A STUDY OF THE INTERPRETATION OF WHEN-SENTENCES: THROUGH ASPECTUAL PROPERTIES

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This paper attempts to account for the interpretative problems of when-sentences in terms of the properties of perfective/imperfective aspect. When-sentences are interpreted in such various ways that there seems to be no principled explanation possible. I will show, however, that much of the variety in temporal interpretation is systematic and attributable to the aspectual characters of the sentences.

I have previously studied the properties of progressive aspect in the framework of Cognitive Grammar, which is also the basis of the present paper. Nevertheless, I shall take other kinds of approaches into consideration, because the interpretation of when-clauses has been more often subject to the analyses of tense than to those of aspect.

This paper is organized in the following way: Section 1 shows the sentences in question and their general interpretations; there the interpretations will be termed in three ways. In Section 2 the core meaning of when is presented and its relation to aspectual distinctions is briefly discussed. Section 3 consists of the analyses on the basis of the assumption discussed in Section 2. In discussing the analyses new conceptions of aspect will suggest themselves.

I must note at the outset that I restrict my attention to the sentences with punctual when-clauses.
1. The sentences that concern me here are of the following kinds:⁴

(1) a. The band was here when Jane arrived.
   b. The band was in rehearsal when Jane arrived.
   c. The band was rehearsing when Jane arrived.
   d. The band rehearsed when Jane arrived.

(2) a. When Jane spilled the coffee, Fred cleaned the floor.
   a'. When Jane spilled the coffee, Fred cleaned it up.
   b. When Jane spilled the coffee, Fred was cleaning the floor.
   b'. When Jane spilled the coffee, Fred was cleaning it up.

(3) a. When Jane arrived, she was the center of attention.
   b. Macbeth believed in ghost when he saw Banquo.
   c. Jane was angry when Mary dropped the brandy snifters.

(4) a. Mary was laughing when she saw the accident.
   b. Mary laughed when she saw the accident.

(5) a. Erica was watching T.V. when she fell asleep.
   *b. Erica watched T.V. when she fell asleep.

(1)a usually means that the band was already in this place at the time of Jane's arrival. (1)b–c are interpreted in the same way; that is, at the time of Jane's arrival the rehearsal was under way. In (1)a–c, therefore, all the main-clause propositions are true at the moment referred to by the subordinate when-clauses. Let me call this interpretation "simultaneity.⁵ In (1)d, on the other hand, the usual interpretation goes that the band began to rehearse at the moment or immediately after Jane's arrival, rather than that the rehearsal had already started as in (1)b–c. I shall call this "immediately after," or "succession" interpretation.

The same kind of difference is observed in (2). (2)a–a' mean that Jane spilled the coffee, and so Fred cleaned the floor to wipe it up; hence,
"succession" interpretation: In (2)b–b’ "simultaneity" interpretation is required. (2)b implies that Fred was already cleaning the floor for some unknown reason, and just at the moment Jane spilled the coffee accidentally or intentionally. The requirement of temporal relation is evidenced by the asterisk put for (2)b’.

In (3)a–b, the *whens* are almost obligatorily taken as roughly synonymous with "immediately after," while (3)c is ambiguous in three ways. Note that (3)c can have either of the following continuations:

(3)c’ ..., because they were his favorites.

(3)c″ ..., and this event made him smile at once; he had really hated that ugly snifters. He was glad at Mary’s carelessness.

(3)c‴ ... His bad humor was because of the impudent letter he had received that morning. He was so hot that he did not even notice the crash.

On the other hand in (4)a and (5)a, the *whens* can ((4)a) or must ((5)a) be interpreted as "just before," while those in the b counterparts are roughly synonymous with "immediately after" (and therefore the asterisk for (5)b). I shall call the former interpretation "just before," or "backward succession."

Thus *when*-sentences may seem to present an interpretative chaos. They comprise so divergent interpretations: "just before," "simultaneous with," and "immediately after." In fact they seem to cover all the possibilities for temporal relation. There may seem to exist no commonness among these meanings of *when*. Smith (1983) and Oversteegen (1986) share the same idea that *when* is "the least demanding conjunction".⁵

*When* relates the situation of the main clause to that of the embedded clause in a very flexible way: depending on viewpoint, situation, and pragmatic factors, the interpretation may be either simultaneous or successive. This means that *when* imposes no particular temporal relation on situations (although there is considerable pressure for the
when clause to be taken as preceding if the situations are successive; cf. Steedman, 1981).\

I do not believe, however, that the interpretation of when is so arbitrary. The variety observed above suggests not the arbitrariness but some principle of the interpretation; otherwise a consistent interpretation could be possible at least in all the sentences. If some interpretation is blocked, that must be because the principle is incompatible with the context for the interpretation.\

In the next section I will present the assumptions on the core meaning of when and for its interaction with aspektual characters.

2.

2.1.

The problem of when has often been treated in the theory of tense. Reichenbach (1947) proposed a scheme in which three points U, R, and E, put along a time-line figure in the temporal reference or the distinctions of tense. U, R, and E are the utterance time, the reference time, and the event time, respectively. The distinctions of tense correspond to the relationships of three points as represented in (6):

\( E \quad R \quad U \)

\( \text{past perfect} \)

\( E, R \quad U \)

\( \text{simple past} \)

According to Reichenbach’s scheme the meaning of when-sentence depends on the identity of the R-points in the two clauses.\

Following Reichenbach’s “three points structures” in principle, Oversteegen proposed the Two-Track Theory, in which two-tracks, E-track and S-track, and S-track, are posited as in the following way.
I claim that . . . the primary role played by conjunctions is to dictate some relation between the evaluation points of the conjoined sub-sentences. In particular, I claim that toen dictates their identity. Writing Em for the event in the main sentence and Es for that in subordinate one, toen requires that the s' points for Em and those for Es are one and the same.13

Although his analyses of Dutch are not completely applicable to English, I believe that his characterization of toen is equally true for when. Following Reichenbach and Oversteegen, I assume that the primary role of when is to identify the evaluation point of the when-clause with that of the main clause. Restricting my attention to the when-clauses with punctual VPs, I shall consider the referential function of when analogous to that of punctual adverbials. For example, in (8) the proposition of the main clause is evaluated at the moment referred to by the when-clause or by the time adverbial.

(8) John was reading the novel when the telephone rang.

at 3:00.
2.2.

Now that I have assumed the core meaning of *when*, what concerns me most are the factors bringing about the variety in interpretation. One such factor is, I believe, verbal aspect. I now ask what is the relationship between the core meaning of *when* and the aspectual distinction. I shall start by giving a brief overview of aspect in English.

According to the general definition, "aspects are different ways of viewing the internal temporal constituency of a situation."¹⁴ In English, however, aspect is not a clearly observable category. The distinction in aspect does not correspond to the distinction in form (syntax or morphology). As a result, the theory of aspect is not definitively established in English Grammar.

After the model of Russian and other Slavonic grammars, it is customary to make the distinction between perfective and imperfective aspect. This dichotomy is widely accepted in the recent studies of English aspect as well. Their definitions go as follows:

The perfective looks at the situations from outside without necessarily distinguishing any of the internal structure at the situation from inside, and as such is crucially concerned with the internal structure of the situation . . . .¹⁵

In English, imperfective aspect is claimed to have the corresponding form, progressive: According to Brinton, "the English progressive is indeed a marker of *imperfective aspect* [sic]."¹⁶ Note that the aspectual dichotomy does not systematically match the formal distinction. If the progressive is a formal marker of imperfective aspect, it does not mean that the simple form is a marker of perfective aspect; that is, the progressive is not the exclusive instantiation of imperfective aspect. In more traditional accounts of aspect, imperfective is characterized as the aspect for stative verbs:

(9) a. George played the guitar. (perfective: non-stative)
b. George was tall and handsome. (imperfective: stative)
c. George was sleeping. (imperfective: progressive)

In fact, the present definition of progressive as the marker of imperfective aspect stems from the analogy with stative verb phrases. Vlach says, for example, that "the progressive operator turns sentences into stative sentences."17 This statement is misleading, however, because he confuses aspect with Aktionsart; Aktionsart is not the speaker's viewpoint but the temporal character of a process itself. "Stative" is clearly a notion of Aktionsart rather than of aspect, for it is a type of situation. For that matter, progressive always comprise with non-stative actions. A more correct characterization will be that the progressive operator turns sentences into imperfective aspect which is prototypically instantiated by stative VPs in simple form.

In summary, I follow the dichotomy of aspect; the simple statives and the progressives have imperfective aspect, while the simple non-stative perfective aspect.

2.3

Let me now consider the interaction of when and aspectual properties.

According to Vlach (1981), "the defining characteristic of stative sentences is their way of interacting with point adverbials. This is not just one fact about the progressive; this is what the progressive is FOR [sic]."18 He posits the following definition of a stative sentence based on the temporal reference:

(10) A sentence $\varnothing$ is stative if and only if the truth of (Past $\varnothing$) when I arrived requires that $\varnothing$ was true for some period leading up to the time of my arrival.19

This definition is exemplified by the sentences in (11):

(11) a. Max was here when I arrived:
    b. Max polished his shoes when I arrived.
In order for (11)a, a stative sentence, to be true, "Max must have been here for some period preceding and extending up to the time of my arrival." The other situation in (11)b shows "a sharp contrast" to it in that its activity "took place at the time of or slightly after my arrival, not before."

Boertien (1979) rightly claims that "Vlach's test [for stativity] is actually a test for sentences that are to be evaluated at moments." His generalization goes that "stative, habitual, and progressive sentences are all statives and should be evaluated at moments." The sentences in (12) exemplify the generalization:

(12) At the moment, he builds a new house. he is a popular man. he builds houses for a living. he is building a house across the way. he dozes by the fire. he dies.

Note that Boertien, as well as Vlach, confuses the terminology of aspect and Aktionsart. The second "stative" in the generalization above should be understood as "of imperfective aspect." From the discussions of Vlach and Boertien, therefore, I shall posit the following assumption on imperfective aspect:

(13) "To be evaluated at moments" or the possibility of point-evaluation is the defining property of imperfective aspect.

An intuitive explanation is possible for this property: "if a state obtains continuously throughout a period of time, it also obtains at each moment of time within that period." That is, the possibility of point-evaluation is ascribable to the stability and homogeneity of imperfective aspect.

On the other hand, non-stative sentences in perfective aspect cannot be evaluated at moments. The starred examples in (12) show that "they cannot be true at any particular moment, as the punctual sentence adverbial
The intuition explains that if Mary baked a cake in two hours, one cannot say that she baked it at any single moment during the two hours, although one can perfectly say that she was baking it at every moment. Before proceeding to the analyses of the sentences presented at the outset of this paper, let me show how these ideas can be adapted in the framework of Cognitive Grammar.

In the model of Cognitive Grammar imperfective and perfective processes are schematically represented as in (14) a–b respectively:

\[
\text{(14) a. imperfective} \quad \text{b. perfective}
\]

![Diagram of imperfective and perfective processes]

Imperfective aspect presents a situation as if it were a constant state. The situation is presented as unbounded in time, without any beginning or end. Because of the homogeneous character, any portion of the situation is the same as another portion; the state at any point represents the entire situation. Therefore, an imperfective process, or a situation in imperfective aspect, can be evaluated, or fully instantiated at moments.

Perfective aspect represents a process as a dynamic one with time boundaries. Because of the dynamicity, an arbitrary point cannot instantiate the process as a whole; a situation varies from point to point. That is the reason perfective process cannot be evaluated at moments.

3.

3.1.

Now I shall go back to examples presented at the onset and their analogues
to examine how the assumption (13) works.

The first sentences in question are as follows:
(15) a. The band was here when Jane arrived. (= (1)a)
   b. The band was in rehearsal when Jane arrived. (= (1)b)
(16) a. John was friendly when I first met him.
   b. John did not resemble his father when I first met him.

All the sentences above require "simultaneity" interpretation. I have already discussed (15)a–b; the same is true for (16)a–b. (16)a means that at our first meeting John was friendly; it does not matter whether it was his habitual humor or not. (16)b means that John did not look like his father at our first encounter.

The main clauses of the sentences above are all statives; that is, they have imperfective aspect and therefore they are evaluated at moments. If they are all truthful statements, the propositions of the main clauses hold true at the moment designated by the when-clauses. In fact "simultaneity" interpretation can be considered as the proof of point-evaluation. Therefore the sentences in (15)–(16) raises no problem against the assumption (13).

The progressives also confirm the assumption (13). The progressives have imperfective aspect, as well as simple statives do. Hence I expect them to behave likewise. See the following examples and compare the progressives in imperfective aspect with the simple non-statives in perfective aspect:
(17) a. The band was rehearsing when Jane arrived. (= (1)c)
   b. The band rehearsed when Jane arrived. (= (1)d)
(18) a. When Jane arrived, the band was playing "Autumn Leaves."
   b. When Jane arrived, the band played "Autumn Leaves."
(19) a. John mixed me a drink when I first met him.
   b. John was mixing me a drink when I first met him.
(20) a. When Jane spilled the coffee, Fred cleaned the floor. (= (2)a)
   a'. When Jane spilled the coffee, Fred cleaned it up. (= (2)a')
b. When Jane spilled the coffee, Fred was cleaning the floor. (= (2)b)

‘b’. When Jane spilled the coffee, Fred was cleaning it up. (= (2)b’)

The general interpretations for (17) are already mentioned: (17)a has "simultaneity" interpretation, while (17)b "succession" one. The same holds in (18): the progressive in imperfective aspect ((18)a) is interpreted in "simultaneity," and the simple non-stative in perfective aspect ((18)b) in "succession." For (19)—(20) the requirement of interpretation even affects the acceptability of a sentence. (19)a implies that I first met John, and so he mixed me a drink perhaps by courtesy. (19)b sounds a little odd for that situation, because this sentence requires "simultaneity" interpretation; it implies that John began to mix a drink for me at a moment preceding our first encounter. The adverbial "first" causes a kind of paradox. Similar paradox is observed in (20) (their common interpretations are given earlier). Because of the "simultaneity" of the progressives, in (20)b—b’, Fred’s cleaning the floor cannot follow but cooccur with Jane’s spilling the coffee. Therefore the only interpretation is that Fred was cleaning the floor for some unknown reason, when Jane spilled the coffee. (20)b’ is out because the pronoun it refers to the coffee and one never happens to be wiping the coffee unless it is already spilled on the floor.

Thus the progressives in (17)—(20) all behave just like simple statives. They require "simultaneity" interpretation, which proves that they are evaluated at moments.

To sum up, all the sentences in (15)—(20) seem to support the assumption (13). Sentences in imperfective aspect, i.e. progressives and simple statives, are evaluated at moments. It is evidenced by their "simultaneity" interpretation. On the other hand, sentences in perfective aspect, i.e. simple non-statitives, do not have the property of point-evaluation perhaps because of their dynamic internal constituency. They rather require "succession"
interpretation that the process starts "at" or "immediately after" the moment referred to by *when*-clauses and proceeds forward.

3.2.

In the preceding sections I have discussed that point-evaluation is an inherent property of imperfective aspect. I also have shown that because of the inherent property *when*-sentences in imperfective aspect require "simultaneity" interpretation. For want of the property, in contrast, *when*-sentences in perfective aspect have "succession" interpretation. This generalization is quite straightforward and can account for a number of linguistic phenomena. However, things are not really that simple. Not all progressive sentences are compatible with "simultaneity" interpretation, and simple stative sentences does not necessarily require "simultaneity" interpretation but rather they have "succession" interpretation like the simple non-statives do.

In the face of these kinds of exceptions, one may possibly revise the assumption (13). However, I shall hold it as it is, because I believe that point-evaluation is not a more characteristic but a defining property of imperfective aspect. In what follows I shall show that it is possible, and indeed correct, to maintain the assumption (13), and see how new conceptions concerning aspect suggest themselves.

The exceptional cases are exemplified as follows:

(21) a. Mary was laughing when she saw the accident. (=(4)a)
    b. Mary laughed when she saw the accident. (=(4)b)

(22) a. Erica was watching T.V. when she fell asleep. (=(5)a)
    b. Erica watched T.V. when she fell asleep. (=(5)b)

(23) John was happy when Mary dropped the brandy snifters, but his humor did not survive the unhappy event.

(24) a. When Jane arrived, she was the center of attention. (=(3)a)
    b. Macbeth believed in ghosts when he saw Banquo. (=(3)b)
    c. John was angry when Mary dropped the brandy snifters. (=(3)c)
(21)–(23) are of the same kind; the imperfective versions suggest a new possibility in interpretation, "backward succession," while the perfective ones consistently require "succession" interpretation. As for (24), although the main clauses are simple statives, they are compatible with "succession" interpretation.

Let me examine (21)–(23) first. (21)a is ambiguous whether Mary was laughing and seeing the accident at the same time, or she was laughing just before she saw the accident. (21)b is unambiguous; Mary laughed immediately after she saw the accident. For (22)a, "backward succession" or "just before" interpretation is almost obligatory, because watching T.V. and sleeping are incompatible at the same time. Therefore the "succession" interpretation is blocked; hence the asterisk for (22)b. 32 As for (23) the conjoined clause requires "backward succession" interpretation for the first stative clause.

The question here is whether these constitute counterexamples to the assumption (13) and the generalization induced from it. I believe they do not. Smith (1983), referring to similar cases, argues as follows:

The terminative reading results from an inference as to what happened just after the time indicated by the progressive: one infers that the main-clause event ended immediately after the time talked about. . . . [For (22)a,] at the onset of falling asleep Erica was watching television; a moment later the watching television terminated and she was actually asleep. 33

Thus, at the very moment designated, the main clauses of (21)a, (22)a, and (23) can still be claimed as truthful. Pragmatic knowledge such that people are more likely not to laugh seeing an accident or that watching T.V. and sleeping are incompatible results in "backward succession" rather than "simultaneity" reading. Therefore "backward succession" is not essentially different from "simultaneity"; both subsume the possibility of point-
evaluation, and the difference originates in the contextual inferences. In other words, "backward succession" is another, less usual exponent of point-evaluation. So long as the proposition of the main clause holds, however narrowly, at the moment, it hardly matters if a moment later Mary is crying ((21)a) or Erica is fast asleep ((22)a). Note again that, in contrast, the sentences in perfective aspect consistently require "succession" reading as is evidenced by the asterisk of (22)b.

Now let me examine (24)a–c, repeated here:

(24) a. When Jane arrived, she was the center of attention: (= (3)a)
   b. Macbeth believed in ghosts when he saw Banquo. (= (3)b)
   c. John was angry when Mary dropped the brandy snifters. (= (3)c)

Although the main clauses of these sentences are all simple statives, which should have "simultaneity" interpretation, they are compatible with "succession" reading. For (24)a–b "succession" interpretation is almost obligatory because of other contextual factors, and for (24)c it is the most natural one among its possible readings: "simultaneity," "succession," and "backward succession."34 The question here is why statives are compatible with "succession" interpretation. As in the former case, I will hold the assumption (13) and the generalization as they stand, and seek the answer elsewhere.

I shall start by considering the reason for "succession" reading. I have accounted for "simultaneity" interpretation for imperfective aspect in terms of the possibility for point-evaluation. As for perfective aspect I have observed that "succession" interpretation is the most general one, giving only a negative explanation; because it cannot be evaluated at moments. Evidently incompatibility with point-evaluation alone cannot constitute the convincing grounds for "succession" interpretation. I shall suggest two more factors behind reading.

The first factor is concerned with the nature of *when*. *When* signals not only a temporal relation but also a causal relation. In the latter case, *when*-clause
represents a cause, and main clause its effect. It is quite natural, in the natural course of events, that the cause temporally precedes the effect; resulting in "succession" reading:

(25) a. When I saw the accident, I called the ambulance.
   b. When Jane spilled the coffee, Fred cleaned it up. (= (2)a')

In interpretation the temporal relation overlaps in part with the causal relation. Even for the sentences where a temporal relation is intended, a causal reading is possible at times; and if a causal relation is not clearly observed, when with simple non-stative main clause is mostly understood as "immediately after".

(26) a. John joked with me when he saw me.
   b. John mixed me a drink when I first met him. (= (19)a)
   c. When I opened the door of the hall, the speech began.

Another factor is concerned with the cognitive processing of a situation and the preference for inceptive interpretation. If a statement implies that any event or process takes place or exists at all, the initial moment of the process can be assumed to be the most prominent point in evaluating the truth of the statement. To say truthfully that she cried, for example, the moment she began to cry is essential. It is the point that turns the truth value of the sentence from 0 (false) to 1 (true); the point that assures the truth of the statement involving the process. It is natural to assume, therefore, that although a process in perfective aspect cannot be evaluated at moments but in its entirety, the initial point can be focused on in reference. If a when-clause refers to the initial point of a process, the remaining substantial portion of the process takes place during the period that follows that point; hence "succession" interpretation results.

These two factors: causal relation and preference for inceptive reading, motivate "succession" interpretation in part at least. If this explanation is correct, there is nothing indeed to prevent "succession" reading for the
statives. A state is usually expressed linguistically as an eternal, invariable one. However, it is in fact a variable one; it can be caused and ceased. It must be possible, therefore, to express it as dynamic in linguistic terms as well. Sentences (24)a–c are instances of this. They are paraphrasable into inceptive sentences (27)a–c, respectively:

(27) a. When Jane arrived, she became the center of attention.
   b. Macbeth came to believe in ghosts when he saw Banquo.
   c. John got angry when Mary dropped the brandy snifters.

They all mean not a stable, everlasting situation, but a change into a situation which is customarily expressed as stable: to be the center of attention, to believe in ghosts, and to get angry. As they are inceptive, it follows that they have “succession” reading. Therefore, (24)a–c are not counterexamples to the assumption (13). The simple statives in (24)a–c are not really functioning as imperfective aspect but they are closer to perfective in reference. This inconsistency in simple statives now compels me to redefine perfective/imperfective aspect.

Simple stative forms are usually considered prototypical of imperfective aspect by virtue of their stative Aktionsart. They are aspectually contrastive with simple non-stative forms:

(28) a. Anne resembled her mother when she was a child, and she still resembles her.
   b. They built a house last year, and they haven’t finished it yet.

I shall say that the simple non-statives have unmarked imperfective. I mean by unmarked that the imperfectivity is not assured by any grammatical marker but dependent in part on context and pragmatic factors; hence it can be cancelled without contradiction. The cancellation is instantiated by the three continuations of (3)c, repeated here:

(3) c. John was angry when Mary dropped the brandy snifters, c’ because they were his favorites.
and this event made him smile at once; he had really hated that ugly snifters. He was glad at Mary's carelessness.

His bad humor was because of the impudent letter he had received that morning. He was so hot that he did not even notice the crash.

They also instantiate the flexibility of the simple statives.

In contrast, the progressives are of marked or grammaticalized imperfective. They are not cancelled by contextual features. Hence they are not compatible with inceptive meaning:

(29) a. When Jane spilled the coffee, Fred cleaned it up. (=(2)a')
   *b. When Jane spilled the coffee, Fred was cleaning it up. (=(2)b')

(30) a. John was (=got) angry when Mary dropped the brandy snifters. (= (3)c)
   *b. John was beating her when Mary dropped the brandy snifters.

Thus the perfectivity of the progressives does not depend on context or pragmatic knowledge but is, in a sense, linguistically autonomous. They are always evaluated at moments; they require "simultaneity" interpretation or its extension, "backward succession" interpretation.

With this redefinition of imperfective aspect, the assumption (13) in the form as it is can account for the variety in temporal interpretation of when-sentences.

4.

I have examined the interpretations of when-sentences in terms of aspectual characterization. The interpretations are roughly of three kinds: "simultaneity," "succession," or "backward succession." The assumption is that "to be evaluated at moments" or the possibility of point-evaluation is the defining property of imperfective aspect.

The point evaluation and "simultaneity" reading are two sides of the same
coin; they define imperfective aspect. As for perfective aspect, "succession" is most commonly observed. Causal relation of *when*-sentences and the preference for inceptive reading are posited to explain it.

"Backward succession" for imperfective and "succession" for the simple statives are seemingly exceptional, but I have shown that both of them can be explained; "backward succession" is an extension of "simultaneity," and the simple statives in "succession" reading are not really imperfective but perfective.

The key concepts concerning aspect and temporal reference suggested in this paper are i) point-evaluation, ii) inceptive reading or focus on initial point, and iii) marked/unmarked imperfective.

Point-evaluation means that a situation is fully instantiated at a moment. This property is observed in imperfective aspect because of its homogeneous character. Inceptive reading means that when a process in perfective aspect is linguistically expressed, the focus of attention falls on the initial point, though the process is evaluated in its entirety. As for marked/unmarked imperfective, I claim that progressive is the marked one and is always evaluated at moments, while simple stative is the unmarked one. Although the simple statives have been considered the prototype of imperfective aspect, the interpretations of *when*-sentences suggest that they are cancelable imperfectives. Simple stative sentences usually have imperfective aspect; however, contexts can turn them into perfective aspect.

All these things being considered, the interpretation of *when*-sentences no longer appears a desperate chaos but a solvable complex. Aspectual characters and their interplay with temporal reference, together with pragmatic considerations, can account for most of the cases, although for a fuller explanation the analysis of *when*-sentences involving non-punctual *when*-clauses still remains for a future study.
Notes


3. The terms "simultaneity" and "succession" are borrowed from Smith, 487; but he does not use them technically in particular. "Backward succession" is my original coinage.

4. The idea for three continuations is from Smith, 488, though the actual examples are different.


6. Carlota S. Smith, 486.

7. The concept "context" here is not very specified in sense, but it comprises pragmatic context or situation as well as such linguistic context as the properties of subject, object, etc.


10. Steedman, 129.

11. Cf. Oversteegen, 202. "The S-track is a set of points qualifying as potential speech points, while the E-track is a dense structure with E(vent) intervals representing the events mentioned in a sentence" (Oversteegen, 200).


15 Comrie, 4.
17 Vlach, 284.
18 Vlach, 284.
19 Vlach, 273.
20 Vlach, 273.
21 Vlach, 273. This kind of test is not unique to Vlach.
22 Boertien, 47.
23 Boertien, 47.
24 Boertien, 49. Note that Boertien (1979) comments on Vlach’s draft of the article to appear in 1981.
25 For a sentence to be evaluated at a particular moment means that the process in the proposition of the sentence is fully instantiated or is true at the moment.
26 Boertien, 48. On the homogeneity of imperfective aspect, compare also Uda, 165–175.
27 Boertien, 48.
30 I avoid the term “grammaticality” because it often presupposes the autonomy of syntax, which I do not believe in. The asterisk here simply means that the sentence is extremely odd or impossible; the question mark signals that the sentence is very odd, and yet it is possible to think of a suitable situation.
31 This sentence is possible in the situation where John had been mixing a drink for some period of time not in front of me.
32 It is not that “simultaneity” reading is impossible for the configuration of (22)b, but that both “backward succession” and “simultaneity” are compatible with this form. It is contextual and pragmatic factors that block the latter interpretation.
33 Smith, 487. Terminative reading means that “the main-clause event terminates with the advent of the when-clause event” (Smith, 487); hence, it almost coincides with “backward succession” interpretation in my terminology. However, Smith meant to argue not for point-evaluation but for the thesis “endpoints are essential
to the understanding of successiveness" (Smith, 487).

34 Cf. (3)c′–c″; they are all possible continuations representing "succession," "backward succession," "simultaneity" readings, respectively.

35 I do not mean that causal relation is more basic than temporal relation for when-sentences. Rather I believe the opposite is true; as causality is more likely to be observed in the events that happen in succession, when signals causal relation as a semantic extension. For discussions of causality and when, refer also to Steedman. He makes much of the causal meaning of when, and claims that the (temporal) sequential relationship "would be better described as 'con-sequential'" (Steedman, 137).

36 "Inceptive," is an aspectual concept designating the initiation of an action or a process. For example, begin to can be called an inceptive aspectualizer. Synonymous terms are "ingressive" and "inchoative." Note further that these are not unanimously aspectual terms. I share the opinion that they are concerned with "phase" rather than with aspect.

37 Tense, Aktionsart, and other factors must be considered as well. In the case of telic sentences, for example, the endpoint may be focused on. The idea of the preference for inceptive reading is, I believe, supported by the evidences in English of older times. It is observed that many instances of the ME periphrasis of ginnen (cognate with begin) bear little aspectual (esp. inceptive) meaning but they simply mean that something took place. Hardly any convincing explanation has been given to this fact. In my opinion this phenomenon shows how closely related inceptive meaning and simple perfective form in general are. A simple perfective process is so likely to be conceived in inceptive fashion that the inceptive aspectualizer easily came to be superfluous or weak in semantic function. Cf. Brinton, 116–162.

38 The inceptive meaning in the simple statives is mentioned in Smith, Steedman, etc. as well; however, the reason for this preference is not discussed.

39 Possibly attaching importance to form, Brinton claims that both simple statives and non-statives are perfective aspect, while progressives are imperfective; however, the similarity between simple statives and progressives evidenced in this paper clearly shows that he is not correct.

40 I use the term "linguistically autonomous" not in the Chomskian sense of
autonomous syntax, but in a wider sense: depending on the interplay of syntax and semantics, but not on pragmatic contexts or knowledge, etc.

I believe that the idea of point-evaluation can even explain the well-known phenomena that simple perfective in present tense can usually mean habitual situations alone. Assume that present tense refers to the point of speaking or "now"; that is, present tense requires point-evaluation. Hence, present tense is compatible only with imperfective aspect. Statives such as (31)a-b below present no problem, as they have imperfective aspect. In the case of non-statives, the simple form can only mean the habitual situation ((31)c), and the progressive form is used instead to refer to the actual present situation ((31)d):

(31) a. John is twenty-two years old.
    b. John loves Alice.
    c. John reads this newspaper.
    d. John is reading this newspaper.

Boertien's claim on statives and point-evaluation is suggestive (Cf. Boertien, 47). Non-statives have perfective aspect; that is, they cannot be evaluated at a moment. Therefore, two kinds of operations, interpretative and grammatical, are applied to turn them into imperfective aspect. The interpretative operation does not change the form at all, but results in habitual interpretation, which, according to Boertien, is one kind of stative [imperfective]. The grammatical operation turns the sentence into the progressive form, or the marked imperfective aspect. I claim, therefore, that the habitual meaning of simple non-statives in present tense is a result of the incompatibility of perfective aspect and point-evaluation. Concerning the reference of present tense, see also Langacker, 259.