which surfaces above negation, such an analysis might not be necessary, but cases such as the Greek *prepi* or Spanish *deber* (both PPIs) take wide scope with respect to negation despite surfacing below it. This is illustrated in (18a) for Greek (see also (10b) above) and (18b) for Spanish: in both cases, negation surfaces above the modal, but the modal is interpreted as scoping over it.

- (18) a. *O Yanis dhen prepi na figi.*
 the Yanis NEG must NA leave

- b. *Juan no debe ir.*
 Juan NEG must go
 ‘John must not go.’

$\Box > \neg$ (Iatridou & Zeijlstra 2013: 550)

A crucial difference to *znati* is that *znati* cannot outscope negation but is simply incompatible with it (see (9) above). According to the analysis in Iatridou & Zeijlstra (2013), this suggests that *znati*, unlike the Greek and Spanish *must*, cannot undergo quantifier raising, reinforcing the conclusion that *znati* is not modal (or quantificational).

4.3.2.2 Evidentiality and the role of pragmatics

Another property of habitual-like *znati* that borders modality is evidentiality. As shown in Chapters 2 and 3, *znati* requires the event denoted by the embedded predicate to occur in the real world at least once—in contrast to modal verbs, which do not require actualisation of the embedded event but merely assert the likelihood of its occurrence (see in particular example (10) in Section 2.2). This excludes a purely modal analysis of *znati* as well as equating it to the habitual operator (as Jędrzejowski 2021 does for *pflegen*), for which a disposition in the actual world is sufficient. The differences between *pflegen* and *znati* discussed in Section 4.3.1 weigh against a parallel analysis of these two verbs: if *znati*, like *pflegen*, was analysed as including the habitual operator, we would expect habitual-like configurations with *znati* to denote rule-like generalisations as well, contrary to fact. Pursuing this line of reasoning further, this means that the evidential-like component of *znati* cannot be analysed as being due to the inductive inferences licensed by the habitual operator (because there is no habitual operator), raising the question of how evidentiality comes into play. In exploring this question, I return to the observation made in Chapter 3 that the nature of inference with *znati* differs from inferences induced by the other habitual expressions: unlike the latter, which a speaker may use to express rule-like generalisations inferred from limited evidence, *znati* seems to convey that the speaker has evidence *against* a certain default state of affairs and has inferred that (recurring) exceptions are possible.

As an illustration, consider the examples with a negated event in (19). While (19a), a simple habitual, expresses a regularity, the sentence in (19b), in addition to asserting that the drawer occasionally does not get stuck, seems to imply that the default expectation is that the drawer does get stuck. Uttering it would thus be appropriate, say, if there is a desk whose drawers get stuck all the time, to indicate that this one particular drawer is less prone to getting stuck than the others, or as an ironic comment about a drawer that gets stuck virtually every time—but occasionally does not.

- (19) a. *Ta ladica ne zapinje.*
 that drawer NEG get.stuck.3SG
 ‘That drawer doesn’t get stuck.’

- b. *Ta ladica zna ne zapeti.*
 that drawer know.3SG NOT get.stuck.INF
 ‘That drawer occasionally doesn’t get stuck.’

A similar observation was made in Section 4.3.1 while discussing the sentence in (20) (repeated from (7)), which is infelicitous as an answer to a question about whether it is a good idea to prepare a meat dish for Viki because it implies that Viki eats vegetarian only occasionally (and regularly consumes meat), and is thus not a good elaboration of the advice that the host should ‘rather not’ prepare meat.

- (20) #*Bolje ne, Viki se zna hraniti vegetarijanski.*
 better NEG Viki SE know.3SG feed.INF vegetarian
 #‘Rather not, Viki occasionally eats vegetarian.’

Note, however, that regular recurrence is not ruled out with *znati*. In a scenario where Marin always brushes his teeth in the morning, he could get a chocolate given the conditional in (21a), just like he could get one according to (21b).

- (21) a. *Ako Marin zna prati zube ujutro, dobit će čokoladu.*
 if Marin know.3SG wash.INF teeth in.the.morning get.INF will chocolate
 ‘If Marin occasionally brushes his teeth in the morning, he will get a chocolate.’
 b. *Ako Marin ponekad pere zube ujutro, dobit će čokoladu.*
 if Marin sometimes wash.3SG teeth in.the.morning get.INF will chocolate
 ‘If Marin sometimes brushes his teeth in the morning, he will get a chocolate.’

Znati thus behaves similarly to the adverb *ponekad* ‘occasionally, from time to time’, or the quantifier *neki* ‘some’. As is well known, the ‘not all’ meaning conveyed by *some* is a scalar implicature, arising due to the tacit assumption that we always choose the strongest alternative available (see, e.g., Horn 1984). For instance, if Lewis states that Alice *sometimes* brushes her teeth in the morning, this implies that she does not *always* do so, but does not exclude the possibility; similarly, if Alice has seen *some* of the Queen’s cards, this does not exclude the possibility that she has seen *all* of them (even though it does imply that she has not). Judging by the properties of (21), the same reasoning can be applied to *znati*: even though using it implies that the embedded event does not happen regularly or every time, the possibility is not excluded. The issue with uttering (20) in the scenario described thus seems to be linked not to semantics (i.e., the truth value of the sentence), but to pragmatics (i.e., informativeness).⁴ The implication in (19b) is most likely of a pragmatic nature as well, as is the deviance of a configuration with *znati* which describes a machine doing something that it is made for doing (see example (20b) and footnote 10 in Chapter 3).

Turning to the other end of the scale and resuming with evidentiality, a single instantiation

4 I thank V. Schmitt for alerting me to examples such as (21) and the possible involvement of scalar implicatures.

of the embedded event is sufficient for the configuration with *znati* to be felicitous. As shown in (22), one instance of rain in Spain allows Igor to infer that there is a possibility that this happens now and then and allows him to use a configuration with *znati*.

- (22) Igor is travelling to Spain for the first time for his summer holiday. Upon his arrival, it starts to rain. Despite having witnessed only a single instance of rain, he can conclude:

U Španjolskoj ljeti zna padati kiša.
 in Spain in.summer know.3SG fall.INF rain
 'It occasionally rains in Spain during the summer.'

The number of occurrences required as evidence seems to vary according to the context: e.g., in a scenario such as (23), Lara's uttering the warning might be a bit odd (even though not impossible) if the drawer only got stuck once, but perfectly valid if the drawer has already got stuck twice. Importantly, it is not only the state of affairs prior to the utterance that needs to be taken into account: even if the drawer had got stuck many times, Lara would not be very likely to utter (23) if she had just repaired the drawer that morning, tried it out multiple times to make sure that it is not getting stuck, and thus does not think that it will get stuck again.

- (23) Marin and Lara are cooking dinner at Lara's place and he wants to fetch a knife from one of the drawers.

Pazi, ta ladica zna zapeti.
 be.careful that drawer know.3SG get.stuck.INF
 'Be careful, that drawer occasionally gets stuck.'

The example in (24) further illustrates the last point, *viz.*, that the repeatability of the event in the future is crucial. One can conclude (24a) after seeing a single final certificate of Zrinka's, but one cannot conclude (24b) based on seeing Zrinka's graduation certificate (assuming that you only graduate from high school once).

- (24) a. *Zrinka zna završiti razred s odličnim uspjehom.*
 Zrinka know.3SG finish.INF class with excellent success
 'Zrinka occasionally finishes the schoolyear with excellent grades.'
 b. *#Zrinka zna maturirati s odličnim uspjehom.*
 Zrinka know.3SG graduate.from.high.school.INF with excellent success
 '#Zrinka occasionally graduates from high school with excellent grades.'

The habitual-like *znati* is thus unable to embed De Swart's (1993) *once-only* predicates, which share with individual-level predicates the property that "their application to a particular individual is felicitous only once" (De Swart 1993: 65). While this restriction primarily reflects the iterative component of *znati*, it is also connected to evidentiality. In particular, these

examples suggest that world knowledge plays an important role: what is crucial is that the embedded event be *repeatable* in principle, rather than that it be actually repeated in the real world. Somewhat speculatively, the evidential component of the habitual-like *znati* might be described as follows: given the (direct or indirect) evidence for the occurrence a certain event in the actual world, the speaker may infer recurrence based on her or his knowledge of how the world works.

Returning to the question of the origin of the evidential component with habitual-like *znati*, there are several factors that may be at play. First, there is an immediate connection to the other readings of *znati*, which invoke knowledge in a more intuitive sense. The mental ability use of *znati* (cf. the English *know how to*) describes the subject's knowledge of how to bring about an event or property described by the embedded predicate. If the 'knowledge how' applies to the speaker rather than the subject, this can be connected to the above speculation that the speaker's knowledge of how the world works (or might work) could be involved in evidentiality. Seen from a different angle, a link can be made to the attitude meaning of *znati* as involving worlds compatible with the attitude holder's knowledge (following the standard analysis of attitudes as quantifiers over modal worlds; see, e.g., Hintikka 1969). In particular, just like an attitude *know* conveys that the embedded proposition is true in all the worlds compatible with the *attitude holder's* beliefs, so can the habitual-like *know* be seen as conveying that the embedded iterated event is true in all worlds compatible with the *speaker's* beliefs.

This shift from subject-orientation to speaker-orientation is a common process in diachronic development, which Traugott (1989, 1997) calls *subjectification*, noting that "[m]eanings tend to become increasingly based in the speaker's subjective belief state/attitude toward the proposition" (Traugott 1989: 35). While her focus is on epistemic modality, her description may be applied to evidentiality as well, in particular since diachronic development of verbs denoting knowledge into evidential markers has been attested (Kuteva et al. 2019: 248).

It is worth noting here that epistemic modality and evidentiality, while being closely related, are not the same (Cornillie 2009; see also Gnjatović & Matasović 2010 as well as Ricciardi 2022 for discussion). In particular, Cornillie (2009) argues that epistemic modality concerns *likelihood* of the truth of a given proposition and is intimately connected to the degree of speaker commitment to a proposition. Evidentiality, on the other hand, is about *reliability* of evidence for a given proposition, and involves elements of reasoning.

According to this distinction, *znati* behaves like an evidential, and not an epistemic modal. In the scenario in (25), Zrinka's answer conveys that she has *reliable* evidence of Petra joining the book club around seven (e.g., she has witnessed Petra coming in late at least once). However, it does not commit her to any prediction with respect to the *likelihood* of Petra joining at seven this time around as well, as shown by the felicity of the continuation: it is perfectly fine for

Zrinka to use the example with *znati* while at the same time believing that Petra will not join today at all.

- (25) Petra invited Marin to join a book club that she is part of, which meets at six every second Wednesday of the month. Marin arrives at six the following Wednesday and, at 6:30, begins to wonder where his friend Petra is. He turns to Zrinka, a regular member of the club, and asks her whether she knows anything about Petra. Zrinka may answer:

Petra zna doći tek oko sedam, ali mislim da danas neće doći.
 Petra know.3SG come.INF only around seven but think.1SG that today NEG.will
 come.INF
 ‘Petra occasionally only comes around seven, but I don’t think that she will come today.’

Further, as detailed above, *znati* requires actualisation and is perfectly felicitous in face of direct evidence (see, e.g., (22)), unlike (epistemic) modals. Two other diagnostics also speak against an analysis of *znati* as an epistemic modal.⁵ First, Papafragou (2006) argues that epistemic modal statements are ‘externally inscrutable’: in order to judge an epistemic statement as true or false, the evaluator would need to have access to the beliefs and processes of reasoning of the person who uttered the original claim. As illustrated in (26), the truth of statements including the habitual-like *znati* may be called into question. Further, if *znati* was an epistemic modal expressing the speaker’s assessment of the likelihood of the embedded proposition (see Cornillie 2009), it should leave open whether the embedded proposition is in fact true, and be compatible with a continuation stating that the embedded state of affairs possibly does not hold. As shown in (27), this is not the case: what the statement with *znati* implies is that it *occasionally* does not snow in April (27a), but not that the speaker is leaving open the *possibility* that it does not (ever) snow in April (27b).

- (26) *Točno je / nije točno da ova ladica zna zapeti.*
 correct be.3SG NEG.be.3SG correct that this drawer know.3SG get.stuck.INF
 ‘It is correct/not correct that this drawer occasionally gets stuck.’

- (27) *U travnju zna sniježiti, ...*
 in April know.3SG snow.INF
 ‘It occasionally snows in April, ...’
- a. *ali ponekad (u travnju) ne sniježi.*
 but sometimes in April NEG snow.3SG
 ‘but sometimes it doesn’t (snow in April).’
- b. *#ali možda (u travnju) (ipak) ne sniježi.*
 but maybe in April after.all NEG snow.3SG
 #‘but maybe it doesn’t (snow in April) (after all).’

⁵ These tests are inspired by the discussion of the sporadic use of the English *can* and the French *pouvoir* in Barbet & Saussure (2012); see Section 4.3.3.

Finally, the evidential flavour may be enhanced by *znati* being a raising verb (see Section 2.2), as raising has been related to evidentiality both within and beyond Croatian. For instance, the raising versions of English and German *promise* and *threaten* have been treated as (direct) evidentials (Reis 2005, Colomo 2011). Within Croatian, Gnjatović & Matasović (2010) describe raising as an evidential strategy. This is illustrated in (28) for the verb *činiti se* ‘seem’. While a finite complement as in (28a) is compatible with indirect evidence (reading about the number of suicides), a configuration involving raising to subject as in (28b) requires direct evidence, and this suggests that the speaker personally surveyed the suicides and is making an estimation based on her or his (direct) evidence.

(28) I remembered a statistics report that I read recently, according to which most suicides in Zagreb happen during the winter ...

- a. ... (*čini mi se da je prosinac najfrekventniji*).
... seems me.DAT SE that AUX.3SG December most.frequent
... it seems to me that December is the most frequent month (for suicides).
- b. ... #(*prosinac mi se čini najfrekventnijim*).
... December me.DAT SE seems most.frequent.INSTR
... December seems to me to be the most frequent month (for suicides).

(Gnjatović & Matasović 2010: 96; my judgement)

I conclude that *znati* is not an epistemic modal, but a marker of inferential evidentiality, which arises due to the lexical meaning of *znati* being applied to the speaker. The Croatian *znati* may thus be analysed as underspecified: its core meaning (roughly, mental acquaintance) manifests itself differently depending on its syntactic context. Somewhat simplified, if *znati* is merged with a finite complement or a nominal object, mental acquaintance applies to the subject, yielding the attitude or familiarity reading, respectively. If *znati* is merged with an infinitive, it assumes either the mental ability reading (‘know how’), or the habitual-like reading, where mental acquaintance applies to the speaker, resulting in an evidential-like flavour. An implementation of this idea is presented in Chapters 5 and 6.

4.3.3 Excursus: A note on sporadicity

Before concluding this chapter, I would like to make a brief digression to so-called *sporadic* uses of the English verb *can* and its French counterpart *pouvoir*, which show properties that are strikingly similar to those of the habitual-like *znati*.

For many researchers, the main reason for tying habituality with modality is to distinguish it from pure iterativity in ensuring that event recurrence in habitual expressions is not accidental but rule-like (see Section 2.1). As discussed at various places above (e.g., Section 4.3.2), this is not the case for *znati*, which allows not only irregular, but also accidental repetitions. Interestingly, while accidental (rather than law-like) iteration can be used to classify *znati* as

non-modal, it also makes a link, albeit indirect, to modality—to wit, the habitual-like *znati* shares the property of irregular recurrence with the *sporadic* use of English *can* (Boyd & Thorne 1969, Carlson 1977, Palmer 1988) and its French counterpart *pouvoir* (Kleiber 1983, Barbet & Saussure 2012), both clearly modal expressions in their most common use. (In fact, Kleiber 1983 analyses the French sporadic *pouvoir* as a modal existential adverb of quantification.)

The sporadic reading is illustrated in (29). The example in (29a), for instance, may be used to convey that cocktail parties are *sometimes* boring (Boyd & Thorne 1969—in addition to its purely modal, non-sporadic reading, which conveys that it is *possible* that cocktail parties are boring). Similarly, (29b) can mean that the person referred to *sometimes* tells awful lies, rather than stating that he is merely able to do so (in fact, under the sporadic reading, *can* cannot be replaced by *is able to*; see Palmer 1988: 113). An example with the French *pouvoir*, which allows for a parallel interpretation (i.e., that lions are *sometimes* dangerous), is given in (29c).

- (29) a. *Cocktail parties can be boring.* (Boyd & Thorne 1969: 72)
 b. *He can tell awful lies.* (Palmer 1988: 113)
 c. *Les lions peuvent être dangereux.*
 the lions can.3PL be.INF dangerous
 ‘Lions can be dangerous.’ (after Barbet & Saussure 2012: 31)

The sporadic readings of *can* and *pouvoir* show properties that are very similar to those of the habitual-like *znati*. As shown in (30), they require the embedded property to apply either to multiple occasions or to multiple individuals—Kleiber’s (1983) *habitual* and *referential* sporadicity, respectively. The contrast between (30a) and (30b) illustrates that individual-level predicates are only compatible with *can* if they are applied to multiple individuals. The example in (30c) is interpreted as applying to occasions in which Luc shows odious behaviour—Luc is sometimes odious (Kleiber 1983). Predicates that cannot recur in this way (e.g., *être grand* ‘be tall’) are incompatible with the sporadic reading (Kleiber 1983: 192).

- (30) a. **That Welshman can be tall.* (Boyd & Thorne 1969: 72)
 b. *Welshmen can be tall.* (Boyd & Thorne 1969: 72)
 c. *Luc peut être odieux.*
 Luc can be.INF odious
 ‘Luc can be odious.’ (Kleiber 1983: 184)

Kleiber (1983) notes that these sporadic readings require actualisation and Barbet & Saussure (2012) even mention evidentiality, stating that “the speaker clearly seems to convey particular knowledge about the referents in question” (Barbet & Saussure 2012: 39). They argue against an analysis in terms of epistemic modality, using the tests that were applied to *znati* in Section 4.3.2 above. (See also Kleiber 1983, as well as Vettters 2007, who concludes that sporadic *pouvoir* is neither epistemic nor alethic.)

Perhaps the most striking parallel to *znati* is the resistance to negation: Barbet & Saussure (2012) and Saussure et al. (2016) note that the sporadic reading disappears under negation, giving way to an (im)possibility reading or an epistemic one. Thus, the example in (31a) can only mean that it is impossible for Welshmen to be tall or that the speaker judges it unlikely that Welshmen are tall, but not, e.g., that Welshmen are sometimes not tall. The same applies to the French *pouvoir* in (31b). However, just like with *znati*, negation may surface below the modal at least in French: the example in (31c) is compatible with the sporadic reading, stating that Alsatians are sometimes not fat.

- (31) a. *Welshmen can't be tall.* (Barbet & Saussure 2012: 41)
 b. *Les Alsaciens ne peuvent pas être obèses.*
 the Alsations NEG can.3PL NEG be.INF fat
 ‘Alsations cannot be fat.’ (Barbet & Saussure 2012: 41)
 c. *Les Alsaciens peuvent ne pas être obèses.*
 the Alsations can.3PL NEG NEG be.INF fat
 ‘Alsations can not be fat.’ (Barbet & Saussure 2012: 41)

The parallel to *znati* is not perfect: in contrast to the latter, these examples are reported to denote a certain “characteristic” (Palmer 1988: 113) or “intrinsic property” (Barbet & Saussure 2012: 33) of the subject referent, which makes them, in a sense, more modal than *znati*. As Barbet & Saussure (2012: 38f.) put it, a ‘relevant’ number of individuals or occurrences need to have the property denoted by the embedded predicate, defining ‘relevant’ as “[a] quantity higher than previous expectations”. Furthermore, whereas *znati* combines most naturally with episodic predicates, at least the French *pouvoir* prefers properties that describe multiple individuals or occasions: Kleiber (1983: 191f.) notes that sentences such as (32) are not excluded but that a sporadic interpretation is more difficult to bring to the fore.

- (32) *Jean peut lire des nuits entières.*
 John can read.INF the nights whole
 ‘John can read all night long.’ (Kleiber 1983: 191; glosses and translation: IK)

Nevertheless, the many similarities between *znati* and the sporadic *can* and *pouvoir* cannot be pure coincidence, and I conclude that insights about the one may lead to a better understanding of the other. For instance, Barbet & Saussure (2012) argue for the presence of an existential component in sporadic *can* and *pouvoir* (which gets pragmatically enriched), resonating with the remarks about the similarities between *znati* and existential expressions such as *some* or *sometimes* in terms of its implications. Note that *some* and *sometimes* are also Positive Polarity Items, making an immediate connection to the resistance to negation found with *znati* and *can/pouvoir* (see Saussure et al. 2016). Conversely, the iterative component proposed for *znati* may shed light on the recurrence requirement of sporadic *can* and *pouvoir*

illustrated in (31). I thus propose to include these configurations into the domain of complex habitual-like expressions, as members of the iterative class.

4.4 Summary

This chapter has provided a more in-depth investigation of the three classes of complex habitual-like expressions arrived at in Chapter 3. Table 4.1 (overleaf) provides a final summary of the properties of complex habitual-like expressions, highlighting those that are defining for each individual class.

Following Binnick (2005) and Boneh & Doron (2010), I analysed the expressions of the aspectual class (English *used to* and Hebrew *hyy*) as markers of complex retrospective aspect, requiring actualisation in the real world and lacking modal properties. For the generic class (English *would* and Croatian *bi*), I adopted Boneh & Doron's (2013) analysis in terms of the generic operator (a universal quantifier over individuals or events as well as ideal modal worlds) with the habitual operator in its restrictor, which is responsible for the habitual-like flavour. As for the iterative class, I proposed that the expressions it encompasses (Croatian *znati* and German *pfliegen*) share the iterative component, but differ with respect to the regularity or law-likeness of repetition and, as a consequence, require a slightly different analysis. Building on Jędrzejowski's (2021) analysis of the habitual-like *pfliegen*, I suggested that *pfliegen* is best analysed as combining with the simple habitual operator. The latter contributes iterativity and modality in terms of rule-like event recurrence and extrapolation, whereas *pfliegen* itself ensures that event recurrence is at least partly instantiated in the real world. As for *znati*, I concluded that, despite sharing some properties with modal expressions, it is not modal in the sense of denoting law-like generalisations, but at most in the sense in which attitude verbs are modal (quantifying over the attitude holder's belief worlds; see Hintikka 1969). I proposed that the core lexical meaning of *znati* (mental acquaintance) applies to the speaker and manifests itself in the evidential-like flavour: based on limited evidence and his or her knowledge about the world, the speaker may infer iteration of the observed event. I did not say anything about the origin of the iterative component of habitual-like *znati*, but I return to this point in Chapter 5, proposing that it is external to *znati* and that it comes from a dedicated iterative head. Finally, I included the sporadic readings of the English *can* and its French counterpart *pouvoir* into the iterative class as well, leaving a more detailed investigation for future work.

	Hebrew	English	Croatian		German	English/French	
	ASPECTUAL <i>hyy</i>	GENERIC <i>used to</i>	<i>would</i>	<i>bi</i>	ITERATIVE <i>znati</i> <i>pflegen</i> <i>can/pouvoir</i>		
Non-iterative	ok	ok	*	*	*	*	*
States	ok	ok	*	*	*	*	*
ILPs	*	ok	*	*	*	*	*
Restrictor	/	/	yes	yes	/	/	/
Variable (<i>x/e</i>)	/	/	∀	∀	ITER	ITER	ITER
Actualisation	yes	yes	INIT	INIT	≥ 1	≥ 1	≥ 1
Viewpoint	IPFV	IPFV	IPFV	IPFV	IPFV/PFV	IPFV/PFV	
Perspective	R < P	R < P	R = P				
Negation	ok	ok	ok	ok	*	%	*

Table 4.1. Complex habitual-like expressions

A common thread connecting at least the generic and the iterative class is the insight that these expressions are underspecified and assume their habitual-like flavour due to certain elements in their grammatical context. The following chapter is dedicated to implementing this observation, taking the concept of semi-lexicity as the foundation.

5 The syntax: Roots meet cartography

Syntactic categories—or, more neutrally, parts of speech—are traditionally split into lexical and functional classes. As a gross simplification, members of the lexical class usually have more ‘concrete’ meanings (encompassing, for instance, nouns such as *chess*, verbs such as *sulk* or adjectives such as *complex*), while members of the functional class tend to have more ‘abstract’ meanings (including, e.g., affixes such as the progressive *-ing* and the superlative *-est* or determiners such as *the*). A clear-cut distinction between these two supercategories is difficult if not impossible to establish, which is why a more fluid conception of functionality and lexicality has been advocated for (see, e.g., Corver & Van Riemsdijk 2001). Moreover, there exist items that cannot be straightforwardly assigned to the one or the other class—in a way, they find themselves in a limbo between pure lexicality and pure functionality. Emonds (1985: 162) calls items with such mixed behaviour *disguised* or *grammatical* lexical categories, and the term *semi-lexicality* (which, according to Corver & Van Riemsdijk 2001, was coined by Van Riemsdijk 1998) has since established itself (*semi-functionality* is sometimes used as well; see, e.g., Wurmbrand 2001).

An example of semi-lexicality is the raising versions of the English verbs *threaten* and *promise* (Verhagen 1995, Traugott 1997) as well as their counterparts in Dutch (Verhagen 1995) and German (Wurmbrand 2001, Reis 2005, Colomo 2011). For instance, in a sentence such as *It promises to be a hot and grueling day* (Traugott 1997: 185), no event of promising by ‘it’ takes place; instead, the sentence conveys that the speaker deems it likely that the day is going to be hot and grueling—an epistemic, and hence more functional-like, statement. Traugott (1997) classifies *promise* and *threaten* as being between lexical raising verbs and auxiliaries, noting that “as decategorialization occurs, recategorialization (in this case to a categorial raising verb) is not instantaneous, necessary, or even expected” (Traugott 1997: 202). Semi-lexicality is thus intricately linked to grammaticalisation and is a labile state: it captures a stage of a certain item that is on its way from being a (fully) lexical item to becoming a (fully) functional one.

Returning to complex habitual-like expressions, Hellman (2005) notes that habitual-like *znati* is neither fully grammaticalised nor fully lexical—it has much less lexical content than the attitude or ability *znati*. The properties discussed in Chapters 3 and 4 point towards a similar conclusion. On the one hand, iterativity and resistance to negation indicate a functional status, as does the behaviour of *znati* as a raising verb: Croatian has no other configurations with

a lexical verb and an infinitive which allow raising to subject.¹ On the other hand, pointing into the lexical direction, *znati* cannot escape negation by outscoping it like modal Positive Polarity Items can (see Iatridou & Zeijlstra 2013 and Section 4.3.2), it is free with respect to tense, person, or viewpoint aspect, and its evidential-like flavour makes a connection to the core meaning of *znati* as involving mental acquaintance. Similar observations have been made about the German *pflegen*, which shows both functional and lexical properties (see, e.g., Wurmbrand 2001, Jędrzejowski 2021).

This chapter proposes a syntactic analysis of the complex habitual-like expressions discussed in Chapters 3 and 4 by combining Cavirani-Pots' (2020) framework for semi-lexicality with cartographic clause structure à la Cinque (1999, 2006). Cavirani-Pots analyses semi-lexical items as the result of lexical roots merging with functional heads. Taking the habitual-like *znati* as a first illustration, I propose that it arises from a combination of the lexical root $\sqrt{zna-}$ and an iterative functional head. The requirement that the embedded predicate be iterated then follows from the iterative head and evidentiality is an abstract manifestation of the core meaning of the root $\sqrt{zna-}$. The German habitual-like *pflegen* is analysed as a semi-lexical item as well: a combination of the lexical root $\sqrt{pfleg-}$ and, in this case, a functional head containing the habitual operator (see also Jędrzejowski 2021). As outlined in Chapter 4, the habitual operator contributes both an iterative and a modal component, the latter causing the habitual-like *pflegen* to denote more rule-like repetitions than *znati*. The iterative class thus does not receive a uniform treatment, but iteration remains at its core, leading to the conclusion that iterative habituality can be arrived at by different means, yielding slightly different outcomes. The expressions belonging to the aspectual class are analysed as fully grammaticalised, instantiating a retrospective aspectual head, and the generic class is a result of the roots $\sqrt{would}$ or $\sqrt{bi}$ merging with a habitual head, in line with Boneh & Doron's (2013) semantic analysis as generic universal quantifiers with a habitual operator in their restrictors.

5.1 The framework: Roots, features, and semi-lexicality

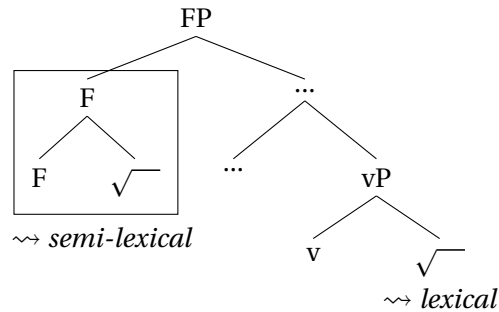
Cavirani-Pots (2020) maintains a strict distinction between functional and lexical items, treating the former as (bundles of) features and the latter as roots. Building on De Belder (2011) and Klockmann (2017), she proposes that semi-lexicality is not an inherent property of an item, but emerges in the syntax as a consequence of (lexical) roots merging with functional heads in a separate workspace, followed by merging the resulting complex item into the position of the functional head in question, in the extended projection of another lexical root.² This is illustrated in (1) (based on Cavirani-Pots 2020: 3). The lower root, merged as complement

1 Perception verbs marginally allow raising to object and the verb *činiti se* 'seem' is compatible with raising, but only with a non-verbal complement in instrumental case; see, e.g., example (28) in Section 4.3.2. Modals can also be raising verbs, but they have functional content as well.

2 Essentially, the mechanism is very similar to Bobaljik & Brown's (1997) proposal for head movement.

to little *v*, results in a garden-variety lexical verb. The higher root, in combination with the functional head *F*, gives rise to a semi-lexical item.³

(1)



I complement Cavarani-Pots' (2020) account of semi-lexicity with the clausal functional sequence proposed by Cinque (1999, 2006). Based on a detailed cross-linguistic study of linear orders among adverbs (Cinque 1999) and functional verbs (Cinque 2006), Cinque proposes a universal hierarchy of functional heads, illustrated in (2) (the instances of more 'basic' or 'standard' heads—*T* and *Voice*—are underlined and boldfaced for ease of orientation). Each of these heads is associated with a specific grammatical function and all of them belong to the functional class (with the notable exception of *V* at the very bottom of the hierarchy).

(2) Cinque hierarchy

(Cinque 2006: 93, 175)

Mood_{speech act} (frankly, honestly) » Mood_{evaluative} ((un)fortunately, luckily) » Mood_{evidential} (allegedly, reportedly) » Mood_{epistemic} (probably, presumably) » **T_{past} (yesterday)** » **T_{future} (tomorrow)** » Mood_{irrealis} (perhaps) » **T_{anterior}** » Mod_{alethic} (necessarily) » Asp_{habitual} (usually, generally) » Asp_{repetitive(I)} (again) » Asp_{iterative(I)} (repeatedly, often) » Mod_{volition} » Asp_{celerative(I)} (quickly) » Asp_{terminative} (no longer) » Asp_{continuative} (still) » Asp_{perfect} » Asp_{retrospective} (just) » Asp_{proximative} (soon) » Asp_{durative} (long, briefly) » Asp_{progressive} (usually) » Asp_{prospective} (almost) » Asp_{inceptive(I)} » Mod_{obligation} (necessarily) » Mod_{ability} (possibly) » Asp_{frustrative/success} » Mod_{permission} » Asp_{conative} » Asp_{completive(I)} (completely) » **Voice (well)** » Asp_{celerative(II)} (quickly, fast) » Asp_{inceptive(II)} » Asp_{completive(II)} » Asp_{repetitive(II)} » Asp_{iterative(II)} (often) » *V*

Seen from the perspective of the proposal in Cavarani-Pots (2020), *viz.*, that semi-lexicity emerges from combining lexical roots with functional elements, all of the heads depicted in (2) are potential hosts for lexical roots. In other words, all the heads in (2) may function as the abstract head *F* in (1) and, as a consequence, participate in the formation of a semi-lexical

³ Cavarani-Pots (2020) distinguishes between two stages of grammaticalisation; the structure in (1) depicts the second, more advanced stage. In the first stage, semi-lexicity arises if an additional root is merged within the *vP*—still in the functional domain of another lexical root, but very low, within the thematic domain. Since this section only makes use of the second stage (the one shown in (1)), I abstract away from the latter option for the time being, but return to it in Chapter 6.

item. The exact combinations of roots and functional heads cannot be predicted for any given language and the question of why a certain root grammaticalises into a certain functional element necessarily leads beyond grammar proper. However, the combinations are subject to a compatibility constraint: “the semantic features of the lexical vocabulary item should be compatible with the interpretation of the syntactic feature it might eventually grammaticalise into” (Cavirani-Pots 2020: 279; see also Klockmann 2017).

5.2 Complex habitual-like expressions

The combination of Cavirani-Pots’ (2020) and Cinque’s (1999, 2006) proposals outlined above is flexible enough to capture the range of habitual-like complex expressions discussed in Chapters 3 and 4. At the same time, it makes the right predictions with respect to the ordering of these expressions in languages which possess more than one habitual-like element. As the Croatian habitual-like *znati* is a prime example of a semi-lexical verb (see also Hellman 2005), I start by a more detailed analysis of this case, and then extend the analysis to other complex habitual-like expressions, which display different degrees of functionality.

5.2.1 Habitual-like *znati*

As illustrated in Chapter 1, the Croatian verb *znati*, lit. ‘know’, has a range of meanings: it may denote familiarity with a person or object, an attitude towards a proposition, or mental ability. I focus on the habitual-like flavour of *znati* here, illustrated in (3). (The other uses of *znati*—attitude, familiarity, and mental ability—are taken up in Chapter 6, where they are derived using the same basic assumptions.)

- (3) *Ove ladice znaju zapeti.*
 these drawers know.3PL get.stuck.INF
 ‘These drawers occasionally get stuck.’

I propose that the habitual-like reading of *znati* is the result of the lexical root $\sqrt{\text{zna-}}$ merging with an iterative functional head. Cavirani-Pots (2020) notes that in order for a lexical root to be merged with a functional head, the two need to be compatible (see also Klockmann 2017). While iterativity, or repetition, is not inherent in knowledge (one can get to know something simply by seeing or hearing it for the first time), it is certainly compatible with it—many kinds of knowledge involve repeated encounters; with people, objects, or facts. I suggest that the iterative head that merges with $\sqrt{\text{zna-}}$ corresponds to the $\text{Asp}_{\text{iterative(I)}}$ head in Cinque’s (2006) functional hierarchy, boxed in (4).⁴

⁴ Cinque (1999, 2006) calls the head *frequentative* ($\text{Asp}_{\text{frequentative(I)}}$). The only reason for renaming it to *iterative* is consistency with the remainder of this thesis; neither Cinque nor I make a distinction between the two terms (but see Boneh & Jędrzejowski 2019 for a possible distinction).

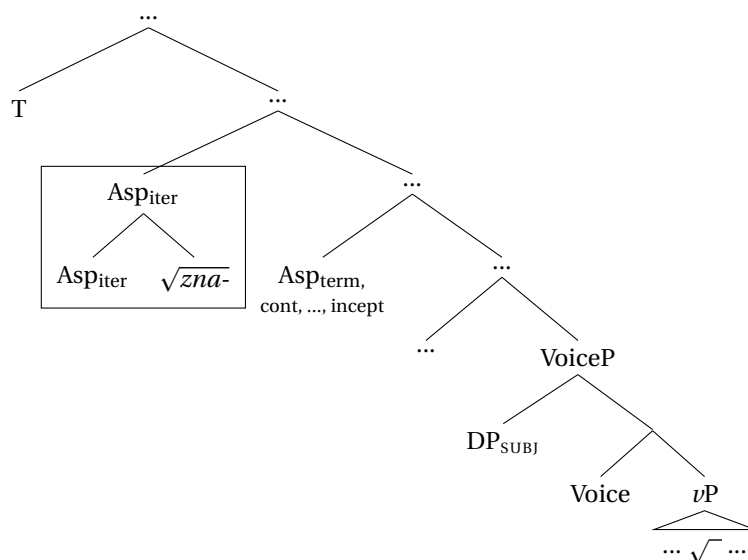
- (4) Mood_{speech act} » Mood_{evaluative} » Mood_{evidential} » Mood_{epistemic} » T_{past} » T_{future} »
 Mood_{irrealis} » T_{anterior} » Mod_{alethic} » Asp_{habitual} » Asp_{repetitive(I)} » Asp_{iterative(I)} + $\sqrt{zna-}$
 » Mod_{volition} » Asp_{celerative(I)} » Asp_{terminative} » Asp_{continuative} » Asp_{perfect} » Asp_{retrospective}
 » Asp_{proximative} » Asp_{durative} » Asp_{progressive} » Asp_{prospective} » Asp_{inceptive(I)} » Mod_{obligation}
 » Mod_{ability} » Asp_{frustrative/success} » Mod_{permission} » Asp_{conative} » Asp_{completive(I)} » Voice »
 Asp_{celerative(II)} » Asp_{inceptive(II)} » Asp_{completive(II)} » Asp_{repetitive(II)} » Asp_{iterative(II)} » V

This choice raises two questions. First, why is it Asp_{iterative} rather than Asp_{repetitive} that merges with $\sqrt{zna-}$? Second, why should it be Asp_{iterative(I)} rather than Asp_{iterative(II)}, the head closest to V? Starting with the first question (iterative vs. repetitive), Cinque's repetitive head corresponds to the adverb *again*, denoting a single repetition of an action, while the iterative (Cinque's frequentative) one denotes "actions repeated several times" (Cinque 1999: 205), encompassing adverbs such as *repeatedly*, *several times*, *often*, *twice*. The meaning of the habitual-like *znati* clearly fits the latter, and not the former, description. As for the second question (iterative I vs. II), recall that habitual-like *znati* is a raising verb: it does not restrict the subject in any way and is compatible with weather predicates, idiom chunks, and inanimate subjects. Following Wurmbrand (2001), this indicates that *znati* is merged above the subject and, hence, above Voice, excluding Asp_{iterative(II)} as a candidate for contributing iterativity to *znati*. With this potential confound out of the way, I hereinafter refer to Asp_{iterative(I)}, the head that merges with $\sqrt{zna-}$, simply as Asp_{iter}.

The abstract structure for a clause including the habitual-like *znati* is given in (5); the combination yielding the habitual-like *znati* is boxed. Analysing the habitual-like *znati* as including Asp_{iter} has a welcome consequence: Cinque (2006: 97) notes that aspectual verbs corresponding to Asp_{iter} do not exist. The habitual-like *znati* then fills the lexical—or, rather, semi-lexical—gap.⁵

⁵ Cinque (2006) makes the remark in the context of testing the ordering Asp_{iterative(I)} » Mod_{volition} in the domain of functional verbs, noting that this ordering cannot be confirmed in the domain of auxiliaries because of "[t]he nonexistence of ('restructuring') aspectual verbs corresponding to Asp_{[iterative](I)}" (Cinque 2006: 97, note 24). Unfortunately, *znati* cannot be of much help with this issue, since the volitional *željeti* 'wish' and *htjeti* 'want' can both be used as lexical verbs (they may both take a DP object). Embedding *znati* under either of these two verbs may thus be an instance of *lexical*, rather than functional restructuring (see Wurmbrand 2004), providing no insight into the ordering of heads in the functional sequence.

(5)



The combination of Asp_{iter} and $\sqrt{zna-}$ derives the two core components of habitual-like *znati*—iterativity and inferential evidentiality—as follows. The interpretation of the embedded event as repeated (or at least repeatable) comes from Asp_{iter}. This is what underlies the requirement that the embedded property apply to multiple occasions or individuals and excludes De Swart’s (1993) once-only predicates as well as states and individual-level predicates which apply only once (see Chapter 3 and Section 4.3.2). A possible semantic implementation would be one in terms of plur(action)ality, involving a distributive operator (see Link 1983), similarly to the semantics proposed for the West Greenlandic frequentative/habitual *-tar-* in Van Geenhoven (2004). The other component of habitual-like *znati*, viz., evidentiality, is contributed by the root $\sqrt{zna-}$, reflecting the latter’s core meaning of mental acquaintance. In other words, evidentiality is not grammaticalised, but an expression of the lexical meaning of $\sqrt{zna-}$. As described in Section 4.3.2, this meaning is manifested in a rather abstract manner, applying to the speaker and allowing her or him to infer recurrence from limited (direct or indirect) evidence for a given event, using his or her knowledge about how the world works. The reason for the lexical meaning of $\sqrt{zna-}$ being speaker- rather than subject-oriented is that, as shown in the structure in (5), the root is merged above the subject and hence cannot affect it, shifting its meaning to the speaker in the form of inferential evidentiality (see, e.g., Speas & Tenny 2003 for the presence of a speaker argument in the syntax, located in a projection corresponding to Cinque’s highest head—Mood_{speech act}).

The proposal that evidentiality is not (yet) fully grammaticalised but comes from the lexical root receives support from the inability of habitual-like *znati* to escape negation. This property is again illustrated in (6). The infelicity of the example shows that it is incompatible with a habitual-like interpretation, which would express the (conceivable) lack of a habit of smoking

after lunch. The only reading available is that of mental ability, yielding an (odd) interpretation according to which Marina does not know how to light a cigarette after lunch.

- (6) #*Marina ne zna zapaliti nakon ručka.*
 Marina NEG know.3SG light.INF after lunch
 Intended: ‘Marina doesn’t sometimes smoke after lunch.’ *HABITUAL-LIKE
 #‘Marina doesn’t know how to smoke after lunch.’ #ABILITY

According to Iatridou & Zeijlstra (2013), modal Positive Polarity Items (e.g., Greek *prepi* or Spanish *deber*, both meaning ‘must’) may surface below negation because they are able to outscope it by means of (covert) quantifier raising (see Section 4.3.2). Since habitual-like *znati* is simply unable to surface below negation,⁶ I concluded that *znati* cannot undergo quantifier raising and is thus neither modal nor quantificational—a conclusion that receives support from the analysis developed in this section, as it invokes neither modality nor quantification.

Before discussing another potential escape route which would allow *znati* to bypass negation, note that, as shown in (7), negation in Croatian is situated above *znati* but below the (higher) subject position in the syntax (occupied by *samo Marina* ‘only Marina’ in (7)). (The reason why *znati* may appear under negation in this context is because negation is itself embedded under a downward-entailing operator; see the discussion of negation and positive polarity in Section 4.3.2.) Taking the higher subject position to be the specifier of TP (it is most certainly below C, as it surfaces below the complementiser *da* ‘that’), this means that negation in Croatian is below T, yielding the order T > NEG > *znati*.

- (7) (*Zanimljivo da*) *samo Marina ne zna zapaliti nakon ručka.*
 interesting that only Marina NEG know.3SG light.INF after lunch
 ‘(It is interesting that) only Marina doesn’t sometimes smoke after lunch.’
 only > ¬ > *znati*

Now, note that the functional hierarchy proposed in Cinque (1999, 2006) includes an evidential head, boxed in the fragment in (8). The head is situated above (all instances of) T and hence also above negation (added) as well as the habitual-like *znati*.

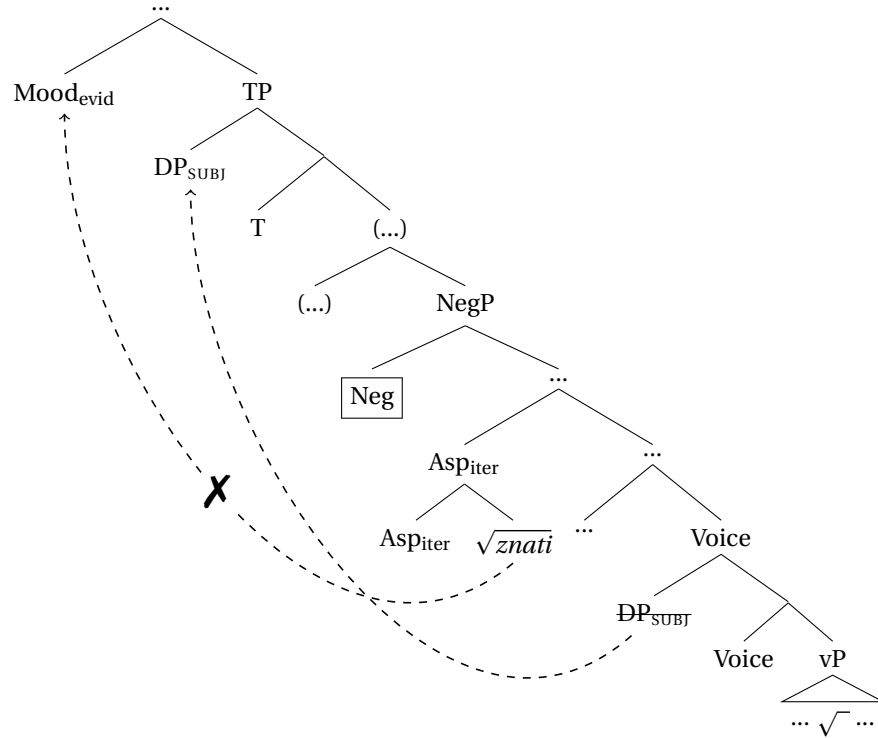
- (8) Mood_{speech act} » Mood_{evaluative} » Mood_{evidential} » Mood_{epistemic} » T_{past} » T_{future} »
 Mood_{irrealis} » T_{anterior} » (...) » NEG » ...

If the evidential component of habitual-like *znati* was grammaticalised, one might expect the root $\sqrt{\text{zna-}}$ (possibly in combination with the iterative head) to merge (internally or externally) with the Mood_{evld} head and escape negation. Since *znati* can escape negation neither overtly nor covertly, this seems to be impossible, as schematised in (9). This indicates

⁶ See Section 4.3.2 and Iatridou & Zeijlstra (2013) for contexts in which Positive Polarity Items can surface under negation.

that evidentiality is not (yet) grammaticalised and provides (indirect) support for the analysis developed here, according to which evidentiality is contributed by the lexical root $\sqrt{zna-}$.

(9)



To sum up, the properties of habitual-like *znati* can be derived by combining Cavirani-Pots' (2020) approach to semi-lexicity with the cartographic clause structure proposed in Cinque (1999, 2006). Informally, the combination of Asp_{iter} and $\sqrt{zna-}$ can be described as yielding iteration in worlds compatible with the speaker's beliefs about how the real world works.

5.2.2 The aspectual class

Moving on to the aspectual class, the two expressions belonging to this class of complex habitual-like expressions—English *used to* and Hebrew *hyy*—are illustrated in (10).

- (10) a. *John used to work here.* (Comrie 1976: 25)
- b. *ya'el hayt-a 'oved-et ba-gina*
 Yael HYY.PST-3SG.F work-SG.F in.the-garden
 'Yael used to work in the garden.' (Boneh & Doron 2013: 344)

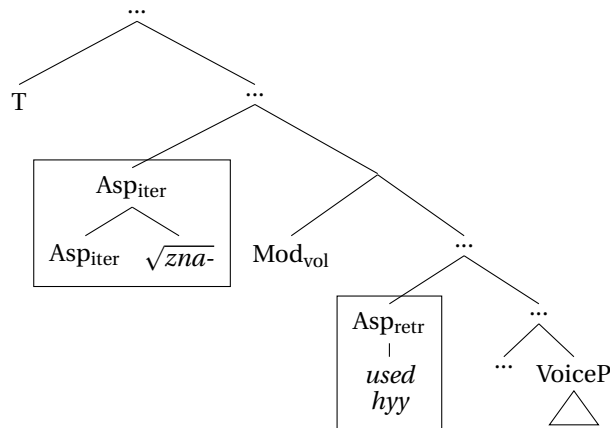
As detailed in Section 4.1, Boneh & Doron (2010) analyse *used to* and *hyy* as markers of

retrospective aspect. As such, they are fully grammaticalised and can be analysed simply as instances of $\text{Asp}_{\text{retrospective}}$, as shown in (11).⁷

- (11) $\text{Mood}_{\text{speech act}} \gg \text{Mood}_{\text{evaluative}} \gg \text{Mood}_{\text{evidential}} \gg \text{Mood}_{\text{epistemic}} \gg \underline{\text{T}_{\text{past}}} \gg \underline{\text{T}_{\text{future}}} \gg$
 $\text{Mood}_{\text{irrealis}} \gg \underline{\text{T}_{\text{anterior}}} \gg \text{Mod}_{\text{alethic}} \gg \text{Asp}_{\text{habitual}} \gg \text{Asp}_{\text{repetitive(I)}} \gg \boxed{\text{Asp}_{\text{iterative(I)}} + \sqrt{\text{zna-}}} \gg$
 $\text{Mod}_{\text{volition}} \gg \text{Asp}_{\text{celerative(I)}} \gg \text{Asp}_{\text{terminative}} \gg \text{Asp}_{\text{continuative}} \gg \text{Asp}_{\text{perfect}} \gg \boxed{\text{Asp}_{\text{retrospective}}}$
 $\boxed{\approx \text{used to} / \text{hyy}} \gg \text{Asp}_{\text{proximative}} \gg \text{Asp}_{\text{durative}} \gg \text{Asp}_{\text{progressive}} \gg \text{Asp}_{\text{prospective}} \gg \text{Asp}_{\text{inceptive(I)}}$
 $\text{Mod}_{\text{obligation}} \gg \text{Mod}_{\text{ability}} \gg \text{Asp}_{\text{frustrative/success}} \gg \text{Mod}_{\text{permission}} \gg \text{Asp}_{\text{conative}} \gg \text{Asp}_{\text{completive(I)}}$
 $\gg \underline{\text{Voice}} \gg \text{Asp}_{\text{celerative(II)}} \gg \text{Asp}_{\text{inceptive(II)}} \gg \text{Asp}_{\text{completive(II)}} \gg \text{Asp}_{\text{repetitive(II)}} \gg \text{Asp}_{\text{iterative(II)}} \gg \text{V}$

Support for the analysis of these elements as fully functional comes from their morphology: Boneh & Doron (2010) propose that the past-like morphology in fact reflects retrospectivity (i.e., the precedence of reference time with respect to perspective time, rather than with respect to speech time; see Section 4.1). At least from the synchronic point of view, there seems to be no lexical root involved, which makes these elements fully functional. I therefore suggest that they simply instantiate the retrospective head, rather than involving a combination of a lexical element with the retrospective head. Adding *used to* and *hyy* to the abstract structure containing habitual-like expressions yields the configuration in (12). Note that it is possible that at least *used to* went through a semi-lexical phase at an earlier stage of English, as suggested by the remark in Bybee et al. (1994: 155) that *used to* has its origin in the verb *use* and its early meaning ‘to follow a usage or custom’.

(12)



⁷ Cinque (1999: 96) takes retrospective aspect to “express the fact that the event has taken place a short while before some reference time”. *Used to* and *hyy* also express a precedence relation, but a different one—between reference and perspective time (see Binnick 2005, Boneh & Doron 2010, as well as Section 4.1). Cinque’s definition of retrospective aspect would thus need to be altered in order to accommodate *used to* and *hyy*. However, the crucial insight here is that these two expressions are instantiations of an aspectual head which finds itself roughly in the position of Cinque’s retrospective head.

5.2.3 The generic class

The generic class of complex habitual-like expressions encompasses the habitual uses of the English *would* and the Croatian *bi* ‘would’, illustrated in (13).

- (13) a. *And occasionally a window would get broken.* (Tagliamonte & Lawrence 2000: 340)
 b. *Tata bi nam prije spavanja otpjevao uspavanku.*
 dad would us.DAT before sleeping sing.PTCP.SG.M lullaby
 ‘Dad would sing us a lullaby before going to sleep.’

As outlined in Section 4.2, Boneh & Doron (2013) analyse *would* as a generic operator (i.e., a kind of modal universal quantifier) with a habitual operator in its restrictor. I propose that the habitual-like readings of *would/bi* arise when these elements combine with a habitual head, the highest boxed element in (14). Cinque (1999: 91) associates this head with the adverbs *usually, habitually, customarily, generally, regularly*, suggesting that this head is also the locus of the simple habitual operator. The reason, then, why habitual-like *would* and *bi* end up with a habitual operator in their restrictors is that they form a complex with the habitual head.

- (14) Mood_{speech act} » Mood_{evaluative} » Mood_{evidential} » Mood_{epistemic} » T_{past} » T_{future}
 » Mood_{irrealis} » T_{anterior} » Mod_{alethic} » Asp_{habitual} + *would / bi* » Asp_{repetitive(I)} »
Asp_{iterative(I)} + $\sqrt{zna-}$ » Mod_{volition} » Asp_{celerative(I)} » Asp_{terminative} » Asp_{continuative} »
 Asp_{perfect} » Asp_{retrospective} $\approx$ *used to / hyy* » Asp_{proximative} » Asp_{durative} » Asp_{progressive} »
 Asp_{prospective} » Asp_{inceptive(I)} » Mod_{obligation} » Mod_{ability} » Asp_{frustrative/success} » Mod_{permission}
 » Asp_{conative} » Asp_{completive(I)} » Voice » Asp_{celerative(II)} » Asp_{inceptive(II)} » Asp_{completive(II)} »
 Asp_{repetitive(II)} » Asp_{iterative(II)} » V

Even though the habitual-like *would* and *bi* appear fully functional, I suggest that they nevertheless reflect a combination of the (functional) habitual head and a root, in line with Cavarani-Pots’ (2020) framework. The meaning of $\sqrt{would}$ and $\sqrt{bi}$ is then rather abstract and, following Boneh & Doron (2013), might be described as modal universal quantification. In fact, one of the verbs Cavarani-Pots (2020) treats as semi-lexical is the Dutch modal *hoeven* ‘need’, suggesting that roots with modal meanings are licit entities in her ontology.⁸ In any event, some combination of elements needs to be at play. An analysis of *would* and *bi* as realisations of the habitual head itself (in parallel to the analysis proposed for the aspectual class) would leave unexplained why these expressions show properties that are different from simple habitual expressions (see, e.g., Table 3.4 in Chapter 3) and why they are semantically decomposable into the habitual and generic operator (see Boneh & Doron 2013). Moreover,

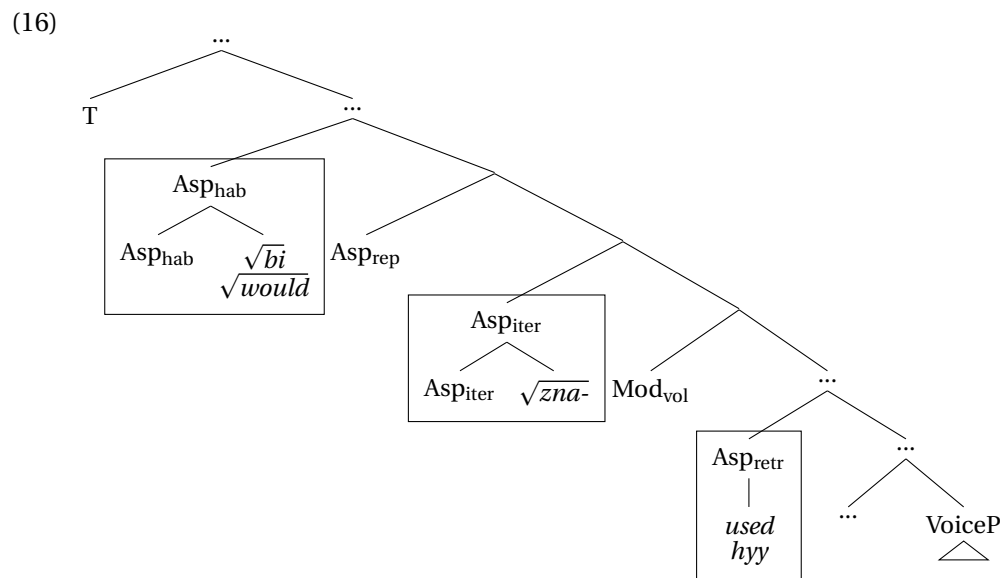
⁸ See in particular the discussion of possible acquisition paths for semi-lexical *hoeven*, where the root is assumed to have “the modal semantics of necessity” (Cavarani-Pots 2020: 157). Wurmbrand (2001), too, notes that some modal expressions show properties that are distinct from properties of fully functional elements.

would and *bi* can appear in conditionals as well (e.g., *If Alice was smaller, she would fit under the table*). If the habitual-like versions of *would/bi* were simply instances of the habitual head, this would require treating the conditional versions, which have no habitual flavour, as completely independent entities, and the identical surface forms of the conditional *would/bi* and the habitual *would/bi* as accidental homonymy.⁹ Finally, note that, as shown in (15), at least the Croatian *bi* can be the sole verb in the sentence, taking a nominal complement and expressing a wish, which indicates the presence of a lexical-like component.

- (15) *Marina bi novu bušilicu.*
 Marina would new drill
 ‘Marina would like a new drill.’

I thus propose that the habitual-like reading of *would/bi* is the product of the roots $\sqrt{\text{would}}$ or $\sqrt{\text{bi}}$ merging with $\text{Asp}_{\text{habitual}}$. Recall that roots and functional heads need to have mutually compatible meanings in order to be able to merge in this way (Cavirani-Pots 2020, building on Klockmann 2017). In the case of the habitual-like *would/bi*, I suggest that the common denominator between $\text{Asp}_{\text{habitual}}$ (*qua* habitual operator) on the one hand and $\sqrt{\text{would}}$ and $\sqrt{\text{bi}}$ (*qua* modal universal quantifiers; see Boneh & Doron 2013) on the other is expressing generalisations, a property common to both of these denotations.

A structure combining the generic and the aspectual class as well as the habitual-like *znati* is given in (16).



Note that the structure in (16) contains two pairs of elements that belong to the same

⁹ This is even less desirable in light of the fact that in a number of other languages, the same form can be used as an expression of habituality and in counterfactual conditionals (for example, the Hindi *-taa*, which, just like *would* and *bi*, is incompatible with individual-level predicates in its habitual use; see Iatridou 2000).

language: the English *would* and *used to* and the Croatian *bi* and *znati*. This makes a prediction: since *would* and *bi* are higher than *used to* and *znati*, the former should be able to embed the latter, but not vice versa. As shown in (17), this is exactly what we find, in English and Croatian alike. Note that it is impossible to even construct examples that would show the inverse order since both *used to* and *znati* combine with an infinitive, and both *would* and *bi* lack the infinitival form.

- (17) a. (...) *he would use to go jogging everyday* (...) (Boneh & Doron 2013: 183)
 b. *Rudi bi znao pričati fantastične priče.*
 Rudi would know.PTCP.SG.M tell.INF fantastic stories
 ‘Rudi would sometimes tell fantastic stories.’

5.2.4 The iterative class

Finally, the remaining members of the iterative class (next to the Croatian *znati*) are illustrated in (18): the German *pflügen*, lit. ‘cultivate, nurse’, (18a) and the sporadic *can* in English (18b) and *pouvoir* in French (18c).

- (18) a. *Simon pflegt zu spionieren.*
 Simon PFLEG.3SG to spy.INF
 ‘Simon has the habit of spying.’ (Jędrzejowski 2021: 1480)
 b. *He can tell awful lies.* (Palmer 1988: 113)
 c. *Les lions peuvent être dangereux.*
 the lions can.3PL be.INF dangerous
 ‘Lions can be dangerous.’ (after Barbet & Saussure 2012: 31)

Since sporadic *can* and *pouvoir* are not at the centre of this thesis, I do not propose an exact implementation of how sporadic iteration is arrived at but merely provide some remarks towards a possible analysis as well as challenges that it ultimately needs to address.

As outlined in Section 4.3.3, sporadic *can* and *pouvoir* share a number of properties with habitual-like *znati*. This points towards an analysis in terms of a root merging with an iterative head (see the previous section for a discussion about roots with modal meanings). As for the compatibility requirement, iterativity is most certainly not *incompatible* with modal possibility (i.e., existential quantification over modal worlds), but these two categories do not seem to have a common denominator either. Moreover, combining modal possibility with iterativity would seem to result in iteration in modal worlds, which does not yield the desired outcome. Just like habitual-like *znati*, sporadic *can* and *pouvoir* crucially involve a connection to the actual world and are not purely modal—the embedded property needs to be actualised (see, e.g., Kleiber 1983 and Section 4.3.3). Barbet & Saussure (2012) propose an analysis in terms of pragmatic enrichment: in a nutshell, *can* and *pouvoir* denote logical possibility, which is trivial, and leads first to dynamic root modality (roughly, capability) and then to sporadicity,

which is the result of quantification. However, it is unclear why pragmatic reasoning would lead to sporadicity, and, as a consequence, how the iterativity requirement follows—as shown in Section 4.3.3, the embedded property needs to apply either to multiple occasions or to multiple individuals, yielding Kleiber’s (1983) habitual and referential sporadicity, respectively. Adopting two different analyses for sporadic *can/pouvoir* on the one hand and habitual-like *znati* on the other would suggest that (the striking degree of) their similarity is accidental, a result that is undesirable if one strives towards an explanatory theory. I thus suggest that a way forward may be a combination of a syntactic and a pragmatic approach, and leave the development of an exact analysis as well as a thorough comparison of habitual-like *znati* and sporadic *can* and *pouvoir* for future work.

Turning to the German *pflegen*, it is tempting to analyse it in the same way as habitual-like *znati*—as a combination of the lexical root $\sqrt{\text{pfleg-}}$ with the iterative head. Much like $\sqrt{\text{zna-}}$, the lexical meaning of $\sqrt{\text{pfleg-}}$ (‘cultivate, nurse’) is compatible with iterativity, even though iterativity is not inherent to it: *pflegen* a garden or one’s image may involve regular actions to those ends, but may also involve just a single act (e.g., one can *pflegen* the neighbour’s cats a single time; A. Ludwig, p.c.). Iterativity thus has to come from an element other than $\sqrt{\text{pfleg-}}$. However, if $\sqrt{\text{pfleg-}}$, like $\sqrt{\text{zna-}}$, was merged with Asp_{iter} , it is unclear how the modal-like quality of expressions with *pflegen* (as denoting rule-like generalisations) would arise. One could, following Colomo (2011), analyse the habitual-like *pflegen* as a stereotypical modal expression, but since the lexical *pflegen* does not involve any kind of modality either, this analysis would not solve the question of how habitual-like *pflegen* assumes a modal flavour.

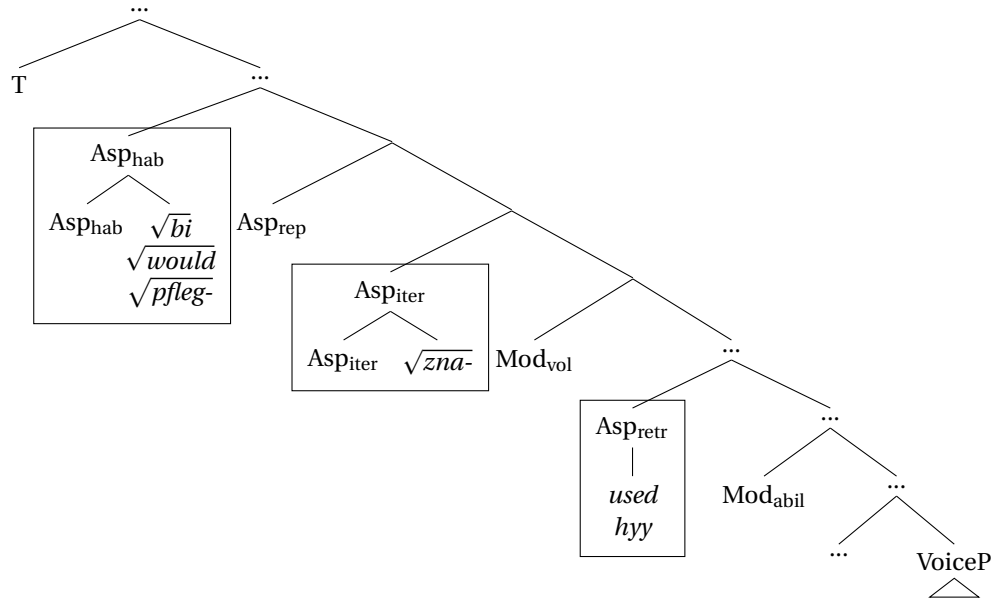
I therefore propose that $\sqrt{\text{pfleg-}}$ merges with Asp_{hab} , rather than Asp_{iter} . According to the analysis in Boneh & Doron (2010, 2013), the habitual operator includes a modalised iterative component. The modal flavour then does not stem from *pflegen* itself (pace Colomo 2011), but from the habitual operator, as does iterativity. Iterativity is also what makes the root $\sqrt{\text{pfleg-}}$ and the habitual head compatible with each other. In fact, $\sqrt{\text{pfleg-}}$ does not seem to contribute much to the meaning of the habitual operator and appears to be almost fully grammaticalised. In line with these observations, Jędrzejowski (2021) treats *pflegen* as the habitual operator, making no distinction between the two. There is, however, at least one important difference: unlike the simple habitual operator, habitual-like *pflegen* is not satisfied with a mere disposition, but requires the event denoted by the infinitive to be actualised in the real world, possibly even multiple times (see Chapter 3). I therefore tentatively suggest that the role of $\sqrt{\text{pfleg-}}$ is, in a sense, to ‘de-modalise’ the habitual operator and make a stronger link to the actual world, leaving the semantic implementation of this proposal for another occasion.

Summarising, the distribution of complex habitual-like expressions in the Cinque hierarchy (setting aside sporadic *can* and *pouvoir*) is given in (19) and illustrated as a structure in (20).

- (19) $\text{Mood}_{\text{speech act}} \gg \text{Mood}_{\text{evaluative}} \gg \text{Mood}_{\text{evidential}} \gg \text{Mood}_{\text{epistemic}} \gg \underline{\text{T}_{\text{past}}} \gg \underline{\text{T}_{\text{future}}} \gg$

Mood_{irrealis} » **T_{anterior}** » Mod_{alethic} » Asp_{habitual} + $\sqrt{\text{would}}$ / $\sqrt{\text{bi}}$ / $\sqrt{\text{pfleg-}}$ » Asp_{repetitive(I)} » Asp_{iterative(I)} + $\sqrt{\text{zna-}}$ » Mod_{volition} » Asp_{celerative(I)} » Asp_{terminative} » Asp_{continuative} » Asp_{perfect} » Asp_{retrospective} $\approx$ *used to* / *hyy* » Asp_{proximative} » Asp_{durative} » Asp_{progressive} » Asp_{prospective} » Asp_{inceptive(I)} » Mod_{obligation} » Mod_{ability} » Asp_{frustrative/success} » Mod_{permission} » Asp_{conative} » Asp_{completive(I)} » **Voice** » Asp_{celerative(II)} » Asp_{inceptive(II)} » Asp_{completive(II)} » Asp_{repetitive(II)} » Asp_{iterative(II)} (often) » V

(20)



Analysing the habitual-like *pflegen* as involving the Asp_{hab} head provides for an interesting twist within both the iterative class and the domain of complex habitual-like expressions in general. Regarding the latter, it does not seem possible to assign to each class of complex habitual-like expressions a unique head in the functional sequence, as both $\sqrt{\text{pfleg-}}$ and $\sqrt{\text{would}} / \sqrt{\text{bi}}$ combine with the very same functional head (*viz.*, Asp_{hab}). It is thus *combinations* of elements that make up a given class, reflecting the conclusion reached in Chapters 3 and 4 that the different classes of habitual-like expressions display distinct but overlapping clusters of properties. As for the iterative class, I proposed that the role of $\sqrt{\text{zna-}}$ is to allow extrapolation: recurrence, which is due to iterative head, may be inferred by the speaker depending on their knowledge of the world. The lexical root $\sqrt{\text{pfleg-}}$, on the other hand, appears to have the opposite effect: it brings the habitual aspect back to the actual world, requiring (possibly multiple) actualisation. The results, like the analyses, are not identical, most notably with respect to the regularity of repetition (see Section 4.3.1), but iterativity remains at the core of both combinations, warranting their treatment as members of the same, albeit heterogeneous, class. In conclusion, it seems that a language is free to encode iterative habituality by whichever means it has available—either by using an iterative functional element and

combining it with a compatible root (as is the case with the Croatian *znati*) or by employing a lexical verb that is compatible with iterativity in combination with an element that contributes both iterativity and modality (as with the German *pflügen*).

5.3 Conclusion and extensions

This chapter provided an analysis of complex habitual-like expressions in a framework combining Cavarani-Pots' (2020) approach to semi-lexicality and Cinque's (1999, 2006) cartographic clause structure. The different classes of habitual-like expressions were shown to involve different functional heads and instantiate different grades of functionality. On the functional end of the scale, the expressions of the aspectual class (English *used to* and Hebrew *hyy*) appear fully grammaticalised and correspond to a retrospective aspectual head. The members of the iterative class—the German *pflügen* and in particular the Croatian *znati*—are closest to (semi-)lexicality and reflect a combination of a lexical root and a functional head which has an iterative component: the lexical root $\sqrt{\text{zna-}}$ merges with an iterative head and $\sqrt{\text{pfleg-}}$ with a habitual one, which includes an iterative (as well as a modal) component. The generic class (English *would* and Croatian *bi*) follows the same mechanism as the one found in the creation of semi-lexical items, but involves roots that have a more abstract meaning, corresponding to (modal) universal quantification (see Boneh & Doron 2013). The habitual-like flavour is the result of $\sqrt{\text{would}}$ or $\sqrt{\text{bi}}$ merging with a habitual functional head.

Such a decomposition approach opens up new analytical possibilities in the domain of modal expressions in general. For instance, different modal flavours may be analysed as combinations of modal roots and modal functional heads along the clausal spine (e.g., $\text{Mod}_{\text{ability}}$, $\text{Mod}_{\text{obligation}}$, $\text{Mod}_{\text{alethic}}$, etc.), the roots denoting, roughly, extrapolation into modal worlds and contributing modal force, and the functional heads leading to different modal bases. Such an approach might contribute to fleshing out the standard analysis according to which, for instance, epistemic modals are higher in the clausal spine than root modals. Furthermore, the habitual-like expressions belonging to the generic class (*would* and *bi*) may also be used in counterfactual conditionals, and this dual use (in habitual and counterfactual contexts) is shared by morphemes in a number of other languages, including, e.g., the Hindi *-taa* (see Iatridou 2000). Decomposing the habitual-like and counterfactual readings of these expressions into more elementary components and assigning them to roots and functional heads may provide new ways of looking at the syntax and semantics of what von Fintel & Iatridou (2023) call X-marking (roughly, morphological marking that appears in counterfactual conditionals). In particular, Boneh & Doron's (2013) analysis of the habitual-like *would* (and, by extension, *bi*) as a modal universal quantifier is not far removed from von Fintel & Iatridou's (2023) proposal that the core meaning of X-marking is *domain widening*. As they put it, “we abstract away from some established facts and then run a thought experiment” (von Fintel & Iatridou 2023:

12). The observation that habitual-like *would* and *bi* allow extrapolation to ideal modal worlds (see Chapter 3) may be reflecting this core meaning of abstracting away from the real world and asking what happens in worlds that are, in certain respects, unlike our own.

6 All the things one can know

Chapter 5 developed an account of complex habitual-like expressions in a framework that combines Cavarani-Pots' (2020) approach to semi-lexicality and the clausal functional hierarchy of Cinque (1999, 2006). This chapter demonstrates that such an approach is applicable to other phenomena as well. By way of illustration, the various readings of the Croatian verb *znati*, lit. 'know', are derived from combinations of the underlying root $\sqrt{\text{zna-}}$ with different functional heads. In brief, I propose that the complex items which give rise to these readings are lexical (or functional) to different degrees and conclude that they find themselves in different stages of the grammaticalisation process, which is reflected by their positions in the clausal spine. The consequences of such a proposal for the analysis of verbs with a similar range of denotations in other languages is explored, as well as possible connections to diachrony.

6.1 In Croatian

6.1.1 The flavours of *znati*

At the very beginning of this thesis, I noted that the Croatian verb *znati* 'know' has four basic readings, connected by a core meaning that may be described as mental acquaintance. The *familiarity* reading, illustrated in (1a), denotes mental acquaintance with (the properties of) a person or an object. The *attitude* reading in (1b) denotes mental acquaintance with a proposition or a fact. The *mental ability* reading, shown in (1c,d), may be described as mental acquaintance with certain skills necessary for an ability. Finally, the *habitual-like* reading in (1d), discussed in detail in the previous chapters, does not require any knowledge on part of the subject referent. Rather, mental acquaintance is applied to the speaker and manifests itself in a rather abstract manner, as inferential evidentiality: based on limited evidence and her or his mental acquaintance with the world, the speaker may inductively infer iteration of the event denoted by the embedded predicate (see Chapters 3 and 4, in particular Section 4.3.2).

- (1) a. *Viki zna Marina.*
Viki know.3SG Marin.ACC
'Viki knows Marin.'
FAMILIARITY
- b. *Viki zna da je njezin bicikl crven.*
Viki know.3SG that is her bicycle red
'Viki knows that her bicycle is red.'
ATTITUDE

- c. *Viki zna (kako) voziti bicikl.*
 Viki know.3SG (how) drive.INF bicycle
 ‘Viki knows how to ride a bicycle.’ ABILITY
- d. *Viki zna voziti bicikl.*
 Viki know.3SG drive.INF bicycle
 ‘Viki knows how to ride a bicycle.’ ABILITY
 ‘Viki occasionally rides a bicycle.’ HABITUAL-LIKE

The different readings go hand in hand with different syntactic contexts. In the familiarity reading as in (1a), *znati* combines with a nominal object. The attitude reading, shown in (1b), arises in the context of a finite complement clause. An embedded infinitive introduced by *kako* ‘how’ as in (1c) results in a mental ability reading. Finally, a bare infinitive as in (1d) may yield either a mental ability or a habitual-like reading. The example in (1d) is thus ambiguous between the two readings, but there are contexts which disambiguate in favour of one or the other reading. For instance, a weather predicate as in (2a) is only compatible with a habitual-like reading, since weather ‘it’ is not sentient and hence cannot know how to do anything. On the other hand, negating *znati* as in (2b) yields only the mental ability reading. While negating habitual-like *znati* is conceivable from a conceptual point of view (not having a habit of doing something is a valid thought), it is blocked by the grammar (see Sections 4.3.2 and 5.2.1 for discussion).

- (2) a. *U travnju zna sniježiti.*
 in April know.3SG snow.INF
 ‘It occasionally snows in April.’ HABITUAL-LIKE
 #‘It knows how to snow in April.’ #ABILITY
- b. *Viki ne zna voziti bicikl.*
 Viki NEG know.3SG drive.INF bicycle
 ‘Viki does not know how to ride a bicycle.’ ABILITY
 Intended: ‘Viki does not occasionally ride a bicycle.’ *HABITUAL-LIKE

These different readings seem to be lexical (or functional) to different degrees. As established in Chapter 5, the habitual-like *znati* is semi-lexical, arising from a combination of the lexical root $\sqrt{\text{zna-}}$ with an iterative functional head. The familiarity and attitude *znati*, on the other hand, are fully lexical, assigning their own theta roles and encoding mental acquaintance in a very concrete manner. The mental ability *znati* seems to be somewhere in-between: its modal ability flavour points into the functional direction, but the mental acquaintance component is very prominent and, unlike with habitual-like *znati*, applies to the subject, rather than the speaker. Moreover, the habitual-like and mental ability flavours are subject to ordering restrictions, illustrated in (3). The habitual-like *znati* may embed the mental ability *znati* (even though it invokes a scenario in which Viki’s mental abilities are inconsistent; e.g., due to being an amnesiac), but an interpretation which would reflect the inverse ordering (i.e., the mental

ability *znati* embedding the habitual-like one) is unavailable. This restriction provides further evidence for the functional-like status of these two flavours of *znati*, as fully lexical verbs are not expected to be subject to ordering restrictions but should be able to stack freely.

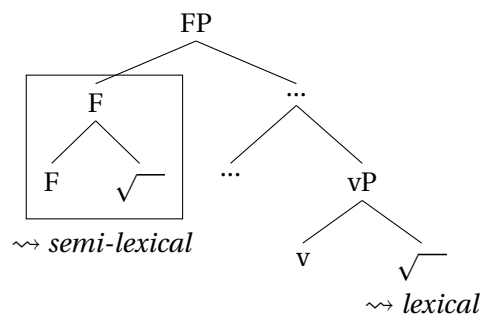
- (3) *Viki zna_{iter} znati_{abil} voziti bicikl.*
 Viki know.3SG know.INF drive.INF bicycle
 ‘Viki occasionally knows how to ride a bicycle.’ HABITUAL-LIKE > ABILITY
 *‘Viki knows how to occasionally ride a bicycle.’ *ABILITY > HABITUAL-LIKE

In order to capture the gradience of the different readings of the Croatian *znati* on the lexical-functional scale, I return to Cavarani-Pots (2020), who proposes two stages of grammaticalisation. Applying her account to *znati*, I treat its different flavours as reflecting different stages of grammaticalisation.

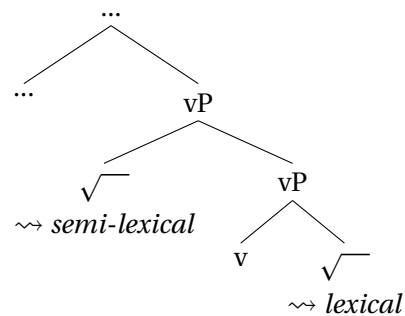
6.1.2 The proposal

Cavarani-Pots (2020) distinguishes between two stages of grammaticalisation. She argues that these two stages are encoded differently in the syntax and lead to different degrees of semi-lexicality, the first stage being more (though not entirely) lexical and the second one advancing further towards functionality. Chapter 5 focused on the second, more advanced stage, where lexical roots are merged with a functional head in the extended projection of another lexical root, depicted in (4a). For instance, the habitual-like reading of *znati* was derived by merging the root $\sqrt{\text{zna-}}$ with a functional iterative head. For the earlier stage of grammaticalisation, illustrated in (4b), Cavarani-Pots (2020) proposes that a lexical root is merged directly above another lexical root, within the latter’s thematic domain, yielding a result that is closer to lexuality.

(4) a. Stage II



b. Stage I



(see Cavarani-Pots 2020: 3)

In what follows, I apply this proposal to the different readings of *znati*, complementing it, as

in Chapter 5, with the functional sequence proposed in Cinque (1999, 2006). I propose that the different readings of *znati* as well as their different degrees of functionality arise from merging $\sqrt{zna-}$ into different positions and/or with different functional heads along the clausal spine, and that they reflect different stages of grammaticalisation.

As proposed in Section 5.2.1, the habitual-like reading of *znati* is the result of $\sqrt{zna-}$ merging with $\text{Asp}_{\text{iterative(I)}}$; it is the most functional-like of the readings of *znati* and instantiates the second stage of grammaticalisation. The analysis for the purely lexical meanings (familiarity and attitude) is straightforward: $\sqrt{zna-}$ is merged as complement to little *v*—there is no functional element (other than little *v*) at play and therefore no semi-lexicality. These different positions within Cinque’s (1999, 2006) functional sequence (slightly modified to split *V* into little *v* and the root) are illustrated in (5).

- (5) $\text{Mood}_{\text{speech act}} \gg \text{Mood}_{\text{evaluative}} \gg \text{Mood}_{\text{evidential}} \gg \text{Mood}_{\text{epistemic}} \gg \underline{\text{T}_{\text{past}}} \gg \underline{\text{T}_{\text{future}}} \gg$
 $\text{Mood}_{\text{irrealis}} \gg \underline{\text{T}_{\text{anterior}}} \gg \text{Mod}_{\text{alethic}} \gg \text{Asp}_{\text{habitual}} \gg \text{Asp}_{\text{repetitive(I)}} \gg \boxed{\text{Asp}_{\text{iterative(I)}} + \sqrt{zna-}}$
 $\gg \text{Mod}_{\text{volition}} \gg \text{Asp}_{\text{celerative(I)}} \gg \text{Asp}_{\text{terminative}} \gg \text{Asp}_{\text{continuative}} \gg \text{Asp}_{\text{perfect}} \gg \text{Asp}_{\text{retrospective}}$
 $\gg \text{Asp}_{\text{proximative}} \gg \text{Asp}_{\text{durative}} \gg \text{Asp}_{\text{progressive}} \gg \text{Asp}_{\text{prospective}} \gg \text{Asp}_{\text{inceptive(I)}} \gg \text{Mod}_{\text{obligation}}$
 $\gg \text{Mod}_{\text{ability}} \gg \text{Asp}_{\text{frustrative/success}} \gg \text{Mod}_{\text{permission}} \gg \text{Asp}_{\text{conative}} \gg \text{Asp}_{\text{completive(I)}} \gg \underline{\text{Voice}} \gg$
 $\text{Asp}_{\text{celerative(II)}} \gg \text{Asp}_{\text{inceptive(II)}} \gg \text{Asp}_{\text{completive(II)}} \gg \text{Asp}_{\text{repetitive(II)}} \gg \text{Asp}_{\text{iterative(II)}} \text{ (often)} \gg \underline{\text{v}}$
 $\boxed{\sqrt{zna-}}$
 (based on Cinque 2006: 93, 175)

As for the mental ability reading, an obvious analysis would be to have $\sqrt{zna-}$ merge with the $\text{Mod}_{\text{ability}}$ head (see also Cinque 2006: 20 for the Italian mental ability *sapere* ‘know’). Note, however, that the mental ability *znati* (unlike the habitual-like one) imposes restrictions on the subject, requiring that it denote a sentient being capable of knowing. This does not immediately follow if the mental ability reading of *znati* is the result of $\sqrt{zna-}$ merging with the $\text{Mod}_{\text{ability}}$ head—this would place $\sqrt{zna-}$ above Voice, and hence above the subject, and it is unclear how the root could put any restrictions on the subject referent from such a high position. One could build a presupposition into the mental ability reading of *znati* that would ensure sentience of the subject referent. However, this appears quite stipulative, and I thus opt for an alternative path, which, in addition to capturing the restriction on the subject, also accounts for mental ability *znati* being less functional-like than habitual-like *znati* but not fully lexical either.

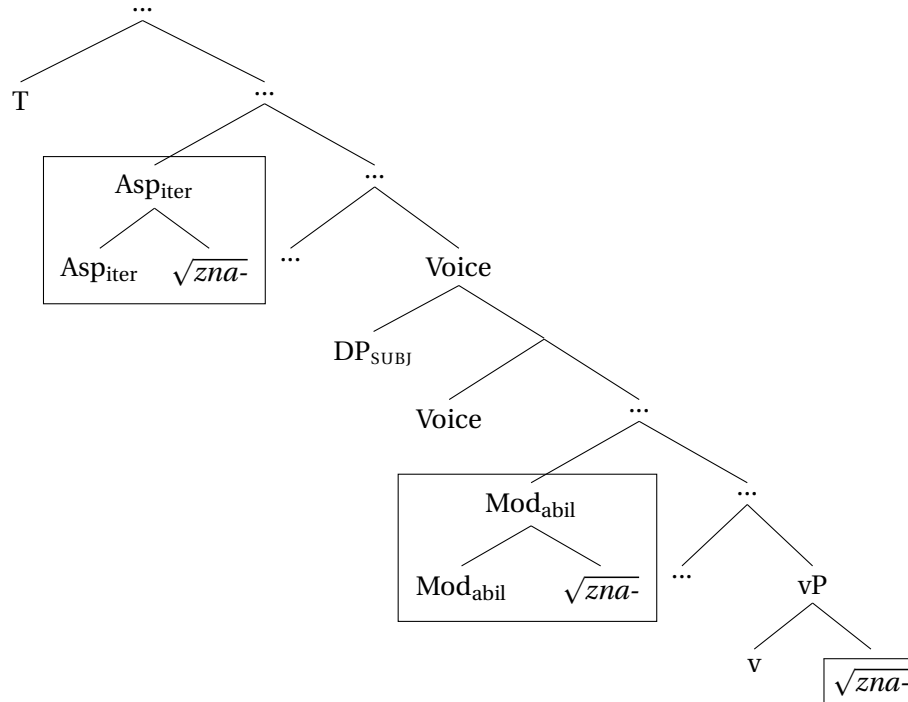
In particular, I propose that $\sqrt{zna-}$ does in fact merge with the $\text{Mod}_{\text{ability}}$ head, but re-evaluate the position of $\text{Mod}_{\text{ability}}$, situating it below Voice. In fact, Cinque (2006: 59, fn. 47) leaves open the possibility that the exact location of Voice may differ across languages. A low position of $\text{Mod}_{\text{ability}}$ is also in line with Wurmbbrand (2001), who places dynamic (including ability) modals below the subject, mainly due to the observation that they impose thematic restrictions on the latter. The diagnostic that Cinque (2006) uses for determining the position of functional heads with respect to Voice is their ability to passivise—verbs that cannot passivise

instantiate heads above Voice and those that can be located below Voice. However, even though modals generally cannot passivise, this need not mean that they are located above Voice, but may be a corollary of other factors.¹ Adopting such a lower position for $\text{Mod}_{\text{ability}}$ reconciles the analysis of the mental ability *znati* as a combination of $\sqrt{\text{zna-}}$ with $\text{Mod}_{\text{ability}}$ with the observation that it restricts the subject referent. Another advantage of such an analysis is that it captures the observation that mental ability *znati* is more lexical-like than habitual-like *znati*. Returning to Cavirani-Pots' (2020) two stages of grammaticalisation schematised in (4), I suggest that while habitual-like *znati* is in the second, more functional-like stage, the mental ability *znati* is between the first and the second stage. This is reflected in the proposed analysis: like in stage I (see (4b)), $\sqrt{\text{zna-}}$ is merged within the thematic domain of another lexical root, below Voice; however, it is not merged within the little vP, but combined with a slightly higher functional head, a property it shares with items that find themselves in stage II (see (4a)).

The different positions of $\sqrt{\text{zna-}}$ that lead to different readings of *znati* are illustrated in (6). Starting from the top, the habitual-like *znati* is the most functional-like. It corresponds to stage II in Cavirani-Pots (2020) and arises by means of merging the lexical root $\sqrt{\text{zna-}}$ with the iterative head Asp_{iter} (see Section 5.2.1 for details). The mental ability *znati* finds itself between Cavirani-Pots' (2020) stage I and stage II, which is reflected by its merging with a functional head outside the little vP (a property of stage II) but within the thematic domain of another lexical root (a property of stage I). Finally, merging $\sqrt{\text{zna-}}$ as complement to little v, as the lowest lexical root within an extended projection, yields the two lexical readings, familiarity or attitude. Which one of the two arises depends on whether the complement is a DP or a CP. Note that the different positions that $\sqrt{\text{zna-}}$ finds itself in are in principle independent of each other and are a result of *external* merge; for instance, the habitual-like reading is entirely independent of the mental ability or the attitude one. That is, I am not suggesting that $\sqrt{\text{zna-}}$ always enters the derivation low and then moves to the higher positions, but, following Cavirani-Pots (2020), that it is able to merge into these different positions independently.

1 For instance, Wurmbrand (2001) accounts for their inability to passivise by merging them in the Voice head itself (v/Asp in her terminology), which causes ability modals and passive to be in complementary distribution. Another option would be to tie their inability to passivise to their stative nature.

(6)



The structure in (6) makes a prediction with respect to ordering. The habitual-like *znati* is higher than both the mental ability and the lexical *znati*'s and should thus be able to embed the latter. Following the same logic, the mental ability *znati* should be able to embed the lexical (attitude or familiarity), but not the habitual-like *znati*. Since the complement clause of the attitude *znati* realises a functional sequence that is separate from the one in the extended projection of attitude *znati* itself, nothing speaks against attitude *znati* embedding the habitual-like or the mental ability one (or both, in that order).

As illustrated in (7), this is exactly what is found. The example in (7a) shows that habitual-like *znati* can embed the lexical *znati* (the example shows the attitude version, but the familiarity version is fine, too). The example gives rise to a peculiar interpretation and requires a context in which Viki's knowledge may change from time to time; for instance, because she suffers from amnesia. (However, recall from Section 4.3.2 that this might be a pragmatic effect, suggesting that the *semantics* of (7a) might spare Viki of memory loss, and that this is only required by *pragmatic* principles.) The example in (7b) (repeated from (3)) shows that habitual-like *znati* can embed the modal ability *znati*, but not vice versa. That is, the sentence can only mean that Viki occasionally knows how to ride a bicycle (once again implying that Viki is an amnesiac), but crucially not that Viki knows how to occasionally ride a bicycle. The mental ability *znati* thus cannot embed the habitual-like one. It can, however, as expected, embed an attitude

znati, as in (7c).² As indicated, the *wh*-word *kako* ‘how’ introducing the infinitive is optional, but facilitates the processing of the example.

- (7) a. *Viki zna_{iter} znati_v da je Zemlja okrugla.*
 Viki know.3SG know.INF that is Earth round
 ‘Viki occasionally knows that the Earth is round.’ ITER > V
- b. *Viki zna_{iter} znati_{abil} voziti bicikl.*
 Viki know.3SG know.INF drive.INF bicycle
 ‘Viki occasionally knows how to ride a bicycle.’ ITER > ABIL
 *‘Viki knows how to occasionally ride a bicycle.’ *ABIL > ITER
- c. *Viki zna_{abil} ?(kako) znati_v trebaju li biljke vode.*
 Viki know.3SG how know.INF need.3PL Q plants water
 ‘Viki knows how to know whether the plants need water.’ ABIL > V

Remaining for a moment with the optional *kako* ‘how’, note that there is a way to embed the habitual-like *znati* under the mental ability one—i.e., to get the reading that is unavailable in (7b)—by adding this very *kako*, as in (8).

- (8) *Viki zna_{abil} *(kako) znati_{iter} voziti bicikl.*
 Viki know.3SG how know.INF drive.INF bicycle
 ‘Viki knows how to occasionally ride a bicycle.’ ABIL > ITER

This example appears to undermine the analysis illustrated in (6), as, contrary to the predictions, the mental ability *znati* seems to be able to embed the habitual-like *znati*. I propose that this is only apparent and that the version with *kako* in fact involves the lexical, rather than the (semi-lexical) mental ability *znati*.

To see why this should be the case, it is important to note that *kako* ‘how’ cannot be left out in (8) under the intended interpretation, as evident from the unavailability of this reading in (7b)—even though *kako* is in principle optional with the mental ability reading of *znati*. That is, leaving out *kako* in (7b) inevitably leads to the ‘occasionally know how to’ reading. This contrast suggests that the optionality of *kako* with the Croatian mental ability *znati* is an illusion and points towards the conclusion that *znati kako* ‘know how’ is in fact an instantiation of the *lexical* (i.e., attitude) version of *znati*, parallel to other configurations in which lexical

² The careful reader will have noticed that the lexical *znati* used in (7c) embeds an interrogative, rather than a that-complement. However, this choice does not impede the argument, since the lexical *know* which embeds interrogative complements can be derived from the factive *know* which embeds that-complements and both can thus be treated as lexical (in a nutshell, what the attitude holder knows is the answer to the embedded question; see Karttunen 1977). The reason for using an interrogative rather than a that-complement in (7c) is that the combination of mental ability with factive *znati* seems strange at the conceptual level: what does it mean for somebody to know how to know that the Earth is round? I do not know what the source of this anomaly is, but, intuitively, the problem seems to lie with the factivity of the lower, lexical *znati* (or *know* in English). I leave the question of why this is the case aside for the purposes of this thesis and merely note that the issue cannot lie with the mental ability *znati* (or *know*) in particular, since replacing it with a paraphrase such as ‘be capable’ does not ameliorate the result, at least according to my own judgements for Croatian.

znati embeds a complement clause introduced by a *wh*-word: know when, who, whether, etc. In other words, what I am suggesting is that the presence of *kako* depends on whether *znati* is used lexically (i.e., merged as complement to little *v*) or semi-lexically (i.e., merged in the thematic domain of another root). The lexical version is obligatorily accompanied with *kako*, and the semi-lexical version obligatorily takes a bare infinitive.³ Returning to example (8), the higher *znati* is then not the semi-lexical mental ability one but the lexical (attitude) one, and the fact that it may embed the habitual-like *znati* does not bear on the ordering predicted by (6) since the complement of the lexical *znati* realises a separate functional sequence, allowing for habitual-like *znati* to appear in it. The semi-lexical mental ability *znati*, without *kako*, cannot embed the habitual-like *znati* (see (7b)), and the ordering predictions that follow from the structure in (6) are borne out.

There is one more conclusion that one might draw from the structure in (6), related to the degree of functionality of the different readings of *znati* and the positions of $\sqrt{zna-}$ along the clausal spine. In particular, the distribution seems to suggest that there is a correlation between the height of the position in which $\sqrt{zna-}$ is merged and the degree of functionality of the resulting reading—in other words, the higher $\sqrt{zna-}$ is merged, the more functional-like the result. The (fully lexical) attitude/familiarity *znati* is in the lowest position available, the habitual-like *znati*, which is the most functional-like, arises when $\sqrt{zna-}$ is merged in the highest of its positions, and the mental ability *znati*, which displays behaviour that seems to be between the habitual-like and the lexical *znati* with respect to functionality, arises when $\sqrt{zna-}$ is merged in a position that is between the other two.

It is tempting to make this correlation more general and conjecture that the roots merged higher in the structure are always more functional-like than roots that are merged lower in the structure. However, one only needs to look as far as English to falsify this hypothesis. At the beginning of Chapter 5, I gave the raising versions of the English *threaten* and *promise* as examples of semi-lexical items. Traugott (1997) argues that these verbs encode epistemic modality. Including these verbs into the framework adopted here, they could be analysed as a combination of the lexical roots of *threaten* and *promise* with the functional head encoding epistemic modality, which is situated very high in the clausal spine according to Cinque's (1999, 2006) functional hierarchy. The height-functionality correlation hypothesis would then predict that any items situated below the epistemic head which arise by means of merging a lexical root and a functional head should be less functional than the epistemic *threaten* and *promise*. This does not seem to hold: if the analysis proposed for *used to* in Chapter 5 is correct,

3 That is not to say that the mental ability *znati* and the lexical *znati kako* 'know how' are entirely unrelated. Somewhat speculatively, the combination of lexical *znati* with *kako* might have been instrumental in triggering the grammaticalisation process leading to the semi-lexical mental ability *znati*—if somebody knows *how* to do something, then they are probably also able to do it. The hypothesis that this (re)interpretation resulted in merging $\sqrt{zna-}$ higher in the tree is in line with van Gelderen's (2004) Late Merge Principle, which is one of the two core principles that, according to her, underlie syntactic change, and states that elements should merge as late as possible.

this example alone falsifies the hypothesis, as *used to* is merged much lower than the epistemic head but is fully grammaticalised, and thereby more functional than the epistemic versions of *threaten* and *promise*.

Nevertheless, I suggest that a more modest version of the generalisation, one applying to individual roots, might still be worth exploring. This version of the hypothesis would state that the higher the functional head with which a given root merges, the more functional the result—or, from a different perspective, that a lower position of a root can never give rise to syntactic or semantic behaviour that is more functional-like than a higher position of this very same root. Given that this generalisation is only based on one single root ($\sqrt{zna-}$) in one single language (Croatian), it is at most tentative, and needs to be tested against semi-lexical items in other languages. Ideally, one would need roots that give rise to more than two readings to test the hypothesis, or at least two readings both of which are semi-lexical. If a verb has but two readings, one of which is lexical, this would not bear on the validity of the suggested hypothesis, since the higher one will necessarily be more functional-like than the lower one, which is as lexical as a root can be.

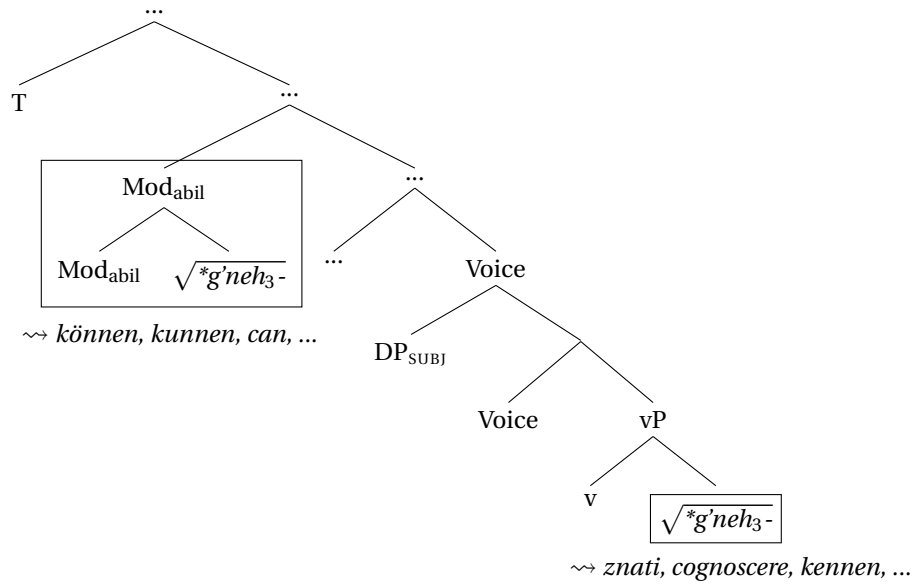
6.2 Beyond Croatian—back to the root(s)

Before concluding this chapter, I briefly turn to verbs in other languages, past and present, that display a range of readings similar to the Croatian *znati* and, as a consequence, may lend themselves to a comparable treatment—as underspecified roots merging with different functional heads along the clausal functional sequence.

Starting from the beginning, the Croatian root $\sqrt{zna-}$ stems from the reconstructed Proto-Indo-European root $\sqrt{*g'neh_3-}$. Other derivatives include, e.g., the Latin *cognoscere* ‘know’ (and its Romance derivatives), the German *kennen*, which most closely corresponds to the familiarity reading of Croatian *znati*, as well as the English modal *can* and its counterparts in German (*können*) and Dutch (*kunnen*).⁴ I suggest that the diachronic process leading to the formation of the modal verbs (in English, German, and Dutch) might have started by merging $\sqrt{*g'neh_3-}$ with a modal ability head, as illustrated in (9), possibly followed by a further process of grammaticalisation. The more lexical meanings (as in Slavic or Romance) are most likely developments of the $\sqrt{*g'neh_3-}$ that stayed in the lowest position, yielding lexical roots.

⁴ See the entry for *znati* in the *Croatian language portal*, available at <https://hjp.znanje.hr/index.php?show=search> as well as the entry for *können* in the *Digital dictionary of the German language*, available at <https://www.dwds.de/wb/k%C3%B6nnen#etymwb-1>.

(9)



Kuteva et al. (2019) (see also Bybee et al. 1994: 154f.) report cases of diachronic development from items denoting ‘know’ to habitual markers in several languages (e.g., the Niger-Congo language Moré or, going from knowledge across ability to habituality, a number of pidgin and creole languages). Similarly to the analysis proposed for the habitual-like *znati* in Section 5.2.1, these developments might be a result of the original root merging with an iterative or habitual functional head, followed by a grammaticalisation process.

In a sense, then, the different synchronic flavours of the Croatian *znati* ‘know’ reflect attested diachronic developments, suggesting that a similar mechanism is at play—as expected given the *uniformitarian principle*, which states roughly that synchronic and diachronic variation adhere to the same rules (but see, e.g., Walkden 2019 for discussion). Diachronic development leading from ‘know’ to evidential markers is also found (Kuteva et al. 2019) and, even though I proposed that the evidential component in the Croatian *znati* is due to its lexical content, this component might grammaticalise in a future stage of Croatian.

Returning to the synchronic perspective, in other languages, too, verbs denoting knowledge in their lexical use may assume more functional-like readings that are similar to the Croatian $\sqrt{zna-}$. For instance, the Hungarian verb *tud* ‘know’ may be used as in (10) with a meaning that is similar to the habitual-like *znati*, suggesting a combination with an iterative head. The incompatibility with individual-level predicates, illustrated in (11), further points into this direction. However, there are also differences: as evident from the paraphrase with ‘tendency’ in (10), the recurrences with *tud* seem to be more regular than with *znati*, and, unlike with *znati*, applying an embedded individual-level predicate to multiple individuals or occasions does not help, as shown in (11b).

- (10) *Ez a fiók be tud ragadni*
 this the drawer in know.3SG get.stuck.INF
 ‘This drawer has the tendency to get stuck.’ (A. Lipták, p.c.)
- (11) a. **Ez a babzsák széket tud lenni.*
 this the bean.bag chair know.3SG be.INF
 Intended: ‘This beanbag can be/function as a chair.’ (A. Lipták, p.c.)
- b. **Ezek a babzsákok székek tudnak lenni.*
 these the bean.bags chairs know.3PL be.INF
 Intended: ‘These beanbags can be/function sometimes as chairs.’ (A. Lipták, p.c.)

Another example is the English *know* in combination with an infinitive, illustrated in (12a) in the active and (12b) in the passive. Similarly to habitual-like *znati*, iterativity seems to be involved in that stative and individual-level predicates are degraded (unless iterated), as shown in (13). Examples such as (13a), with active *know*, may be uttered if, for instance, the rules of chess are under dispute (similarly to the German *pflügen*; see Section 4.3.1), but the passive (13b) cannot be salvaged even in such a context (S. Bryant, p.c.).

- (12) a. *I know her to give fabulous talks.*
 b. *She is known to give fabulous talks.*
- (13) a. **I know the bishop to move diagonally.*
 b. **The bishop is known to move diagonally.* (S. Bryant, p.c.)

The Norwegian *vite* ‘know’ also appears to have a habitual-like use, illustrated in (14). In order to use *vite* in (14a), it is not enough that Nora have the ability to ruin a party; she also has to have the tendency or habit of doing so. The example in (14b) is similarly restricted: Arne’s ability to hit the bullseye is not sufficient, there also has to be a tendency or habit in order for this sentence to be true (A. Ommundsen, p.c.).

- (14) a. *Nora vet å ødelegge en fest, #men hun har aldri gjort det.*
 Nora knows to ruin a party but she has never done it
 ‘Nora has the habit of ruining a party, #but she has never done it.’
- b. *Arne vet å treffe innerblinken.*
 Arne knows to hit bullseye
 ‘Arne has the habit of hitting the bullseye.’ (A. Ommundsen, p.c.)

Finally, Albanian *di* ‘know’ can be used as an attitude verb as in (15a), but also to denote ability, as in (15b). In contrast to Croatian, however, the ability reading does not seem to denote *mental* ability, as the subject need not be sentient: the example in (15b) shows that *di* can be used with weather predicates. This suggests that the ability reading of *di* is more functional and hence in a later stage of grammaticalisation.

- (15) a. *Ana e di që toka është e rummbullakët.*
 Ana CL knows that Earth.the is AGR round
 ‘Ana knows that the Earth is round.’ (D. Kallulli, p.c.)
- b. *Në Vjenë di të bjerë shi.*
 in Vienna knows SUBJ fall rain
 ‘It can rain in Vienna.’ (D. Kallulli, p.c.)

The different flavours that these knowledge-denoting verbs assume show similarities to the ways in which the Croatian *znati* is used, with ability and iterativity as recurrent features (see also the discussion of sporadic *can* in English and *pouvoir* in French in Section 4.3.3). At the same time, the readings are not entirely identical across languages, points of variation including, for instance, the frequency of repetition (higher with the Hungarian *tud* than with the Croatian *znati*) or the ability of the verb in question to be passivised (possible in English, but not in Croatian). In order to delineate the range of admissible variation and pinpoint the factors that underlie it, the similarities and differences among readings of knowledge-denoting verbs across languages need to be carefully examined, with respect to both their syntactic and semantic properties. On a more general note, investigating the functional-like flavours that knowledge-denoting verbs may assume from the perspective of semi-lexicality and cartographic clause structure may help isolate the semantic contribution of the lexical roots involved by subtracting the meaning of the functional elements and, as a consequence, provide insights into the long-standing question of what it really means to ‘know’ something.

7 Conclusion and outlook

This thesis provided an in-depth investigation of the habitual-like reading of the Croatian verb *znati*, lit. ‘know’, situating it within a cross-linguistic context in terms of a comparison with complex habitual-like expressions in English, German, and Hebrew. The different flavours of *znati*—attitude, familiarity, and mental acquaintance—were related to each other as well as to verbs with a similar range of readings in Albanian, English, French, Hungarian, and Norwegian.

The main conclusion emerging from the previous chapters is that the concept of habituality cannot be reduced to a single universal feature but needs to be decomposed into more basic properties if a comprehensive classification of habitual-like expressions is to be achieved. Habituality is a very diverse concept, situated at the juncture of categories such as aspect, modality, iterativity, genericity, and evidentiality (see Chapter 2). Importantly, as shown in Chapters 3 and 4, an individual habitual-like expression may combine properties of several of these categories, even though one of them might be most prominent. The comparison among complex habitual-like expressions in Croatian, English, German, and Hebrew yielded three broad classes, which display different clusters of properties and cut across languages: *aspectual*, *generic*, and *iterative* habituality. Treating a single feature—be it iterativity, imperfectivity, or modality—as the defining feature of habituality would exclude one or more classes from the domain of habituality and thereby cause greater uniformity, but would still need to account for the differences among the (classes of) expressions that remain as well as for similarities with the excluded classes. I therefore suggested that a broader, heterogeneous, inclusive concept of habituality should be maintained, as conveying roughly that a certain state of affairs holds for an extended period of time, but that the expressions encompassed by such a broad concept of habituality need to be carefully classified into smaller, more uniform types—reconciling, in a sense, the various definitions of habituality that have been proposed in the literature.

The decomposition method is reflected in the syntactic implementation as well (see Chapter 5). Building on Cavarani-Pots’ (2020) approach to semi-lexicality and supplementing it with the cartographic clausal structure à la Cinque (1999, 2006), the habitual-like markers under investigation were analysed as resulting from more elementary building blocks—lexical roots and functional heads. The different clusters of properties displayed by these habitual-like expressions can then be seen as reflecting the properties of the different individual elements involved.

The combination of Cavarani-Pots' system and Cinque's functional hierarchy may prove fruitful in investigating phenomena that belong to other domains of grammar as well. As suggested in Chapter 5, one such domain is modal expressions. For instance, determining the syntactic building blocks of the English habitual-like *would* and its Croatian counterpart *bi* provides a promising direction towards isolating the core meaning of the underlying roots and may aid the investigation of the contribution of these roots in other contexts, such as counterfactual conditionals, providing a new perspective on what von Stechow & Iatridou (2023) call X-marking. Further, different modal flavours may be analysed as reflections of modal roots merging with heads encoding different modal bases (e.g., epistemic, obligation, alethic, etc.), which, in turn, may establish a link back to the realm of habitual-like expressions through the sporadic flavour of the English *can* and French *pouvoir* 'can'.

A second area to which the developed framework may be applied is polysemous verbs as well as grammaticalisation patterns which start from the same root but yield items with distinct syntactic and semantic properties. Chapter 6 captured the different readings of the Croatian *znati* 'know'—familiarity, attitude, and mental ability—as reflecting combinations of the lexical root $\sqrt{\text{zna-}}$ with different functional heads along the clausal spine. This results in various degrees of grammaticalisation, suggesting that the height at which a given root is merged may correlate with the degree of functionality of the resulting expression: the higher the position of the functional head with which a certain root combines, the more functional-like the behaviour of the resulting item. As it stands, this is merely a conjecture based exclusively on the behaviour of $\sqrt{\text{zna-}}$ in Croatian and would need to be tested against other roots in other languages in order to investigate its validity. A domain which may lend itself to testing this hypothesis is knowledge-denoting verbs. An initial overview in Chapter 6 showed that such verbs in Albanian, English, Hungarian, and Norwegian may assume flavours that are similar, but not identical, to the range of readings that the Croatian *znati* may have. In addition, a thorough investigation of different flavours of knowing through the lenses of semi-lexicality in combination with cartographic clause structure may help isolate their common semantic component and lead to novel insights into the roots of knowledge.

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