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Chapter 4  Generic sentences

The last chapter attributed the impossibility of episodic readings for eventive bare predicates (BPs) in root clauses to the fact that there was no way of obtaining a constituent of type \(<i,t>\). That means that the derivation will crash, and thus the sentence will be uninterpretable. We saw, however, that non-episodic readings of eventive BPs are possible. Following our earlier point of view, this suggests that in these cases we can obtain constituents of type \(<i,t>\) with the relevant meaning. This chapter makes a proposal for how this happens.

There are two main classes of cases to consider: sentences with adverbial quantifiers, and so-called “habitual” sentences without overt adverbial quantifiers (including what have been termed “dispositional” sentences). With this in mind:

1. We give an analysis of the former cases and suggest an analysis of the latter, which includes a covert quantifier and thus reduces to the former.

2. Since the analysis of “habitual” sentences here differs from some others that have been proposed, we explain what those other analyses are and why we didn’t adopt them.

This chapter is organized as follows:

Section 4.1 introduces definitions and some important notions concerning genericity. In particular, we distinguish generic NPs from generic sentences and we define precisely the subcategory of generic sentences that are relevant to the current study on Mandarin, that is, sentences with eventive predicates reporting regularities or making generalizations.

Section 4.2 presents previous analyses of generic sentences: the Quantificational Treatment, which assumes a GEN operator quantifying over situations or times; the Aspectual Treatment, which makes the assumption of a covert imperfective operator HAB_{imp}; and the Modal Analysis, which derives genericity from a modal operator HAB_{mod}. 
Section 4.3 reviews the data in Mandarin concerning generic sentences that are aspectually unmarked. We investigate connection between aspectual marking and generic readings in sentences with eventive BPs as well as the temporal anchoring of generic sentences.

Section 4.4 spells out the semantics of Q-adverbs and the covert operator Q. We discuss the difference between Q and the purely aspectual HAB, and we provide evidence for a quantificational treatment of generic sentences with eventive BPs in Mandarin.

4.1 Genericity

Genericity is a well-researched topic. It is far beyond the scope of this thesis to give an overview of many different notions and analyses involving genericity. Instead, we focus on the kind of generic construal that is relevant to the temporal interpretation of aspectually unmarked sentences in Mandarin. We have seen in Chapter 3 that sentences with bare eventive predicates only allow generic readings in Mandarin. In this section, we clarify the meaning of the term “generic” in our generalizations. In particular, Section 4.1.1 distinguishes sentence-level genericity from NP-level genericity and Section 4.1.2 discusses different types of generic sentences and pinpoints those that are present in our Mandarin data.

4.1.1 Genericity: NP level vs. sentence level

The term “genericity” has two different uses: it can either refer to i) a property of a Noun Phrase (NP) denoting a kind, or ii) the characterizing feature of a sentence reporting a regularity (see Krifka et al. 1995:2-3). The first use of genericity concerns kind-referring NPs, also known as generic NPs, as opposed to object-referring NPs; the second use of genericity indicates a property at the sentence level, generic sentences, as opposed to episodic sentences (Carlson 1988). Episodic sentences are related to specific instances of eventualities. Their truth value can be obtained, according to Carlson, by examining directly the world at a certain temporal location, while a generic sentence makes a generalization (about an individual or a kind) that is inferred from instances; they are also referred to as characterizing sentences (Krifka et al. 1995:2-3).
The examples in (1) and (2) below illustrate how the two meanings of *genericity* differ from each other:

(1) Pandas were discovered a long time ago.

*Generic NP; Episodic sentence*

(2) Huanhuan eats a lot.

*Object-referring NP; Generic sentence*

(1) is an *episodic sentence*: it reports a particular event in the past, that is, the discovery of the species of panda, although the subject of the sentence is a “generic” NP referring to the kind “panda”. (2), in contrast, is a *generic sentence*, which contains no kind-referring NP: it makes a generalization about the behavior of the individual Huanhuan. We see here that the presence of a ‘generic NP’ does not itself make a sentence a ‘generic sentence’ and a generic sentence does not necessarily contain a kind-referring NP. They are distinct properties.

Note, however, that these two types of genericity are often connected. Generic NPs often appear in sentences making generalizations. Take (3) for instance:

(3) Pandas eat a lot.

The bare plural *pandas* refers to a kind and the whole sentence *Pandas eat a lot* could be paraphrased as “A typical member of the panda kind tends to eat a lot”. (3) generalizes over individuals. In other words, the individual members of the panda kind are the relevant “instances”. Given the definitions of genericity, (3) is a generic sentence. Compare (3) with (2). They differ in the nature of the argument involved in the characterization: while (2) makes a generalization over regular occurrences of events involving a particular *individual*, Huanhuan, (3) characterizes a *kind*, the species of “panda”.

Having clarified the two notions of genericity, we now turn to sentences involving genericity in Mandarin. The Mandarin data further confirm that kind-referring NPs have different properties from characterizing sentences.
Consider (4)-(6) below:

(4) Xióngmāo hěnjiǔ yǐqián jiù bèi
    panda long.time before already PASSIF
    fāxiàn *(le).
discover PERF

‘Pandas were discovered a long time ago.’

(5) Xióngmāo chī de tèbié duō.
    panda eat de special lot

‘Pandas eat a lot.’

(6) Huānhuān chī de tèbié duō.
    Huanhuan eat de special lot

‘Huanhuan eats a lot.’

(4) above is the Mandarin counterpart of (1), an episodic sentence describing a past event involving a kind xióngmāo ‘panda’. (5) is a characterizing sentence about the kind “panda” and (6) is a characterizing sentence about the individual named Huānhuān.

Interestingly, we find another contrast between (4) on the one hand and (5) / (6) on the other hand: (4) must be overtly marked by the perfective aspect le, otherwise it is ill-formed, whereas both (5) and (6) are well-formed with no overt aspect. How can we explain this contrast? Notice that (4) reports a particular past event and thus is an episodic sentence, although the subject NP xióngmāo ‘panda’ refers to a kind. (5) and (6), in contrast, make generalizations over events, and they are generic sentences. Since Mandarin eventive predicates must be overtly marked for aspect to allow episodic readings, as we proposed in Chapter 3, (4) requires an aspect to be felicitous. Recall that we also claimed that when bare eventive predicates are well-formed, they only allow generic readings. That’s exactly what we find in (5) and (6). They contain bare eventive predicates and they only allow a generic construal.

The contrast observed in the Mandarin data that we have just discussed provides evidence for the distinction between two distinct phenomena related to “genericity” that we have introduced earlier: kind-referring NPs and characterizing sentences.
In this chapter, we essentially deal with sentences with a bare eventive predicate that express regularities. Therefore, our discussion will be restricted to genericity as a clausal property, and not as a nominal property. Only generic sentences are relevant.

### 4.1.2 Generic sentences: lexical vs. habitual

Also referred to as “characterizing sentences” (Krifka et al. 1995), generic sentences make generalizations or express regularities over eventualities, situations, or individuals. From this point of view, they are the opposite of episodic sentences, which report episodic eventualities.

There are two subtypes of generic sentences depending on the lexical-semantic properties of the predicate. Generic sentences with a stative predicate like “have” in (7) below are known as lexical characterizing sentences, as opposed to habitual characterizing sentences, which refer to generic sentences containing an eventive predicate like “eat bamboo” in (8) (see Krifka et al. 1995).

(7) Huanhuan has black circles.

(8) Huanhuan eats bamboo.

Table 7 below recapitulates the classification of generic sentences and episodic sentences. The specific focus of this chapter, however, will be on the class of habitual sentences in Table 7; that is, sentences with an eventive predicate reporting regularities. (The temporal interpretation of sentences with stative predicates in Mandarin has already been discussed in Chapter 3.) We will continue to use the term generic sentences, but with these sentences in particular in mind, and our concern will be how the readings of these sentences get derived.
We described earlier generic sentences as sentences making “generalizations or express regularities over eventualities, situations and individuals”. The reader has probably imagined how this description applies to John drinks a beer every day: the truth of John drinks a beer every day is guaranteed by the existence of many episodes of John drinking a beer. Likewise for Pandas have black circles: the truth of this sentence is guaranteed by the existence of many pandas who have black circles. It is probably less easy to see in what sense this description applies to a sentence like Max is smart. Max is smart is classified as a generic sentence in the literature because it contains an individual-level predicate “be smart”, which “ascribe[s] tendentially permanent properties to [its] argument” (Chierchia 1995:198), which is closely related to the key properties of generic sentences. This type of sentences do not make generalizations over episodic eventualities or individuals, but inherently generic.
occurrence can vary according to the meaning of the predicate or/and the quantificational adverb if there is any. Compare (9a) to (9b):

(9) a. John goes to the movies.
   b. Mary murders children. (Rimell 2004)

Rimell (2004) points out that an utterance like (9a) is normally based on the observation of relatively frequent events of John going to the movies, while (9b) can be truthfully uttered on the basis of fewer instances of murder.

Moreover, some generic sentences with no overt Q-adverbs are used to characterize individuals without any specification of the frequency of the events. Ferreira (2005) argues that (10) describes John as a vacuum-cleaner salesman, and it can be true even if John has never sold a single vacuum-cleaner.

(10) John sells vacuum-cleaners. (Ferreira 2005:121)

(10) is an example given in Krifka et al. (1995:39) as a habitual sentence. In the analysis of Ferreira (2005), sentences describing activities or professions like (10) have a different semantics compared to sentences making generalizations over instances of events. On his proposal, sentences describing activities or professions like (10) involve a null stativizer, functioning like the nominalizing suffix -er in English, on a par with “John is a vacuum-cleaner seller”: it takes an eventive predicate as its argument and yields a stative predicate. Although Ferreira (2005) does not go any further to explore the semantics of sentences describing activities or professions, his observation shows us that the term “habitual sentences” used in the literature might be misleading. Sentences like (10) do not form a homogeneous class with sentences describing habits like (9a) above. Scheiner (2003) defines habituals as sentences that can be paraphrased by used to, has the habit of, without change in meaning. (10) is clearly not a habitual sentence in Scheiner’s view.

In Mandarin, sentences describing regular events and those reporting professions are both aspectually unmarked. Consider (11) below:
(11a) Lùlu hē lù-chá.
   Lulu drink green-tea
   ‘Lulu drinks green tea.’

(11b) Lánlan mài huàzhūāngpǐn.
   Lanlan sell cosmetics
   ‘Lanlan sells cosmetics.’

(11a) describes Lulu’s habit of drinking green tea and (11b) reports Lanlan’s profession as a cosmetics saleswoman. They should be analyzed differently if we follow Ferreira (2005) and Scheiner (2003), but both (11a) and (11b) have a “minimal” form: the temporally/aspectually unmarked form.

The priority of our investigation in this chapter is the semantics of “habitual” sentences like (11a). We leave open the question of the semantics of “profession-denoting” sentences like (11b). Obviously, a purely temporal/aspectual analysis leads to many issues: why (11b) can be uttered even if there is no instantiation of the described event at all, namely, in a context where Lanlan never managed to sell anything, and (11b) is only used to describe her profession. We will bring up later the analyses by Ferreira (2005) and Boneh & Doron (2010) of profession-denoting habituals, but we will not take sides as to which analysis is more plausible.

The next section gives an overview of theoretical accounts for generic sentences. We show why these analyses are not adequate for our purpose. In Section 4.4, we propose an analysis of generic readings of sentences with eventive BPs in Mandarin.

4.2 Overview of analyses for genericity

Sentences yielding generic readings are attested cross-linguistically and they share some quasi “universal” properties: they are for example minimally marked for tense and aspect in most languages investigated in Dahl (1995). The source of genericity has been of interest to semanticists. This section examines some analyses of generic sentences in the literature.

In particular, we discuss the Quantificational Treatment, the Aspectual Treatment and the Modal Treatment of generic sentences.
We observe the advantages and the limits of each approach and evaluate their appropriateness for our current study.

### 4.2.1 The quantificational GEN operator

It is commonly assumed that the semantics of generic sentences involves a silent operator GEN, which behaves like quantificational adverbs (Q-Adverbs) such as *usually, in general or always* (Wilkinson 1991). On one implementation of this idea, GEN is analyzed as a dyadic operator of the kind originally imagined for Q-adverbs (Lewis 1975; Kamp 1981; Heim 1982; Farkas & Sugioka 1983; Carlson 1989 and Krifka et al. 1995). The operator relates two constituents at logical form, a “restrictor” and a “nuclear scope”, and it quantifies over individuals and/or situations. A generic sentence thus has a “tripartite” logical form along the lines of (12):

\[
\text{(12) Q-Adv/GEN (Restrictor) (Nuclear scope)}
\]

GEN quantifies over situations or cases in generic (characterizing) sentences reporting regularities (Lawler 1972, Schubert & Pelletier 1989, among others). In the sentences of interest to us, GEN functions specifically as a quantifier over situations, and the analysis under discussion would assign to (13a) a logical form of the kind in (13b), where $s$ is a situation variable (Krifka et al. 1995).

\[
\begin{align*}
\text{(13) a. John goes to the movies when he is free.} \\
\text{b. GEN[s] (John is free in } s; \text{ John goes to the movies in } s)
\end{align*}
\]

(13b) says that most or all situations of John being free are also situations in which John goes to the movies. The restrictor corresponds to the condition “John is free” and the nuclear scope corresponds to the matrix “John goes to the movies”.

Note that there are generic sentences, such as (14a) below, which do not contain a conditional or a *when*-clause like (13a). A question arises whether these sentences have a tripartite structure at all, or if they simply lack a restrictor altogether. One of the most commonly adopted representations for these “simple generic sentences” is that they contain an implicit (contextually determined) restrictor, as shown in (14b), where GEN quantifies over “normal situations” for Mary to smoke:

\[
\begin{align*}
\text{(14) a. Mary always smokes.} \\
\text{b. GEN["normal situations"] (Mary always smokes)}
\end{align*}
\]
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(14) a. Mary smokes.
     b. GEN[s] (s is a normal situation with respect to smoking & s contains Mary; Mary smokes in s)

(cf. Krifka et al. 1995:31)

An important challenge for this analysis is how to define these “normal situations”.

Although the quantificational treatment of generic sentences is very influential in the literature, the semantics of the generic operator is hotly debated and no analysis has been established as standard. Krifka et al. (1995) give an overview of several plausible directions (relevant quantification; prototypes; stereotypes; modal interpretations, situations and nonmonotonic inferences), but leave open the question of the semantics of GEN.

The difficulty in finding a unified treatment for GEN results at least partly from the large range of empirical facts that the term “genericity” is used to cover. Both Scheiner (2003) and Rimell (2004) argue for a distinction between habitual sentences that range over situations and generic sentences that involve genericity under other forms. The following sections present non-quantificational treatments of generic sentences, that is, the aspektual analysis and the modal analysis of generic sentences.

4.2.2 The aspektual HAB operator

The term habitual sentences, as we have seen in Section 4.1.2, refers to sentences that contain an eventive predicate and report regularities. They are considered as a subtype of generic sentences. That is, habitual sentences are often taken to be generic sentences with an eventive predicate.

Under the influential quantificational treatment presented in the previous section, genericity of both kind-referring NPs and generic sentences is associated with a null quantificational operator GEN. However, many scholars investigating the semantics of habitual sentences assume an implicit operator HAB (Schoorlemmer 1995, Paslawska & von Stechow 2003, Scheiner 2003, Rimell 2004, Ferreira 2005, Boneh & Doron 2008, 2010 among others), itself not a quantifier of the same nature as Q-adverbs. One of the arguments for
distinguishing HAB from quantifiers is that habitual sentences lack scope ambiguities, contrary to quantificational sentences. Consider (15a) and (15b):

(15) a. John smokes a pipe.
    b. #John smokes a cigarette.

Analyzing HAB as a quantifier ranging over events described by the predicate fails to explain why (15a) but not (15b) is felicitous as a habitual sentence. That is, why can’t (15b) be interpreted as a generalization over events of “John smoking a cigarette”, the way John usually smokes a cigarette can? The source of the contrast observed above is the scope of HAB. The indefinite NP scopes over the HAB operator, and since a pipe but not a cigarette can usually be smoked again and again, (15a) but not (15b) is felicitous.

Although many scholars provide evidence for distinguishing HAB from universal quantifiers like always and usually, the semantic value of HAB remains a hotly debated issue.

4.2.2.1 Kaufmann (Scheiner 2003), Paslawska & von Stechow (2003) and Schoorlemmer (1995)

Schoorlemmer (1995) analyzes HAB as an imperfective operator that selects for a predicate of events. Paslawska & von Stechow (2003) (henceforth P&S) share the view that HAB encodes imperfectivity, but in their definition given in (16) below, HAB selects for a predicate of times rather than for a predicate of events.
(16) HAB<it, it> is defined only for summative properties \(^{35}\) of intervals, more accurately ‘habits’;
where defined, \([\text{HAB}] = \lambda P. \lambda I. \exists J[I \subseteq J \& P(J)] \)

Paslawska & von Stechow (2003:337)

Under P&S’ assumption, a sentence like (17) in Russian given by Schoorlemmer has the logical form in (18).

(17) My \textit{každyj god} ezdili \textit{na kurort.} \textit{We went to the spa every year.}’

Schoorlemmer (1995:110)

(18) PAST HAB \([\phi]\) where
\([\phi] = \lambda J. \forall K[\text{year(K)} \& K \subseteq J \rightarrow \exists e: \text{we go to the spa} \& \tau(e) \subseteq K]^{36}\)

Adapted from P&S (2003:337)

According to (18), HAB selects for a predicate that holds of an interval if every year inside it contains the duration of an event of our going to the spa. the event variable \(e\) is bound by the perfective aspect INCLUDED \(\subseteq\) (in ‘\(\tau(e) \subseteq K’\), and HAB, which is imperfective in nature, binds the reference time.

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\(^{35}\) By “\textit{summative property}”, P&S mean the so-called \textit{cumulative} property (CUM) defined by Krifka (1992:32) as follows:
(i) \(\forall P[CUM(P) \iff \forall x, y[P(x) \& P(y) \rightarrow P(x \cup y)]\)
A property \(P\) is \textit{cumulative} iff for any \(x, y\) satisfying \(P\), the fusion of \(x\) and \(y\) also satisfies \(P\).

Krifka (1992:39) defines the \textit{summative} property as a \textit{cumulative} property for two-place relations, which is therefore different from the term used in P&S (2003).
(ii) \(\forall R[SUM(R) \iff \forall e, e', x, x' [R(e, x) \& R(e', x') \rightarrow R(e \cup e', x \cup x')]]\)

\(^{36}\) The semantics of (17) given by P&S is as follows:
PAST \(\lambda I. \exists J[I \subseteq J \& \forall K[\text{year(K)} \& K \subseteq J \rightarrow \exists e: \text{we go to the spa} \& \tau(e) \subseteq K]]\)

P&S (2003:337)
P&S give a very brief note on habituals and their discussion focuses on the case discussed in (17), which contains an overt quantificational adverbial *kaldyj god* ‘every year’. Otherwise, they give no detail on how to derive summative properties in habitual sentences with no overt quantification, such as (19a). For instance, while *go to the movies every week* clearly denotes a habit in their sense, it is not obvious whether the VP *go to the movies* without any adverb in (19a) denotes a habit, or whether it describes intervals corresponding to single events of going to the movies:

(19) a. John goes to the movies.

b. John goes to the movies every week.

Assuming that (20a) contains an instance of HAB, this raises the question how to derive a predicate of times characterized as a ‘habit’ from a VP like *go to the movies* in (19a).

Inspired by P&S (2003), M. Kaufmann (Scheiner 2003) also argues for an imperfective operator HAB in habitual sentences. Kaufmann’s HAB is not a covert Q-adverb, but takes Q-adverbs as arguments -- specifically, it takes as an argument a Q-adverb that turns an eventive predicate to a habitus, which is cumulative. Thus, Kaufmann’s HAB, like P&S’s, ultimately gives a property of times, namely, the property of being included in an interval that constitutes a “habitus”. Here is her definition of HAB:

(20) \[ \text{HAB}^{bc} = \lambda Q. \lambda P. \lambda I. \exists J [ I \subseteq J \& Q(P)(J)], \]

\[
\text{HAB}^{<vl,ir<vl,ir>}, \text{ defined only if } \text{CUM}(||Q||).^{37}
\]

cumulativity as restriction on a quantifier:

\[
\text{CUM}(||Q||) \iff \forall P \forall J [Q(P)(I) \& Q(P)(J) \& I \succ J \rightarrow Q(P)(I \cup J)].^{38, 39}
\]

37 Kaufmann represents an “event” as type “\(s\)”. We replace “\(s\)” by “\(v\)” in order to be consistent with the terminology used in the previous parts of this thesis.

38 The *cumulativity* is similar to the property referred to as *summative* in Paslawska & von Stechow (2003).

39 “\(I \succ J\)” means I and J are adjacent.
For instance, HAB could combine with the Q-adverb *often*, whose semantic value is as in (21) according to Kaufmann:

\[
(21) \left[ \text{\textit{[often]}_{g,c}} \right]_\text{g,c} = \lambda P. \lambda t. \left[ \{e: \tau(e) \subset t \& P(e) = 1\} \right] > C
\]

where \( C \) a contextually given standard for the number of events \( e \) in \( t \) such that \( P(e) \).

Adapted from Scheiner (2003:9)

(21) defines *often* as a \(<\text{vt}, it>\) type operator. When it combines with a predicate \( P \), it gives a property of intervals, true of an interval \( t \) if the amount of \( P \)-events within \( t \) is larger than a contextually specified standard \( C \). As for sentences with no overt quantification, Kaufmann assumes a covert Q-adverb “Qc”.

To summarize, under Kaufmann’s analysis in Scheiner (2003), habituals are statives derived from eventive predicates, and HAB is a “stativizer” that relates predicates of events to predicates of times, just like aspect. Quantificational adverbs are not overt HAB-operators, but modify the complement of HAB. To illustrate, a habitual sentence like in (22) has the representation in (23):

(22) John often goes to the movies.

(23)

\[
\text{TP t} \quad \begin{array}{c}
\text{Ti} \quad \text{PRES} \quad \text{AspP} <\textit{i},t> \\
\quad \text{VP} <\textit{v},t> \\
\quad \text{HAB} <\textit{<vt,it>},<vt,it>> \\
\quad \text{Q-Adv} <\textit{<vt,it>}> \quad \text{John goes to the movies} \quad \text{often}
\end{array}
\]

Kaufmann adopts the view that morphological tenses introduce semantic tenses (PRES, PAST, FUT) and moreover she adopts a
deictic theory of tense (Partee 1973). The semantic value of PRES is as follows (see also Chapter 2 of this thesis):

\[(24) \|PRES_i\|^{g,c} = g(i) \text{ if } g(i) \text{ overlaps } t_c, \text{ undefined otherwise.}\]

In (24), g(i) is a time the speaker refers to when she utters a sentence with present tense where the index on PRES is i. The present tense PRES is defined only if the value assigned to the index i, g(i), overlaps the utterance time t_c, and if it is defined, PRES gives the value g(i).

(25) below gives the semantic values of the composants in (22) and (26) illustrates the derivation of the habitual construal.

(25)

a. \([PRES_i]^{g,c} = g(i) \text{ if } g(i) \text{ overlaps } t_c, \text{ undefined otherwise.}\]

b. \([HAB]^{g,c} = \lambda Q. \lambda P. \lambda I. \exists J \left[ |\{e: \tau (e) \subset t \& P(e) = 1\}| > C \right], \text{ defined only if } \text{CUM}([Q]^{g,c}).\]

c. \([\text{often}]^{g,c} = \lambda P. \lambda t. \left[ |\{e: \tau (e) \subset t \& P(e) = 1\}| > C \right] \text{ where } C \text{ a contextually given standard for the number of events } e \text{ in } t \text{ such that } P(e) = 1.\]

d. \([\text{John}]^{g,c} = \text{John}\]

e. \([\text{goes to the movies}]^{g,c} = \lambda x. \lambda e. \text{GOES TO THE MOVIES} (e, x)\)

(26) Derivation:

a. \([\alpha]^{g,c} = \lambda e. \text{GOES TO THE MOVIES} (e, \text{John})\]

b. \([\beta]^{g,c} = \lambda P. \lambda I. \exists J \left[ |\{e: \tau (e) \subset J \& P(e) = 1\}| > C \right] \text{ (since } [\text{often}]^{g,c} \text{ is cumulative)}\]

c. \([\gamma]^{g,c} = \lambda I. \exists J \left[ |\{e: \tau (e) \subset J \& \text{GOES TO THE MOVIES} (e, \text{John})\}| > C \right]\]

\[\text{The past tense } \text{PAST and the future tense } \text{FUT are defined as follows:}\]

\[\|\text{PAST}_i\|^{g,c} = g(i) \text{ if } g(i) \text{ precedes } t_c, \text{ undefined otherwise.}\]

\[\|\text{FUT}_i\|^{g,c} = g(i) \text{ if } g(i) \text{ follows } t_c, \text{ undefined otherwise.}\]
d. $\llbracket \varphi \rrbracket^\mathcal{E} = 1$ iff $\exists J \ [g(i) \subseteq J \ & \ |\{\tau(e) \subseteq J \ & \ GOES\ TO\ THE\ MOVIES\ (e,\ John)\}| > C], \text{ where } g(i) \ O \ t_c,$
unde nedefined otherwise

The last step in (26) says that $\varphi$ is defined only if the value assigned to PRES, by the function $g$, $g(i)$, is a time that overlaps with the utterance time $t_c$. Where defined, (22) is true if and only if there is an interval $J$ that includes $g(i)$, and within which the number of events characterized by John goes to the movies exceeds the contextually specified standard $C$.

Note that we have not presented the final version of Kaufmann’s semantics for HAB, which integrates a kind of subinterval property\(^{41}\) of the habitual sentences as well, as shown in (27) below:

\[
(27) \ [\text{HAB}] = \lambda Q. \lambda P. \lambda I. \exists J: I \subseteq J \ & \ \forall J' [J' \subseteq_{\text{RELEVANT}} J \rightarrow Q(P)(J')],
\]
HAB$<v\tl,> <v\tl,>\text{, defined only if CUM}([\llbracket Q \rrbracket^\mathcal{E})].$

Since building the subinterval property into the meaning of HAB, without any further restrictions may be too strong for the semantics of HAB, Kaufmann restricts the range of subintervals involved in its definition by a pragmatic relation $\subseteq_{\text{RELEVANT}}$. $\subseteq_{\text{RELEVANT}}$ in (27) only selects relevant subintervals (with a certain size for instance). Thus the derivation of the semantic value of (22) will be as follows:

\[
(28) \text{Derivation:}
\]

\begin{enumerate}
  \item $[\alpha]^\mathcal{E} = \lambda e. \ GOES\ TO\ THE\ MOVIES\ (e,\ John)$
  \item $[\beta]^\mathcal{E} = \lambda P. \lambda I. \exists J: I \subseteq J \ & \ \forall J' [J' \subseteq_{\text{RELEVANT}} J \rightarrow [\{\tau(e) \subseteq J' \ & \ P(e) = 1\}| > C] \text{ (since } [\llbracket \text{often} \rrbracket^\mathcal{E} \text{ is cumulative})}$
  \item $[\gamma]^\mathcal{E} = \lambda I. \exists J: I \subseteq J \ & \ \forall J' [J' \subseteq_{\text{RELEVANT}} J \rightarrow [\{\tau(e) \subseteq J' \ & \ GOES\ TO\ THE\ MOVIES\ (e,\ John)\}| > C]$\end{enumerate}

\(^{41}\) The subinterval property is referred to in Scheiner as the\textit{ divisive} property. Here is her definition:

Divisive: $\text{DIV}([\llbracket \phi \rrbracket]) \leftrightarrow \forall I, J[[\phi(I) \wedge J \subseteq I) \rightarrow \phi(J)]$

That is, $\phi$ is divisive or has the subinterval property iff $\phi$ is true for any subinterval of an interval for which $\phi$ is true.
d. $[\varphi]^{t_c} = 1 \text{ iff } g(i) \cap t_c \land \exists J: g(i) \subseteq J \land \forall J' \subseteq \text{RELEVANT } J \rightarrow

\left\lbrack \left\lbrack e: \tau(e) \in J' \land \text{GOES TO THE MOVIES } (e, \text{John}) \right\rbrack > C \right\rbrack,$

undefined otherwise

(28d) says that $\varphi$ is true only if the interval assigned to PRES, by the function $g$, $g(i)$, overlaps the utterance time $t_c$, and there is an interval $J$ that includes $g(i)$, for which the number of events characterized by John goes to the movies within any relevant subinterval exceeds the contextually specified standard C.

4.2.2.2 A problem with aspectual HAB

At least once we adopt the analysis we have been assuming of temporal adverbs, Kaufmann’s analysis fails to explain the contrast between (29a) and (29b) below. That is, (29a) is not felicitous while (29b) is.

(29) a. #Zuótiān/gāngcái, Xiàoxīn jīngcháng dǎ diànyóu.
    yesterday/just.now Xiaoxin often play video.game

b. Xiāo-shíhou, Xiàoxīn jīngcháng dǎ diànyóu.
    little-time Xiaoxin often play video.game
    ‘When he was a child, Xiaoxin often played video games.

(29b) contains a temporal adverb xiāo-shíhou ‘when he was a child’, and receives a past habitual reading; in contrast, (29) is ill-formed with the adverb zuótiān ‘yesterday’ or gāngcái ‘just now’. Habitual sentences select frame setting time adverbs that refer to a “large” time interval.

If we apply Kaufmann’s analysis of habitual sentences, (29a) and (29b) will have the structure in (30) and they give rise to the truth conditions in (33a,b) respectively.
Lexical entries:

a. \([\text{Xiao-shihou}]^{\text{ge}} = (X's)\ childhood\)

b. \([\text{zuotian}]^{\text{ge}} = \text{the day before the day of t_c}\)

c. \([t_i]^{\text{ge}} = g(i)\)

d. \([\text{HAB}]^{\text{ge}} = \lambda Q.\lambda P.\lambda I.\exists J: I \subseteq J \land \forall J'[J' \subseteq \text{RELEVANT} J \rightarrow Q(P)(J')]\)

where \(\text{HAB} \rightarrow \text{vt}, \text{it} \rightarrow \text{vt}, \text{it}\) defined only if \(\text{CUM}([Q]^{\text{ge}})\).

e. \([\text{jingchang}]^{\text{ge}} = \lambda P.\lambda I. [\{e: \tau (e) \subseteq t \land P(e) = 1\}] > C\)

where C a contextually given standard for the number of events e in t such that P(e) = 1.

f. \([\text{Xiaoxin}]^{\text{ge}} = X\)

g. \([\text{da dianyou}]^{\text{ge}} = \lambda x.\lambda e. \text{PLAY VIDEO GAMES} (e, x)\)

Derivation:

a. \([\alpha]^{\text{ge}} = \lambda e. \text{PLAY VIDEO GAMES} (e, X)\)

b. \([\beta]^{\text{ge}} = \lambda P.\lambda I.\exists J: I \subseteq J \land \forall J'[J' \subseteq \text{RELEVANT} J \rightarrow [\{e: \tau (e) \subseteq J' \land P(e) = 1\}] > C\] (since \([\text{often}]^{\text{ge}}\) is cumulative)

c. \([\gamma]^{\text{ge}} = \lambda I.\exists J: I \subseteq J \land \forall J'[J' \subseteq \text{RELEVANT} J \rightarrow [\{e: \tau (e) \subseteq J' \land \text{PLAY VIDEO GAMES} (e, X)\}] > C\]
(33) a. $[\varphi]^\text{bc} = 1$ iff $\exists J: X$’s childhood $\subseteq J \& \forall J'[J' \subseteq \text{RELEVANT} J \rightarrow$

$$[\{e: \tau (e) \subseteq J' \& \text{PLAY VIDEO GAMES} (e, X)\}] > C],$$

undefined otherwise

b. $[\#\varphi]^\text{bc} = 1$ iff $\exists J$: YESTERDAY $\subseteq J \& \forall J'[J' \subseteq \text{RELEVANT} J \rightarrow$

$$[\{e: \tau (e) \subseteq J' \& \text{PLAY VIDEO GAMES} (e, X)\}] > C],$$

undefined otherwise

(33b) predicts that the sentence in (29) conveys that the habit of Xiaoxin often playing video games is in force over an interval that contains the day before the day of the utterance. There are many plausible scenarios that could in principle satisfy these conditions. However (29) is not a felicitous sentence.

Kaufmann’s analysis therefore cannot capture the selection of adverbs in generic sentences. That is, it cannot explain why generic sentences are not compatible with adverbs denoting “short” time intervals.

Note also that for Kaufmann the purely aspectual operator HAB does not contribute to the core meaning of habitual sentences, that is, the derivation of the generic property from eventive predicates. According to the lexical entries she defines for HAB and often in (25), the “habitus” is obtained because of the Q-adverb often rather than HAB.

For Kaufmann, HAB is a covert imperfective aspect marker. One could see the assumption of a covert imperfective aspect for generic sentences as related to the compatibility of imperfectivity with generic sentences in general. But notice that imperfective aspect seems to be compatible with all sentences describing stative properties. So if we follow the spirit of Kaufmann’s approach, it seems that sentences with a stative predicate like (34) should contain a covert imperfective aspect as well.

(34) Sue is upset.

Recall however our analysis of sentences with bare states in Mandarin. We argued that states do not require overt aspect because they are properties of intervals, and can thus combine directly with a time. In light of this, one might imagine that generic sentences, which share major properties with sentences with stative BPs (cf. the “subinterval property”), can be assigned similar structures as stative sentences, that
is, structures without the AspP. We will show later that generic readings can be correctly accounted for without the assumption of a covert imperfective aspect.

4.2.3 The modal HAB operator

4.2.3.1 Ferreira (2005)

Ferreira (2005) considers habituality as involving both aspectual and modal components. He points out some similarities between habitual and progressive sentences: progressive sentences describe ongoing events and habitual sentences describe ongoing sequences of events. The HAB operator that Ferreira posits, just like the operator PROG that he associates with progressive aspect, encodes an inclusion relation between time intervals. Take (35) for instance:

(35) a. John is playing soccer (right now).
   b. John plays soccer.

Ferreira (2005:116)

The progressive aspect PROG in (35a) relates the event time (ET) to the reference time (RT) (which itself coincides with the utterance time (UT) in this case), - the time of the event “John playing soccer” is thus required to include the UT. The habitual operator HAB in (35b) requires the RT (= UT) to be included within an interval including a sequence of events of John playing soccer. In sum, PROG and HAB both instantiate imperfective aspect, they differ only in the number of the events they select: PROG applies to singular events while HAB applies to plural events. The logical forms of (35a) and (35b) are given below:

(36) a. \[ \text{TP}_\text{Pres}_\text{I} [\text{AspP} \text{PROG} [\text{VP-sg} \text{sg} [\text{VP John play soccer }]]] \]

b. \[ \text{TP}_\text{Pres}_\text{I} [\text{AspP} \text{HAB} [\text{VP-pl} \text{pl} [\text{VP John play soccer }]]] \]

According to Ferreira, bare VPs denote sets containing singular and plural events. In (36a), “sg” stands for a number morpheme that only selects singular events in the set denoted by the VP. Similarly, “pl” in (36b) only selects plural events. HAB, also labelled as “Imp-pl” in Ferreira, then encodes temporal inclusion of the reference time within the time of a plural event in the set denoted by the VP-pl.
Ferreira further argues that a purely temporal/aspectual analysis of HAB as presented above is inadequate, because temporal inclusion itself cannot explain why a habitual sentence can be true even if the sequence of events is interrupted after the UT by external factors. To illustrate, (35b) is true if John regularly plays soccer. In other words, there should be a sequence of events of John playing soccer prior to the UT and he probably continues to play soccer after the UT if nothing happens after the UT that prevents him from playing soccer. In a case where some “external factors” interfere (John breaks his leg, the campus is closed just after the UT, for instance), and John never plays soccer again after the UT, (35b) is still true, because the speaker who utters (35b) “does not commit himself to the existence of future events of John playing soccer regardless of what might happen to John”.

From this point of view, habitual sentences are very similar to progressive sentences: the event described by a progressive sentence with an accomplishment can also be interrupted without changing the truth-value of the sentence. Consider (37), an example from Portner (1998).

(37) Mary was climbing Mount Toby.

(37) is true even if the climbing was interrupted by an accident (Mary was eaten by a bear or got injured).

Ferreira argues for a unified semantics for habitual and progressive sentences. He adopts Portner’s modal analysis of the progressive (Portner 1998, Kratzer 1981). On this analysis, progressive involves universal quantification over possible worlds (w). The relevant set of possible worlds is determined by a circumstantial modal base (M) and an ordering source (O) based on the ideal that the event described by the sentence is not interrupted by any “outside” factor (See also Dowty (1977) and Landman (1992) for modal analyses of progressive).

Likewise, the on-going sequences of events denoted by habitual sentences can also be interrupted by unexpected factors. The truth-conditions of a habitual sentence like (35b) are as follows:
In (38), \( BEST(M, O, w, t) \) contains ideal worlds very similar to the real world at a time \( t \). The ideal worlds are defined in terms of two sets of propositions: a circumstantial modal base \( M \) given in (39), and an ordering source \( O \) like that given in (40). The modal base \( M \) in (39) contains facts / conditions that make “John plays soccer” possible, and the ordering source \( O \) in (40) contains propositions that exclude the existence of factors of a kind that could interrupt a sequence of events of John playing soccer. The sense in which \( BEST(M, O, w, t) \) defines ideal worlds at a time \( t \) is that it selects those worlds meeting the conditions in \( M \) that satisfy the greatest number possible of propositions in \( O \). In all of these worlds, there are no external factors preventing John from playing soccer after the UT.

(39) \( M(w, t) = \{ \text{John played soccer with his friends several times recently, John is in good physical condition, John intends to play soccer again, there is a soccer stadium close to John's house, ...} \} \)

(40) \( O(w,t)=\{ \text{John does not die tomorrow, John does not get arrested, the stadium does not close, ...} \} \)

Thus in ideal worlds for John to keep playing soccer, as defined by \( BEST(M, O, w, t) \), there should be both past and future events of John playing soccer for the sentence in (35b) to be true. In other words, the sequence of events ‘John playing soccer’ should not be interrupted before the utterance time. Take a scenario where there are past events of John playing soccer, but something happened to him before the UT and he can no longer play soccer, the worlds denoted by \( BEST(M, O, w, t) \) do not contain an interval, which itself contains “John playing soccer” events that includes the UT, and thus the sentence is false.

---

42 “Pres” refers to the utterance time.
Ferreira defines imperfective aspect (HAB and PROG) as in (41).\(^{43}\)

\[(41) \text{[[Imp]]}^w = \lambda P. \lambda t. \text{for every world } w' \text{ in } \text{BEST}(M, O, w, t), \text{there is an event } e, \text{ such that } t \subseteq \tau(e), \text{ and } P(w')(e) = 1.\]

In other words, HAB and PROG have a unified semantics. They only differ in the kinds of events described by their sister: HAB is applied to sets of plural events, while PROG to sets of singular events.

**4.2.3.2 Boneh & Doron (2008, 2010)**

Boneh & Doron (2008, 2010) dissociate habituality and imperfectivity. They reject the purely temporal treatment of HAB, contra Scheiner (2003) and Rimell (2005), and adopt a modal treatment (Carlson 1977, Dahl 1985, Comrie 1985). They propose two possible layers in the syntax for habituality: a modal operator HAB\(_1\) at the VP level which is responsible for habituals like (42) and an aspectual HAB\(_2\) generated under Asp, which gives rise to habituality in periphrastic expressions like (43).

(42) Mary goes to work by tram.

(43) John used to play tennis.

---

\(^{43}\) The revised definition given by Ferreira is as follows:

(i) \([[\text{Imp}]]^w = \lambda P. \lambda e. \text{for every world } w' \text{ in } \text{BEST}(M, O, w, \tau(e)), \text{there is an event } e', \text{ such that } e \leq e', \text{ and } P(w')(e') = 1.\]

According to (i), \(\text{Imp}\) takes a set of events and returns another set of events. This modification aims to account for the interaction between \(\text{Imp}\) and Q-Adverbs. See Ferreira (2005: 122-125) for more details.
The syntactic structure of habituals is illustrated in (44):

(44)

```
TP
    /\      
   /  \     
  HAB₂  Asp₁P
     /      
   Asp₂  Asp₁
      /\    /\ 
     /  \  /  \ 
   IMP/PERF VP  HAB₁
                  
                  VP
```

In the structure in (44), the imperfective/perfective aspect is higher than the modal HAB₁, but lower than the aspectual head HAB₂. Since HAB₂ is proposed to account for periphrastic habitual sentences like (43), in which the predicate is not in its “bare” form, it is not relevant to the goal of this chapter. We only discuss the modal operator HAB₁.

HAB₁ takes a predicate of events Q and yields a predicate of states. Its semantic value is given in (45):

(45) \[ \text{HAB}_1 = \lambda Q \lambda s \lambda w [\text{init}(Q,s,w) \& \forall w' \in \text{MB}_{(s),w} \exists i [\tau(s) \subseteq i \& \text{FOR}(Q,i,w')]] \]

(45) says that HAB only selects Q-events that have been initiated and that iterate within an interval i in ideal worlds.

B&D’s (2010) modal analysis of HAB differs from that of Ferreira’s. B&D uses a modal base to account for the habitual sentences with no instantiation (at all), while the modal HAB in Ferreira aims to explain the potential lack of instantiation of the events in the future. Recall the definition of HAB in (45) given by B&D: the Q-events described by the bare VP should be initiated in ideal worlds and there does not have to be any occurrence of the Q-event at all in

\[ \]

\[44\] In Boneh & Doron (2010), the input of HAB can also be a predicate of states. We ignore this part in the semantics of HAB, since the current chapter focuses on habitual sentences with bare eventive predicates.
the actual world. Thus this definition allows for habitual sentences like (46):

(46) John sells vacuum-cleaners.

Ferreira (2005) considers sentences describing professions like (46) as involving a nominal stativizer. (46) is thus equivalent to (47) and does not need to be have actual occurrences of the selling event.

(47) John is a vacuum-cleaner seller.

B&D (2010) and Ferreira (2005) also differ as to whether HAB is related to plurality. Ferreira (2005) claims that HAB selects for plural events and the progressive aspect takes singular events, while B&D (2010) argue that plurality is not always associated with habituality. The progressive aspect can also be applied to plural events, such as the case in (48):

(48) Sue is dialing a busy number.

(48) can be used to report a situation where Sue dials the same number again and again, thus it describes an on-going plural event but not a singular event.

The divergence concerning the modal base and the ordering source associated with habituals has been pointed out by Krifka et al. (1995). They defend one unique covert operator in habitual sentences. They claim that the variety of interpretations of habitual examples results from different modal bases and ordering sources that the hearer constructs to “accommodate” the interpretation of a sentence (Krifka et al. 1995:55-56).

4.3 Generic sentences with eventive BPs in Mandarin

4.3.1 Well-formed eventive BPs and genericity

In Chapter 3, we presented sentences with eventive BPs that are well-formed in Mandarin (Section 3.2). We have shown that these sentences either contain overt modifying phrases (Q-adverbs, locative PPs and other adverbials) or can be totally “bare” (with bare activities in particular), and they are used to report certain regularities about the event described by the predicate rather than single events. We repeat some examples below:
Q-Adverbs:

(49) Zhōngguó dui zōng shǔ. China team always lose
‘The Chinese team loses all the time.’

(50) Èrmáo jīngcháng tīng zhèi-shǒu gē. Ermao often listen this-CL song
‘Ermao often listens to this song.’

Locative PPs:

(51) Tā zài zhèi-jīá miànbāofáng mǎi tiándiàn. 3SG at this-CL bakery buy dessert
‘He buys his dessert in this bakery.’

(52) Lúlu zài wòshì-lǐ tīng zhèi-shǒu gē. Lulu at bedroom-inside listen this-CL song
‘Lulu listens to this song in her bedroom.’

Other modifiers:

(53) Bōlibēi hěn róngyì suì. glass very easy break
‘Glasses break easily.’

(54) Zhè jī-jīā diàn hěn wǎn guānmén. this several-CL store very late close
‘These stores close late.’

Bare activities:

(55) Lìsī dǎ wǎngqiú. Lisi play tennis
‘Lisi plays tennis.’

(56) Gūlóng chǒu yuān. Gulong smoke
‘Gulong smokes.’

We have also shown that sentences with eventive BPs, such as (57)-(59) below, are ill-formed as assertions of the occurrence of a single event in Mandarin:
(57) Jinglī dào *(le).
   manager arrive PERF
   ‘The manager arrived.’

(58) Mālì xiào *(le).
   Mary smile PERF
   ‘Mary smiled.’

(59) Tā *(zài) xiě yīběn xiǎoshuō.
   3SG PROG write one-CL novel
   ‘He is writing a novel.’

(57)-(59) require an overt aspect to license episodic readings, while
(49)-(56), which are unmarked for aspect, only allow generic readings,
but never episodic readings. We observe a correlation here between
the availability of a generic reading for a bare eventive and the
necessity for an overt aspect; that is, when a sentence with an eventive
BP is well-formed, it necessarily yields a generic reading; and when a
sentence with an eventive predicate allows for an episodic reading, it
must be overtly marked for aspect (perfective, progressive or durative).

The lack of an episodic construal for sentences with eventive BPs
is due to the argument structure of the predicate, as we claimed. More
precisely, eventive BPs are predicates of events, which require an
aspect to map them to properties of times. Since aspect must be
overtly realized in Mandarin according to our assumption, eventive
BPs do not allow episodic past or on-going readings.

The remaining puzzle is how to account for the generic construal
of sentences with bare BPs (with or without a modifying adverbial)
like (49)-(56). Recall that our analysis presented earlier predicts that
eventive BPs, being properties of events, are incompatible with a time,
and consequently sentences with eventive BPs are not interpretable.
However, we have just seen that some sentences with eventive BPs
are felicitous, and they yield generic construals. Then the remaining
question is how the generic construal is derived on the basis of an
eventive BP?

Before making a proposal about the generic construals of bare
sentences, we see in Section 4.3.2 below the interaction of temporal
adverbials with generic sentences. Section 4.4 is dedicated to our
analysis of generic construals. We explore the semantics of generic
sentences with or without overt quantification. We claim that the generic readings of sentences with a bare eventive predicate are due to a quantificational element. When the sentence contains an overt quantificational adverb, it is the Q-adverb that maps the properties of eventualities to properties of times; when the sentence does not contain any quantificational element, a covert operator Q plays a role similar to that of a Q-adverb.

4.3.2 Temporal anchoring of generic sentences

Recall our analysis of temporal construals of sentences with bare stative predicates and sentences with aspectually marked eventive predicates presented in Chapter 3. We argued for a “minimal” TP projection introducing a time that serves as a reference time to anchor the eventuality denoted by the stative VP or the AspP. As far as this section is concerned, we continue to assume that there is a TP projection introducing a time variable $t_i$ in Mandarin, and we leave open for the moment the question of whether or not Mandarin has a null “tense” morpheme.

The variable $t_i$ can either be bound by an adverb or remain free and in so doing comes to have a salient time as its value. We assume that frame setting temporal adverbials, such as zuótiān ‘yesterday’, jīntiān ‘today’, qūnián ‘last year’, xiàwǔ lìǎngdiǎn ‘2 pm’, April 1$^{st}$, are of type $i$. They refer to time intervals (including moments). Stative VPs are of type $<i,t>$; imperfective aspect (Imp) is of type $<vt, i/t>$, and thus it yields a $<i,t>$ type at ImpP when combined with an eventive VP (of type $<v,t>$); perfective aspect (PerfP) is of type $<vt, <i,i,t>>$ and thus requires a property of events and a time to return a $<i,t>$ type at PerfP.

We’ll run through our analysis with the derivations of the examples in (60) and (64):

A sentence containing a stative bare predicate modified by a time adverb like (60) has the structure in (61), where the time variable $t_j$ is bound by the adverb zuótiān ‘yesterday’. As a result of the binding, the structure is interpreted as though the interval denoted by zuótiān were the time argument of the AP. Accordingly, the structure expresses that the state of Yichen’s happiness extends throughout yesterday.
(60) Yīchén zuótiān hěn gāoxìng.
Yichen yesterday very happy
‘Yichen was very happy yesterday.’

(61)

The lexical entries are given in (62) and the semantic value of the sentence in (63).

(62) Lexical entries:
   a. \[Yīchén\]^{x.e.= Y}
   b. \[zuótiān\]^{x.e.= the day before the day that contains t_c}
   c. \[hěn gāoxìng\]^{x.e.= \lambda x. \lambda t. x is happy in t}
   d. \[t_j\]^{x.e.= g(j)}

(63) \[[\emptyset]^{x.e.} = 1\] iff Y is happy on the day before the day containing t_c,
     0 otherwise

Similarly, a sentence with an overt imperfective aspect like (64) has the structure in (65), where \(t_j\) gets bound by the time adverb \(gāngcái\) ‘just now’ and combines with the ImpP by saturating its time slot:

(64) Gāngcái, Xiàoxiao zài tīng guāngbō.
    just-now, Xiao Xiao PROG listen radio
    ‘Just now, Xiao Xiao was listening to the radio.’
(66) Lexicon:
   a. $g\langle g_{\text{ngcái}}\rangle$ = the moment before $t_c$
   b. $t_j$ = $g(j)$
   c. $zài$ = $\lambda t. \exists e: P(e)=1 \land t \subseteq \tau(e)$
   d. $\text{tīng guāngbō}$ = $\lambda x. \exists e. e$ is an event of $x$ listening to the radio.
   e. $\Xiàoxiāo$ = $X$

(67) Derivation:
   a. $\Xiàoxiāo \text{tīng guāngbō}$ = $\lambda e. e$ is an event of $X$ listening to the radio.
   b. $\text{ImpP}$ = $\lambda t. \exists e. e$ is an event of $X$ listening to the radio, whose running time includes $t$
   c. $\text{TP}$ = 1 iff there is an event of $X$ listening to the radio, whose running time includes $g(j)$, 0 otherwise
   d. $\varnothing$ = 1 iff there is an event of $X$ listening to the radio, whose running time includes the moment before $t_c$, 0 otherwise

We have seen in Chapter 3 that sentences with eventive BPs only allow generic readings, and episodic readings are licensed by overt aspect. Moreover, we have seen that eventive BPs are ill-formed as
episodic events and this is the case even if there is an overt present/past time adverb that could serve as the reference time for the sentence. Consider (68) and (69) below:

(68) Zuòtiān nèi-tiáo yú sǐ *(le).
yesterday that-CL fish die PERF
‘That fish died yesterday.’

(69) Zhèi-huǐr Yíchēntū *zhě tā de xiǎochē.
this-instant Yichen push DUR 3SG de stroller
‘Yichen is pushing her stroller right now.’

In the absence of the overt aspect le, (68) cannot mean that the fish died on the day before the day of the utterance. Similarly, (69) fails to license the on-going present reading “Yichen is pushing her stroller” without the durative aspect zhe, even if the adverb zhèi-huǐr ‘this-instant’ clearly refers to a time that includes the UT.

This observation exemplifies our generalization that overt aspect is required to license episodic construals. Temporal adverbs, even if they fix the temporal reference of sentences describing single events, are not sufficient to license an episodic reading for an eventive BP. Now the question is: how do temporal adverbs interact with generic sentences with eventive BPs? Can they fix the temporal reference of generic sentences? Consider (70)-(72):

(70) Gǔlóng jīngcháng chōu-yān.
Gulong often smoke-cigarette
‘Gulong often smokes.’

(71) Xiànzāi Gǔlóng jīngcháng chōu-yān.
now Gulong often smoke-cigarette
‘Now, Gulong often smokes.’

(72) Niánqīng-shí Gǔlóng jīngcháng chōu-yān.
youth-time Gulong often smoke-cigarette
‘Gulong used to smoke when he was young.’

(70) allows a generic reading with an eventive BP chōu-yān ‘smoke-cigarette’. In the absence of a time adverb, (70) is interpreted in the present, namely, the habit of Gulong holds through a period including the UT. With an overt present-time denoting adverb xiànzāi ‘now’, (71) is grammatical and yields a present reading. With an overt past
time adverb *niánqīng-shí* ‘when he was young’, (72) is well-formed and receives a past reading.

The sentences discussed above seem to suggest that time adverbs can fix the temporal reference of generic sentences with eventive BPs, yielding present or past generic readings. Consider now (73a) and (73b):

(73) a. #Zúòtiān Gúlóng (jīngcháng) chōu-yān.
yesterday Gulong (often) smoke-cigarette

b. #Jǐntiān Gúlóng (jīngcháng) chōu-yān.45
today Gulong (often) smoke-cigarette

These two sentences containing either a past time adverb *zuótiān* ‘yesterday’ or a present time adverb *jǐntiān* ‘today’ are ill-formed.

The contrast between (73a, b) on the one hand and (71)-(72) on the other hand suggests that sentences with eventive bare predicates in Mandarin select for a specific type of time adverbial. This is so, because sentences with eventive BPs are used to make generalizations over instances of events, and the “generic properties” are usually evaluated with respect to relatively “long” time spans. The adverb *xiànzài* in (71) actually means “nowadays” rather than “at this moment”. Gulong’s habit of smoking conveyed by *Gūlóng chōu-yān* is compatible with *xiànzài* in (71) and *niánqīng-shí* ‘when he was young’ in (72), but incompatible with *zuótiān* ‘yesterday’ in (73a) and *jǐntiān* ‘today’ in (73b).

The selection of time adverbs in generic sentences recalls sentences with bare states. We have shown in Chapter 3 that the compatibility of time adverbs with some sentences containing bare states relies largely on the semantic properties of the predicate.

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45 The sentence below is acceptable in a scenario where Gulong usually does not smoke and for some particular reason he will exceptionally smoke ‘today’. In this case, the sentence receives a future-oriented reading, and it is the only available reading for the sentence. Sentences of this type will be discussed in Chapter 5.

i) Jǐntiān Gūlóng chōu-yān
today Gulong smoke-cigarette

‘Today, Gulong will smoke.’
Individual-level properties denoted by bare states like gāo ‘tall’ and cōngmíng ‘smart’, being relatively stable, do not vary with time, explaining the oddness of (74) and (75) below:

(74) #Zuótiān Yīchén hěn cōngmíng.
yesterday Yichen very smart
#‘Yesterday, Yichen was very smart.’

(75) #Gāngcái Èrmáo hěn gāo.
just.now Ermao very tall
#‘Just now, Ermao was very tall.’

To summarize, sentences with eventive BPs in Mandarin yield generic readings. Generic properties can be temporally anchored in the past or in the present with appropriate temporal adverbs, that is, adverbs denoting intervals that are relatively long.

A counterexample to the generalization stated above about adverb selection in generic sentences in Mandarin might be (76):

(76) Lìsī yùjiàn Gūlóng, shì, tā jīngcháng chōuyān.
Lisi meet Gulong time 3SG often smoke
‘When Lisi met Gulong, he often smoked.’

(76) is grammatical, and allows for a generic reading, although the event described by Lìsī yùjiàn Gūlóng in the when-clause apparently refers to a moment of time (the moment when Lisi met Gulong) rather than an interval.

(76) seems to challenge our generalization that generic sentences with bare eventives only select for adverbials referring to long time spans. The explanation that we suggest for this “exception” is that when-clauses can be ambiguous between moment denoting and interval denoting (at least in Mandarin). We claim that the semantics of when-clauses is different from that of deictic temporal adverbs like yesterday. We assume that deictic time adverbs are of type i. The semantic value of yesterday is given in (77):

(77) [yesterday]_{c}^{e} = the day before the day that contains t_{c}

According to (77), yesterday refers to the day before the day of the utterance. Whereas, a when-clause describes intervals that OVERLAP with the time (moment or interval) of the situation denoted by the embedded proposition. Take “when Lisi meets Gulong” for instance:
(78) \([\text{when Lisi meets Gulong}[^{78}]} = \lambda t: t \text{ includes a moment at which Lisi meets Gulong.}\]

(78) defines “when Lisi met Gulong” as times that overlaps the time \(t'\), at which Lisi meets \(Gulong\). In other words, \(Lisi \text{ yùjiàn Gulong; } shì\) can either refer to the exact moment at which Lisi meets Gulong or a larger time interval containing that moment. \(76\) is felicitous because the \(\text{when-}\)clause in \(76\) refers to a large interval containing the moment that Lisi meets Gulong, and “Gulong often smokes” holds for that large interval.

If we replace the \(\text{when-}\)clause in \(76\) by another temporal adverbial clause headed by “the-moment”, the sentence is no longer grammatical. Compare \(79\) with \(76\):

\[
\begin{align*}
\text{(79) } & Lisi \text{ yùjiàn Gulong; de nà-yì-kè,} \\
& Lisi \text{ meet Gulong time DE that-one-instant} \\
& tāi jīngcháng chōuyān.
\end{align*}
\]

The adverbial clause \([_{\text{ADV}} Lisi \text{ yùjiàn Gulong; de nà-yì-kè}]\) in \(79\) means “the moment when Lisi meets Gulong”, and it clearly refers to an instant of time, but not a long time interval. The ill-formedness of \(79\) is probably due to the incompatibility of the generic property described by the main clause \(tāi jīngcháng chōuyān ‘he often smokes’\) and the moment-denoting temporal adverbial clause. In contrast \(76\) is well-formed, because the \(\text{when-}\)clause headed by \(shì \ ‘time’\) can refer to time intervals compatible with generic properties.

To conclude, the generic readings of sentences with eventive BPs in Mandarin can be temporally anchored in the past or in the present with appropriate temporal adverbs, that is, adverbs denoting intervals that are relatively \textit{long}. Analyses of generic sentences should be compatible with the selection of temporal adverbials.

### 4.4 Our proposals

The goal of this section is to figure out what elements contribute to the genericity of habitual sentences in Mandarin and how. (We use the term “\textit{bare sentence}” to indicate that the sentence in question has no overt aspectual marking; in other words, the predicate is unmarked for aspect.)
Habitual sentences have been argued not to form a homogeneous class (Scheiner 2003, Ferreira 2005, Rimell 2004). We share this view. Thus we use *simple habituals* (SHs) to refer to sentences that are not modified by any overt adverbial, and *quantified habituals* (QHs) to refer to habitual sentences with overt Q-adverbs.

We claim that the genericity at the sentence level is derived either from an overt quantificational adverbial (in QHs) or a covert quantificational operator $Q$ (in SHs).

In QHs, the overt $Q$-adverbs take properties of eventualities and yield generic properties. In SHs, there is a covert quantificational operator $Q$ that plays a role similar to that of a $Q$-adverb.

### 4.4.1 Quantified habituals (QH)

Quantified habituals are habitual sentences with overt quantificational adverbials ($Q$-adverbs) such as $zōng$ ‘always’, $jīngchāng$ ‘often’, $hēnshǎo$ ‘rarely’, $cōngbù$ ‘never’ or $měinián$ ‘every year’, etc. We have seen that sentences with eventive BPs in Mandarin are well-formed in the presence of overt $Q$-adverbials, and they yield generic construals.

Consider (80) and (81) below:

(80) a. *Zhōngguó dui shū-qǐu.
   China team lose-ball
   *The Chinese team loses all the time.*

b. Zhōngguó dui $zōng$ shū-qǐu.
   China team always lose-ball
   ‘The Chinese team loses all the time.’

   China team every-CL-world-cup DOU lose-ball
   ‘The Chinese team loses in every World Cup.’

(81) a. #Èrmáoxiào
   Ermao smile
   ‘Ermao rarely smiles.’
The Q-adverbs in the “b” examples, zǒng ‘always’ and hěnshǎo ‘rarely’, rescue the “a” sentences with eventive BPs from ill-formedness. The “c” examples contain quantified DPs serving as adverbs: měi-cǐ shìjiè-běi ‘every World Cup’ in (82c) and yí jiàn-dào xiǎochōu ‘every time he sees a clown’ in (81c). The question then is what is the distribution of Q-adverbs and how they license generic construals.

We claim that the genericity of quantified habituals comes from the Q-adverbs or other expressions having quantificational force, which map properties of eventualities to properties of times.

4.4.1.1 Q-adverbs: zǒng ‘always’

We suggest here a treatment of zǒng ‘always’ on which it combines with two predicates, a predicate of events and a predicate of time intervals.

Lewis (1975) proposes that Q-adverbs like always are ‘unselective quantifiers’ that combine with two “open” propositions and that potentially bind more than one variable in these propositions. Ogihara (1991:66) has taken this view, and gives the semantics of structure involving always as in (82).

(82) always [ψ, ϕ] is true iff every assignment to the free variables in ψ which makes ψ true also makes ϕ true.

Our proposal is more in line with the particular variants of this view on which the bound variables include event variables and time variables.46 Here is the way our analysis of always applies to an example like (83).47 In (83) below, always relates two properties: when John is happy (C) and he goes to the movies (P). The when-clause corresponds to the restrictor in the tripartite structure, and the main clause to the nuclear scope (see also Section 4.2.1).

---

46 Partee (1984) considers that always can bind event variables.
47 We will ignore the focus-sensitive behaviors that have been observed for some quantified habituals (Rooth 1985).
(83) When John is happy, he always goes to the movies.

(84)

\[
\begin{array}{c}
\beta \\
C \\
\text{when John is happy} \\
\alpha \\
\text{always} \\
P \\
\text{he goes to the movies}
\end{array}
\]

Note that (84) is one of the possible binary-branching representations of quantified habituals. Partee (1991) uses a tripartite structure like (85) to represent the structural ambiguity, but for readability reasons, we keep using binary-branching structures like (84) and ignore the ambiguity in the interpretation of quantified habituals.

(85)

\[
\begin{array}{c}
S \\
\text{Q-Adv. Restrictor Nuclear scope}
\end{array}
\]

(86) below gives the lexical entries concerning the sentence in (83), and the derivation is given in (87).

(86) Lexical entries:

a. \([\text{always}]^{g,e} = \lambda x.\lambda t. x\text{ is happy for the duration of } t\)

b. \([\text{John}]^{g,e} = J\)

c. \([\text{happy}]^{g,e} = \lambda x.\lambda t. x \text{ is happy for the duration of } t\)

d. \([\text{he}]^{g,e} = g(i)\)

e. \([\text{goes to movies}]^{g,e} = \lambda x.\lambda e. \text{GOES TO MOVIES (e, x)}\)
Derivation:

a. \[ \text{when John is happy} \rightarrow \lambda t. \text{John is happy for the duration of } t \]
b. \[ \text{he, goes to the movies} \rightarrow \lambda t. \text{GOES TO} (e, \text{g(i), the movies}) \]
c. \[ \alpha \rightarrow \lambda Q_{<i,t>}. \text{Every maximal interval } t \text{ such that } Q(t)=1 \] contains the running time of an event of g(i) going to the movies.
d. \[ \beta \rightarrow 1 \text{ iff every maximal interval } t \text{ such that } J \text{ is happy throughout } t \] contains the running time of an event e of J going to the movies; 0 otherwise.

(84) is not the complete structure of (83), since it says nothing about tense, though (84) is a present-tensed sentence. The semantics of always should be modified as follows:

\[ \text{always} \rightarrow \lambda P, \lambda Q_{<i,t>}, \lambda t. \text{Every maximal interval } t' \text{ such that } t' \subseteq t \text{ and such that } Q(t')=1 \] contains the running time of an event e such that P(e)=1

(88) says that always takes two properties (P and Q) and returns a property of times. The relation between P and Q holds for a (long) time interval.

Similarly, the temporal readings of sentences like (89), which describes John’s habit in the past, can be correctly captured with the structure in (90):

(89) When John, was happy, he, always went to the movies.

(90)
Tense scopes over the Q-adverb (Partee 1984, De Swart 1991). In (90), the T projection provides a time argument for β, which denotes a generic property. Here is the detailed derivation:

(91) Lexical entries:

a. \[ [\text{always}]^{g,c} = \lambda t. \text{Every maximal interval } t' \text{ such that } t' \subseteq t \text{ and such that } Q(t')=1 \text{ contains the running time of an event } e \text{ such that } P(e)=1 \]

b. \[ [t_j]^{g,c} = g(j) \]

c. \[ [\text{PAST}]^{g,c} = \lambda t: t < t_c. t \]

(92) Derivation:

a. \[ [\text{when John is happy}]^{g,c} = \lambda t. t \text{ is a maximal interval for the duration of which } J \text{ is happy} \]

b. \[ [\text{he goes to the movies}]^{g,c} = \lambda e. \text{GOES TO}(e, g(i), \text{the movies}) \]

c. \[ [\alpha]^{g,c} = \lambda Q_{<t_c}. \lambda t. \text{Every maximal interval } t' \text{ such that } t' \subseteq t \text{ and such that } Q(t')=1 \text{ contains the running time of an event of } g(i) \text{ going to the movies.} \]

d. \[ [\beta]^{g,c} = \lambda t. \text{Every maximal interval } t' \text{ such that } t' \subseteq t \text{ and such that } J \text{ is happy throughout } t' \text{ contains the running time of an event of } J \text{ going to the movies.} \]

e. \[ [T \ t_j \ PAST]^{g,c} = g(j) \text{ iff } g(j) \text{ precedes } t_c, \text{ undefined otherwise.} \]

f. \[ [\varphi]^{g,c} \text{ is defined only if } g(j) < t_c, \text{ where defined, } [\varphi]^{g,c}=1 \text{ iff } \text{every maximal interval } t' \text{ such that } t' \subseteq t \text{ and such that } J \text{ is happy throughout } t' \text{ contains the running time of an event of } J \text{ going to the movies; } 0 \text{ otherwise} \]

In a similar way, a quantified sentence with no overt temporal / aspectual marking in Mandarin, such as (93), has the structure illustrated in (94):
(93) Māma zài jiā de shíhou, mother at home de time
Xiao'xin zǒng dǎ diànyóu. Xiao'xin always play electronic-game
‘Xiao'xin always plays video games when his mother is at home.’

(94)

(95) Lexical entries:

a. \([t_i]^{g,e} = g(i)\)
b. \([zǒng]^{g,e} = \lambda P.\lambda Q_{<t,i}.\lambda t.\) Every maximal interval t’ such that t’ \(\subseteq t\) and such that Q(t’)=1 contains the running time of a P-event
c. \([Xiao'xin]^{g,e} = X\)
d. \([dǎ diànyóu]^{g,e} = \lambda X.\lambda e.\) PLAY VIDEO GAMES (e, X)

(96) Derivations:

a. \([\alpha]^{g,e} = \lambda e.\) PLAY VIDEO GAMES (e, X)
b. \([\beta]^{g,e} = \lambda Q_{<t,i}.\lambda t.\) Every interval t’ such that t’ \(\subseteq t\) and such that Q(t’)=1 contains the running time of an event of X playing video games
c. \([\gamma]^{g,e} = \lambda t.\) t is a maximal interval during which (X’s) mother is at home
d. $[\delta]^{g,c} = \lambda t. \text{Each maximal interval } t' \text{ in } t \text{ such that } X's \text{ mother is at home throughout } t' \text{ contains an event of } X \text{ playing video games}$

(97) $[\varphi]^{g,c} = 1$ iff each interval $t'$ in $g(i)$ such that $X's$ mother is at home throughout $t'$ contains an event of $X$ playing video games; 0 otherwise

The Q-adverb zōng in Mandarin behaves just like *always* in English; it combines with two properties denoted by two clauses in the sentence and gives rise to a property of times.

There is still a problem with the truth conditions in (97). We have shown in Section 4.3.2 that a generic property is evaluated with respect to long time intervals, whereas (97) says nothing about that. We think that this requirement is anchored in the lexical meaning of the Q-adverb zōng, since it is the relation established by zōng that is associated with long time intervals. Thus we revise the definition of zōng as follows:

(98) $[zōng]^{g,c}(P)(Q)(t)$ is defined only if $t$ is long; 48 where defined, $[zōng]^{g,c}(P)(Q)(t) = 1$ iff every maximal interval $t'$ such that $t' \subseteq t$ and such that $Q(t') = 1$ contains the running time of a P-event

The truth condition of the quantified habitual in (93) is revised as:

(99) $[\varphi]^{g,c}$ is defined only if $g(i)$ is long; where defined, $[\varphi]^{g,c} = 1$ iff each interval $t'$ in $g(i)$ such that $X's$ mother is at home throughout $t'$ contains an event of $X$ playing video games; 0 otherwise

The derivation of the truth condition in (99) shows that in overtly quantified habitals, the Q-adverbial takes properties of eventualities and gives properties of long intervals, explaining the well-formedness

---

48 The requirement for the length of an interval $t$ is relative to the property described by the sentence. An interval of a certain size can be appropriate for evaluating one generic property but not another. See Section 5.1.2.1 for detailed discussion.
of QHs without overt aspectual marking and the fact that habituals make reference to long time intervals.

In the next section, we turn to another Q-adverb, hěnshāo ‘rarely’, showing that sentences with Q-adverbs have the same structure.

4.4.1.2 Q-adverbs: hěnshāo ‘rarely’

The Q-adverb hěnshāo ‘rarely’ has a similar role to zōng ‘always’, in the sense that it selects for two sets denoted respectively by the temporal adverbial clause and the main clause, and yields a property of times.

Consider (100) below. It says that when Xiaoxin was a child, there were few occasions of his mother being home, in which Xiaoxin played video games. (100) will have a structure as in (101), where hěnshāo combines with the restrictor (when-clause α) and the main clause (β), and gives a property of times at δ.

(100) Xiǎo-shíhou, Xiǎoxīn hěnshāo zài māma zài jiā de shíhou dà diànyóu.

‘When he was a kid, Xiaoxin rarely played video games when his mother was at home.’
The lexical entries are given in (102) and the derivation is illustrated in (103).

(102) Lexical entries:

a. \([\text{hěn shǎo}]^{g,c} = \lambda P. \lambda Q_{<_{\text{IP}}} \cdot \lambda t: \text{t is long. Few Q-intervals in } \text{t contain a } P\text{-event}\)

b. \([\text{Xiăoxīn} \text{ xiăo-shìhou}]^{g,c} = (X^{\prime}\text{\text{’}}\text{‘s}) \text{ childhood}\)

c. \([\text{Xiăoxīn}]^{g,c} = X\)

d. \([\text{dă diănyōu}]^{g,c} = \lambda X. \lambda e. \text{ PLAY VIDEO GAMES (e, x)}\)

(103) Derivation:

a. \([\alpha]^{g,e} = \lambda e. \text{ PLAY VIDEO GAMES (e, X)}\)

b. \([\beta]^{g,e} = \lambda Q_{<_{\text{IP}}} \cdot \lambda t: \text{t is long. Few Q-intervals in } \text{t contain an event of } X \text{ playing video games}\)

c. \([\gamma]^{g,e} = \lambda t. \text{ t is a maximal interval during which } (X^{\prime}\text{\text{’}}\text{‘s}) \text{ mother is at home}\)

d. \([\delta]^{g,e} = \lambda t: \text{t is long. Few maximal intervals in } \text{t during which } X^{\prime}\text{\text{’}}\text{‘s} \text{ mother is at home contain an event of } X \text{ playing video games}\)
e. $[e]^{g,e}$ is defined since $X$'s childhood is a long time interval; $[e]^{g,e} = 1$ iff few maximal intervals $t'$ in $X$'s childhood such that $X$'s mother is at home throughout $t'$ contain an event of $X$ playing video games; 0 otherwise.

The important point concerning the semantic value of quantified habituals is that the Q-adverb (zōng or hěnshāo in the cases discussed above) applies to two sets of eventualities (a and $\gamma$) and returns a property of times ($\delta$). The node $\delta$ denotes a cumulative property in both (94) and (101). We borrow the definition of Krifka (1992:32) for cumulative property (CUM) (see also Link 1983):

\[(104) \forall P [CUM(P) \leftrightarrow \forall x, y [P(x) \land P(y) \rightarrow P(x \cup y)]]\]

(104) says that a property $P$ is cumulative if and only if for any individual $x$ and $y$ having the property $P$, the conjunction $x \cup y$ also has that property.

Now reconsider (103d). $\delta$ clearly denotes a cumulative property following the definition in (104). If in July Xiaoxin rarely plays video games when his mother is at home, and in August this is also the case, we can infer that Xiaoxin rarely plays video games when his mother is at home during the summer.

The cumulativity encoded in quantified habituals recalls the cumulativity found with stative predicates (Krifka 1989b, 1992). Take hěn mǎng ‘very busy’ in (105) for instance. If Lulu is busy for the month of July and that she is also busy during August, then she is busy during the whole summer.

\[(105) \text{Lulu hěn mǎng.} \]

Lulu very busy

‘Lulu is very busy.’

The cumulative property shared by quantified habituals and stative predicates makes it plausible to pursue syntactic similarities between them. Recall our analysis of sentences with stative predicates: we claimed that stative bare predicates are properties of times (of type $<i,t>$), true or false for a time. Reconsider (106) below, a sentence with a bare stative predicate discussed in Chapter 3. The syntactic structure of (106) is illustrated in (107):
The bare stative predicate, that is, the AP in (107), is of type $<i,t>$, and thus can combine directly with a time without resorting to aspect.

We believe that quantified habituals should have similar structures to sentences with stative predicates, that is, at a certain level of derivation (namely, when the Q-adverbs are saturated by two properties of eventualities), we get cumulative properties that can combine directly with a time. Q-adverbs play the same role as a spect: they map properties of eventualities to properties of times, and consequently quantified habituals need not be overtly marked for aspect and their syntactic structures lack the projection AspP.

Our analysis of aspectually unmarked generic sentences differs from the aspectual HAB operator analyses for habitual sentences presented in Section 4.2.2 (Paslawska & von Stechow 2003; Scheiner 2003). Both P&S and Scheiner posit a null HAB operator encoding imperfectivity, as shown below:

(108) \[ \text{HAB}^{<i,t>} \text{ is defined only for summative properties of intervals, more accurately ‘habits’;} \]
\[ \text{where defined, } [\text{HAB}] = \lambda \text{P}. \lambda \text{I}. \lambda \text{J}[[\text{I} \subseteq \text{J} \& \text{P(J)}] \]

Paslawska & von Stechow (2003:337)
In both (108) and (109), the input of HAB should already have all elements resulting in habituality, and the basic role of HAB is to place the reference time within the time of the “habit”.

We reject this position, because under this perspective, sentences with stative predicates should also be analyzed as involving a null imperfective operator. Although stative predicates are often associated with an imperfective interpretation, we believe that the imperfectivity results most likely from the lexical / semantic properties of the predicates, and not from an external null operator. Moreover, we can make the semantic composition right without an extra covert element in sentences with stative predicates (see Chapter 3 for discussion). So we would make the same assumption for quantified habitual sentences, that is, there is no covert aspectual HAB in quantified habituals.

To sum up, the generic readings of quantified habitual sentences with eventive bare predicates in Mandarin result from the combination of the overt quantificational adverbs with the properties they relate. Q-adverbs take properties of eventualities and give properties of times, that is, habituality. Habitual properties, just like stative properties, are cumulative and can be temporally anchored by a reference time under $T$ projection, without involving aspect.

### 4.4.2 Simple habituals

Simple habituals (SHs) refer to habitual sentences with no overt Q-adverb. Under the quantificational treatment that we presented in Section 4.2.1, SHs involve a covert operator GEN, equivalent to Q-Adverbs such as *generally*, or *always* (Lewis 1975; Kamp 1981; Heim 1982; Farkas & Sugioka 1983; Carlson 1989 among others). GEN quantifies over cases or times (Lawler 1973). In the aspectual treatment of habituals defended by Scheiner (2003), bare habituals contain not only a covert Q-adverb that she labels as “Q,” (which means *often, mostly or regularly*) turning an eventive predicate to a “habitus”, but also a covert imperfective aspect that she calls “HAB”. Both Ferreira (2005) and Boneh & Doron (2010) defend a modal “HAB” mapping properties of eventualities to properties of times.

\[
[HAB\!^x]^{\mathcal{L}} = \lambda Q. \lambda P. \lambda I. \exists J [\square J \land Q(P)(J)],
\]

Scheiner (2003:10)
Although each of these analyses has its specificities, they share the assumption of a covert element that takes properties of eventualities and returns habituality. (cf. The operator “GEN” in the quantificational treatment, the “Qc” operator for Scheiner and the “HAB” operator for Ferreira and B&D)

We share the view that bare habituals contain a null operator encoding quantification over eventualities. Let’s call it “Q” for “quantification”. The reason why we do not use “GEN” to refer to this quantificational operator is simply to avoid ambiguities between genericity as a property of kind-referring NPs and genericity at the sentence level.

The meaning of Q is a big issue (see Krifka et al. 1995 for the discussion of the semantics of the generic operator in characterizing sentences). No Q-adverb seems to be the overt form of Q given the whole range of possible readings of habitual sentences. If the sentences in (110a) and (110b) can be paraphrased as involving a covert Q-adverb always or generally, these adverbs are much less appropriate for cases like (111a) and (111b), which describe either an activity or a profession.

(110) a. John smokes after dinner.
   b. John smokes in the kitchen.

(111) a. John smokes.
   b. John sells vacuum-cleaners.

Now we focus on habitual sentences without any (temporal or locative) adverbial modifier like (111) above. Its counterpart in Mandarin is given in (112) below.

(112) Gulong chōu-yān.
     Gulong smoke-cigarette
     ‘Gulong smokes.’

What is the meaning of an SH like (112)? More precisely, what is the semantics of the covert quantificational operator Q in SHs? Can we paraphrase (112) as “Gulong often smokes” or “Gulong regularly smokes”? We think that neither of these sentences can convey the real meaning of (112). Gulong does not have to smoke regularly or very often for the speaker to truthfully utter (112). Consider now (113):
The sentences in (113) are overtly quantified habituals. At first sight, (113a), (113b) and (113c) describe situations that are compatible with (112), while (113d) is inconsistent with (112). If (112) is a covertly quantified habitual, the semantics of the covert operator Q should give rise to a semantic value compatible with our observation above, that is, (112) should be interpreted as sets of situations that include all situations denoted by (113a), (113b) and (113c), and exclude the set of situations conveyed by (113d).

Suppose that the covert Q has a similar distribution to that of Q-adverbs. Then it should measure the quantity of events of Gulong smoking over a certain period. Imagine a scale of the occurrences of events within a given time span (“per week” for instance) like (114):

\[
\begin{array}{cccc}
N: & R: & O: & \text{often} \\
0 & 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & 11 & 12 & 13 & 14 \\
\end{array}
\]

- N: cóngbù (never)
- R: hénshào (rarely)
- O: òu’ ēr (occasionally)

When talking about the frequency of the predicated event, we can use the exact number of occurrences per week, “three times per week”,

\[154\]
“four times per week” for instance; or we can also use more “vague” terms like the Q-adverbs jīngcháng ‘often’, ǒu’èr ‘occasionally’ or hěnshǎo ‘rarely’ in (113).

Suppose that hěnshǎo ‘rarely’ in terms of smoking corresponds to less than two times per week, and jīngcháng(chōuyān) ‘often(smoke)’ corresponds to more than ten times a week. Then under the same convention, the covert Q operator as well as other Q-adverbs should also be associated with a certain range of frequency, which is determined by the lexical meaning of the Q-adverb, the semantic properties of the predicate or other pragmatic factors.

What are the frequencies associated to Q when we talk about one’s smoking? We think that when Q applies to a property P, Q(P) means that the occurrences of the P-event over a certain time partition (unit) could vary from 1 to the biggest possible number. Here is an attempt at the semantic value of Q:

\[
(115) \llbracket Q \rrbracket^{g,c} = \lambda P.\lambda t: t \text{ is long. } |\{e: \tau(e) \subset t \& P(e)=1\}| > 0
\]

Adapted from the semantics of “often” in Scheiner (2003:9)

The semantic value of the sentence (112) is derived as follows:

(116)

a. \[G_{\text{ulong}}^{g,c} = G\]

b. \[\text{chôuyân}^{g,c} = \lambda x.\lambda e. \text{sMOKE}(e, x)\]

c. \[G_{\text{ulong chôuyân}}^{g,c} = \lambda e. \text{sMOKE}(e, G)\]

d. \[Q G_{\text{ulong chôuyân}}^{g,c} = \lambda t: t \text{ is long. } |\{e: \text{sMOKE}(e, G) \& \tau(e) \subset t\}| > 0\]

e. \[\text{TP } t; Q G_{\text{ulong chôuyân}}^{g,c} \text{ is defined only if } g(i) \text{ is a long time interval; where defined } \llbracket \text{TP} \rrbracket^{g,c} = 1 \text{ iff } |\{e: \text{sMOKE}(e, G) \& \tau(e) \subset g(i)\}| > 0, 0 \text{ otherwise}\]

(116e) says that the sentence Gulong chôuyân ‘Gulong smokes’ conveys that there is at least one event of Gulong smoking within a contextually determined interval including the utterance time. This truth condition seems too weak. According to (116e), a scenario where Gulong only smoked once in the past is predicted to be
compatible with the sentence *Gūlóng chōu-yān*, if the present time interval referred to by the speaker includes the event time of the only occurrence of Gulong smoking, whereas it is counter-intuitive to use the habitual sentence in (112) to report this kind of situation.

However, we think that (116e) is the exact truth condition of (112). Notice that (113a), (113b) and (113c) all entail (112). (112) is just an underspecified quantificational habitual sentence with respect to the sentences in (113a, b, c). For (112) to be true, there should be events (or at least one event) of *Gulong* smoking within the relevant interval, but the quantity of the events is unspecified. When interpreting a sentence like (112), we can imagine *Gulong* as a smoker who smokes more or less regularly / frequently. (112) can be truthfully uttered if *Gulong* only smokes once a week. In another case where *Gulong* just started smoking and he has only smoked once, (112) is perfectly appropriate if the speaker assumes that *Gulong* will probably smoke again.

To summarize, simple bare habitals contain a covert quantificational operator Q, which ranges over eventualities denoted by the predicate and results in habitual properties. The covert Q differs from overt Q-adverbials in the range of frequency of events they cover: the covert Q is less restricted than overt Q-adverbs, thus is compatible with more situations.

### 4.4.3 Habituals with locative PPs

The assumption of a covert Q operator also captures the temporal readings of habitual sentences with locative PPs. Take (117) for instance:

(117) Gūlóng zài wòshì lǐ chōu-yān.
   Gulong at bedroom inside smoke-cigarette
   ‘Gulong smokes in the bedroom.’

(117) can be used to describe Gulong’s habit of smoking in the bedroom. On a habitual reading, the semantic value of (117) is derived as follows:

(118)

a. $[[Gūlóng_{k}]]^{g,e} = G$
b. \([\text{chōuyān}]^{\text{ge}} = \lambda x. \lambda e. \text{SMOKE}(e, x)\)

c. \([t_k \text{ chōuyān}]^{\text{ge}} = \lambda e. \text{SMOKE}(e, g(k))\)

d. \([\text{zài wòshí lì}]^{\text{ge}} = \lambda x. \lambda t. x \text{ is in the bedroom throughtout } t\)

e. \([t_k \text{ zài wòshí lì}]^{\text{ge}} = \lambda t. g(k) \text{ is in the bedroom throughtout } t\)

f. \([Q [t_k \text{ zài wòshí lì}] [t_k \text{ chōuyān}]^{\text{ge}} = \lambda t. \text{ there are intervals } t', t''… \text{ in } t, \text{ such that } g(k) \text{ is in the bedroom throughout } t', t''…, \text{ and such that } t', t''… \text{ contain un event of } g(k) \text{ smoking}\)

g. \([\text{TP } t_1 \text{ Gǔlóngē } Q [t_k \text{ zài wòshí lì}] [t_k \text{ chōuyān}]^{\text{ge}} = \text{ defined only if } g(i) \text{ is a long time interval; where defined } [\text{TP}]^{\text{ge}} = 1 \text{ iff there are maximal intervals } t', t''… \text{ in } g(i), \text{ such that } G \text{ is in the bedroom throughout } t', t''…, \text{ and such that } t', t''… \text{ contain an event of } G \text{ smoking; } 0 \text{ otherwise}\)

4.4.3.1 Q and locative PPs

In Chapter 3, we have shown that some sentences with a locative prepositional phrase are ambiguous between a habitual and an ongoing construal, as is the case for (119).

(119) Lúlu zài túshūguǎn chá zīliào.
   Lulu ZAI library consult document
   ‘Lulu is consulting documents in the library.’
   ‘Lulu consults documents in the library.’

We argued that the progressive reading of (119) is due to the overt progressive aspect marker \(zài_{\text{prog}}\), and that the preposition heading the PP ‘in the library’, \(zài_{\text{loc}}\), homophonous with the progressive \(zài_{\text{prog}}\) preceding it, is deleted at the PF by haplology, as shown in (120).
Note that (119) can also receive a generic construal. As we have argued in the current chapter, the generic readings of sentences with no aspectual marking are derived from the null operator Q, which turns properties of eventualities into generic properties. (121) below gives the logical form of the generic reading of (119), where the morpheme \( z\tilde{a}i \) is a preposition.
The operator Q licenses the generic construal for (119). The sentence is interpreted as communicating Lulu’s habit of consulting documents in the library.

The assumption of a quantificational operator Q licensing genericity also captures the “topicalized PP puzzle” pointed out by Waltraud Paul (p.c.) discussed in Chapter 3. The puzzle is that when the locative PP is topicalized, the progressive reading of (119) is lost and only the generic reading is available for the sentence with a topicalized PP, as illustrated in (122).

(122) Zài túshūguǎn, Lúlu chá zǐliào.
    ZÀI library Lulu consult document
    ‘Lulu is consulting documents in the library.’
    ‘Lulu consults documents in the library.’

Why is the progressive reading lost? Because, as we have argued, in the topicalization case we no longer have an environment where locative zài can go unpronounced and so the zài in this case cannot be the progressive zài. Why is the habitual reading available? Because, in
the absence of overt aspect, eventive predicates can only yield habitual readings due to the null operator Q. The logical form of (122) is given below:

(123) \([pp \text{zài loc library}], [\text{TP t}, [Q [VP Lûlu [V consult docs]]}\]

The generic reading of (122) comes from the covert Q, just like the generic reading of (119). Whether the locative PP is topicalized or not has no impact on the generic construal of the sentence.

4.5 Summary

In this chapter we discussed generic sentences containing eventive bare predicates in Mandarin. We distinguished genericity in the nominal domain and genericity as a clausal property. We gave a brief overview of analyses proposed in the literature to capture generic construals. In particular, we presented the quantificational treatment, aspectual analyses and the modal treatment of generic sentences.

We adopted the quantificational treatment of generic sentences and argued that the genericity of sentences with eventive bare predicates in Mandarin is derived from a quantificational element in the form of overt or covert quantificational adverbials.

Overt Q-adverbs take predicates of events and return generic properties, which are properties of times. That’s the reason why sentences with eventive predicates containing Q-adverbs are grammatical and only yield generic construals.

The covert quantification operator Q plays a similar role to that of overt Q-adverbs, and it also gives properties of times. The only difference between overt Q-adverbs and the covert Q is that Q is an underspecified quantification.