

## Review article

# Recent research on the acquisition of aspect: An embarrassment of riches?

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This review article surveys recent research on the first and second language acquisition of temporal and aspectual properties of natural languages. Three recently published books are discussed in the context of the Aspect Hypothesis and the prototype, the connectionist, and the discourse explanations for the attested acquisition sequences. A potentially misleading terminological issue is highlighted: Deictic tense, grammatical, and lexical aspect are often conflated in acquisition studies. Recent research from the (innatist) generative perspective (e.g., Olsen & Weinberg, 1999) is also examined. An alternative explanation of the skewed acquisition sequences in terms of processing costs is proposed. Some important topics for future aspect research are identified.

**Li, P. and Shirai, Y.**, 2000: *The acquisition of lexical and grammatical aspect*. Berlin and New York: Mouton de Gruyter. x + 262 pp. In the series *Studies on language acquisition*, edited by P. Jordens, volume 16. Approx. US\$88 hard. ISBN 3 11 016615 1

**Bardovi-Harlig, K.** 2000: *Tense and aspect in second language acquisition: Form, meaning, and use*. Oxford and Malden, MA: Blackwell Publishers. xvi + 491pp. In the *Language learning Monograph series*, edited by R. Young, general editor A. Z. Guiora, vol. 2. US\$34.95 paper. ISBN 0 63122 149 2

**Salaberry, M. R.**, 2000: *The development of past tense morphology in L2 Spanish*. Amsterdam and Philadelphia: John Benjamins. Xii + 211pp. In the series *Studies in bilingualism*, edited by

K. de Bot and T. Huebner, vol. 22. US\$76.00 hard. ISBN 90 272 4132 5 (Eur.) / 1 55619 954 6 (US)

## **I Introduction**

The first and second language acquisition of tense and aspect has probably been the most prolific topic of research in the field of applied linguistics. The body of literature on, say, acquisition of questions, negation, null subjects, etc., even of inflectional morphology, pales in comparison. Furthermore, tense and aspect have been approached from a number of research perspectives with different epistemological affiliations. That is why the publication of the three volumes under review provides a timely opportunity to step back and evaluate not only these books, but what has been and hasn't been accomplished in acquisition research on the temporal properties of natural languages. Is it the case that we now have definitive answers to the important question of whether lexical and grammatical aspect are innate or learned? And is tense really defective in child language acquisition? What do the results really tell us about 1) the underlying linguistic competence of language learners; and 2) the implications of the attested learning sequences?

By and large, there appears to be a consensus on the L1 and L2 acquisition sequences. I will suggest in this review article that while most of the proposed explanations in fact argue that the attested sequences CAN be accounted for in their way, none of them actually argues that they MUST be accounted for in a specific way. Using the three books as a starting point, I will briefly discuss the data, the acquisition sequences they imply, and the prototype, the connectionist, and the discourse explanations. I will further review some generative explanations and will propose a new explanation in terms of processing costs. I will identify underresearched areas and outline directions for further experimental studies.

## **II The books and the data they present**

The intended audience of the books under review is the wider applied linguistics research community. All three books approach the acquisition of tense and aspect from a functional perspective, but they differ in scope and focus. Li and Shirai's book focuses on child language acquisition. After a very clear introduction to lexical aspect, grammatical aspect, and their interaction (chapters 1 and 2), the authors introduce the main findings in the L1 and L2 literature, namely, the following four associations:

- 1) Learners first use (perfective) past marking on achievements and accomplishments, eventually extending use to activities and statives;
- 2) In languages that encode the perfective/imperfective distinction, imperfective past appears later than perfective past, and imperfective past marking begins with statives, extending to activities, accomplishments, and achievements;
- 3) In languages that have progressive aspect, progressive marking begins with activities, then extends to accomplishments and achievements;
- 4) Progressive marking is not incorrectly over-generalized to statives.

The authors present in more detail their own previously published studies on the L1 acquisition of Chinese (experimental work by Li and colleagues in chapter 5) and Japanese (work by Shirai among others, in chapter 6). The results of the Chinese studies indicate that the associations above exist in child Chinese production, but are even stronger than in English. For example, while English-speaking children do produce past morphology combined with activity verb phrases, although less so than past morphology with telic verb phrases, Chinese-speaking children in all age groups studied (3 to 6 years) used the imperfective markers almost exclusively with atelic verbs, and the perfective marker predominantly with telic verbs. This

pattern becomes even more pronounced in the older children. An experiment testing aspectual morphology comprehension shows a clear developmental effect and supports the asymmetrical coupling of lexical aspect with overt aspectual morphology.

In child Japanese, only the strong association of the past tense marker with achievement verbs is consistent with the English child language data. Unlike English children, however, Japanese children initially mark stative verbs with past tense. The data from the durative marker association with lexical classes is inconclusive. The book's most important contribution is in discussing the aspectual morphology and the acquisition asymmetries of non-Indo-European languages, as well as comparing them to the well-known English facts.

Bardovi-Harlig's book paints a broader canvas, in which temporal morphology / lexical class associations in interlanguage are only an aspect of the whole. It can successfully be used in applied linguistics graduate classes on tense-aspect development, because it compares different perspectives and highlights methodological issues and the effect of instruction. In describing work on tense and aspect in the L2 literature, she points to an interesting grouping (see also Bardovi-Harlig 1999): studies can be divided into those investigating the expression of temporal semantic concepts through various linguistic devices and those investigating the distribution of temporal verbal morphology across lexical classes of verbs. Again, providing an overview of research by others and then a more detailed account of her own previously published work, the author discusses the meaning-based approach (chapter 2), longitudinal studies of verbal morphology emergence (chapter 3), interaction between verbal morphology and lexical classes in cross-linguistic studies (chapter 4), the role of discourse (chapter 5), and the influence of instruction (chapter 6).

While Li & Shirai's book focuses on justifying explanations for the well-known findings and Bardovi-Harlig's book concentrates on presenting the existing research and explanations in a systematic way, Salaberry's book, based on his dissertation work, presents his experimental study testing the four associations above in the L2 acquisition of Spanish by instructed learners. Using a variety of tasks, he describes the particular distribution of the past aspectual morphology at each stage of development and the effect of instruction on the movement from stage to stage. Salaberry finds some developmental sequences inconsistent with the asymmetrical associations cited above. Recall that these associations have been attested at the onset of language acquisition. In the early stages of instructed Spanish acquisition, however, English college students do not demonstrate a significant association of past tense morphology with telic predicates. In the later stages of acquisition, the effect of lexical aspect on past tense marking becomes much stronger. Thus Salaberry's findings present a challenge to the generally converging consensus in the field, which is interesting, given that he uses methodology and operational tests consistent with Shirai's and Bardovi-Harlig's work. On the other hand, the lack of an independent measure of proficiency apart from the university placement tests, weakens his challenge to the lexical aspect / verbal morphology asymmetrical associations at the onset of acquisition.

### **III What do the data really tell us**

We have a bit of a chicken-or-egg issue here. Note that postulates 1-4 above consist of a series of observations although they have been formulated to sound like predictions.<sup>1</sup> It is not the case that all researchers agree about the data. See, among many others, Behrens (1993), Weist et al (1984),

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<sup>1</sup> In this respect, I disagree with Bardovi-Harlig, who on pp. 191-193 of her book states that the primacy of aspect is a "theory-driven inquiry" and "is based on a theory of lexical, or inherent, aspect". Nothing in the theoretical semantic description of lexical classes of predicates makes any predictions about how they are going to be acquired.

and Salaberry's findings discussed above. More importantly, researchers are very far from agreement on what the data are telling us about child and interlanguage acquisition.

Let me first point to a potentially misleading terminological issue. Most of the languages for which these observations were made (predominantly Germanic and Romance) have conflated deictic past and aspectual meanings in their verbal morphology. For example, the English *-ed* marks both past tense and perfective aspect; Spanish Preterite, Italian Passato Prossimo, and French Passé Composé markers are also past and perfective. Note that we have three different temporal contrasts to take into account: past versus present deictic tense, perfective versus imperfective grammatical aspect, and lexical aspect distinctions like telic versus atelic, stative versus dynamic, punctual versus durative.

The early proponents of the Primacy of Aspect (POA)<sup>2</sup> Hypothesis (Antinucci and Miller, 1976; Bloom, Lifter, and Hafitz, 1980; Bronckart and Sinclair, 1973) argued that children actually use past and present morphology to mark the more salient aspectual distinctions instead. In other words, children use aspect to learn tense. Thus, the early POA proponents have it that initially *lexical aspect* is mapped onto *tense*. For example, Bloom et al (1980) demonstrated that children use past tenses with telic predicates and present tenses with atelic predicates.

Olsen (1997) and Olsen and Weinberg (1999), however, consider the initial mapping to be that of *lexical aspect* onto *grammatical aspect*. Wagner (in press) argues for a third type of mapping, namely, that of *grammatical aspect* onto *tense*. These three distinct proposals can be illustrated by the following diagram:

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<sup>2</sup> Also known as the Aspect Before Tense Hypothesis (Bloom et al, 1980), Defective Tense Hypothesis (Weist et al, 1984), Redundant Marking Hypothesis (Shirai, 1993).

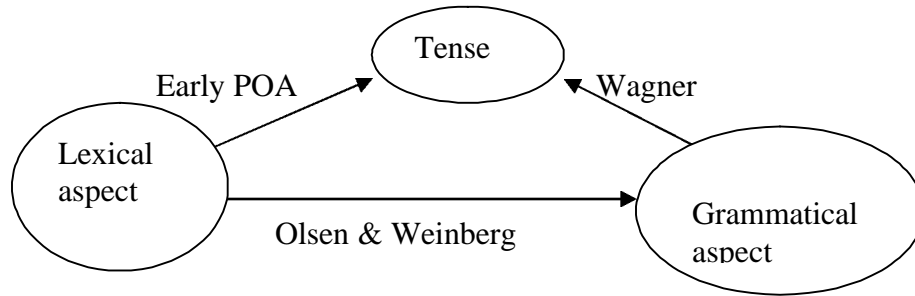


Figure 1: Existing proposals for tense-aspect mapping in child language

In Figure 1, the base of the arrow is at the underlying semantic contrast that is being mis-analyzed and the tip of the arrow is pointing towards the surface encoding of that contrast, according to the three different proposals outlined briefly above. Obviously, the literature on tense and aspect acquisition will greatly benefit from more terminological clarity in this respect. The POA Hypothesis, at least in its recent formulations, appears to be bracketing tense and grammatical aspect, like this:

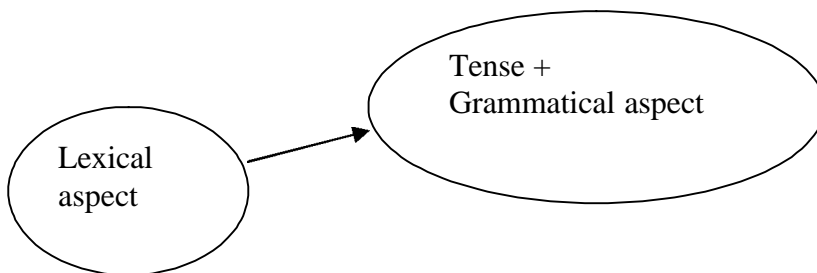


Figure 2: Later POA proposal for tense-aspect mapping in child language

None of the books under review makes these distinctions sufficiently clear, they talk alternatively about past tense marking or perfective/imperfective aspect. Obviously, it is not really possible to tease the actual mappings apart unless we look at languages that have separate grammatical aspect and tense morphology. Research in the acquisition of such languages will be

especially useful for fine-tuning the claims of the POA. Such languages include Mandarin Chinese, which has no overt tense but ample aspect marking; Japanese, which has a separate past tense morpheme and some aspect marking; and all Slavic languages, in which aspect and tense marking are not conflated. I believe that specifying what kind of mapping a proposal assumes is helpful both for readers and for the researchers themselves.

#### **IV The explanations**

The early proponents of the POA Hypothesis (Antinucci and Miller, 1976; Bronckart and Sinclair, 1973) argued that children are not sufficiently cognitively mature to distinguish between past and present events, so they actually use past and present morphology to mark the more salient aspectual distinctions instead. Bloom, Lifter, and Hafitz, 1980 go away from a cognitive deficiency explanation, and propose a linguistic developmental explanation instead: children use aspect to learn tense. In the books under review, three different explanations are prominent, so I will take them up in turn.

*The Prototype Theory explanation.* The Prototype Theory was first developed in cognitive psychology by Rosch and colleagues (Rosch, 1973, 1978; Rosch and Mervis, 1975) to account for human categorization. It assumes graded category membership and proposes that there is a best exemplar – the prototype – and peripheral members, which might not share much with the best exemplar. Applied to language acquisition, the claim is that children and second language learners acquire a linguistic category starting with the prototype of the category, and later expand its application to less prototypical cases. Shirai’s account posits that the prototype for the category “progressive” can be characterized as “action in progress.” The lexical classes

that exhibit this meaning are activities and semelfactives,<sup>3</sup> having the semantic features [dynamic] and [atelic]. The prototype of the past tense is argued to be restricted to verbal predicates exhibiting [telic], [result], and [punctual] features. It is important to note that the prototype explanation does not evoke immature cognitive development on the part of children. Since it is used to account for second language acquisition, such a claim would be inconceivable indeed. Furthermore, Li and Shirai do not consider prototypes to be innate or predetermined (a rather intuitive assumption, one would think) but to be “created through the learner’s distributional analyses of the input language” (p. 69). This claim brings us to the second explanation proposed in Li and Shirai, namely, connectionism.

*The connectionist explanation.* Also known as the “emergentist” approach to language acquisition (see Elman et al., 1996, for general discussion), this is the view that language emerges through an interaction between domain-general learning mechanisms and the environment, without crediting the child with innate knowledge of domain-specific rules. The child’s overregularization errors, in this view, reflect her ability to extract statistical patterns from the input data and to use the extracted pattern productively in building her grammar. In the case of tense-aspect acquisition, the child engages in correlational analyses of 1) a verb’s co-occurrences with situational contexts, 2) a verb’s co-occurrences with other words, 3) a verb’s co-occurrences with certain grammatical morphemes like *-ed* and *-ing* (Li and Shirai, pp. 155-6). Since lexical aspect and certain tense-aspect morphology are associated in the parental input and to a lesser extent in adult speech, the child is capable of extracting the pattern and consequently restricting her production to the reinforced combinations only. “As the distributional biases become weaker in the input, and as the child’s lexical repertoire grows, the

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<sup>3</sup> Elsewhere, I have argued that semelfactives do not really belong to the atelic class of verbal predicates, and that Shirai’s inclusion of semelfactives in the progressive category, while necessary to explain some attested child language production, is not justified (Slabakova, 2001: 111).

strong associations between lexical aspect of verbs and tense-aspect morphology will gradually relax (p.156).” In chapter 7, Li and Shirai demonstrate that a network supplied with the verbs from half the CHILDES database, organized in five stages, is capable of “learning” the verb class / suffix associations. The implication is that if a certain pattern can be extracted from the input, there is no reason to postulate innate rules and constraints.

It is certainly possible that the learning of the lexicon and even most of inflectional morphology may proceed by the general mechanisms described in the emergentist view. However, there is more to language acquisition than learning the surface combinatory properties of lexical items. There are demonstrable constraints on what children *do not* produce and what they unconsciously know is *not* part of their grammar. Furthermore, if emergentist networks can “learn” everything there is to learn from the input, then there is no need to make sense of properties, associations, and rules of the linguistic input. There is no need to distinguish possible from impossible natural language grammars and to explain why the latter do not occur. In other words, connectionist learning networks overgenerate, or are capable of outputting non-attested “language.” Applied to tense-aspect acquisition, this well-known argument in favor of innateness implies that the prototype explanation is simply superfluous. The network, and presumably the child, could certainly extract prototypical as well as non-prototypical associations, if they existed in the parental input. The Prototype Theory, then, could be useful in explaining why there is aspectual bias in the discourse of adult native speakers, but is irrelevant to child acquisition of temporal morphology and semantics. Thus, whereas the two explanations appear to be convincing on their own, when in combination, one cancels the other.

*The discourse explanation.* This explanation is discussed extensively by Bardovi-Harlig and mentioned by the other two books. Cross-linguistic investigations have suggested that, while

narrating a story, the distinction between background and foreground information is a universal in narrative discourse (e.g., Hopper, 1979, Longacre, 1981). This distinction has a communicative purpose: to separate the important from the less important information in the linguistic message. The foreground relates events belonging to the skeletal part of the discourse and typically interpreted to be in temporal sequence. The background, on the other hand, typically relates events that overlap with, or extend on both sides of, the sequence of dynamic events in the foreground. The Discourse Hypothesis, then, argues that narrative structure influences the distribution of tense-aspect morphology in interlanguage: predominantly past in the foreground, predominantly progressive in the background. Investigating the contribution of both lexical aspect and narrative structure on the temporal morphology distribution of L2 English learners, Bardovi-Harlig (see also Bardovi-Harlig, 1998) concludes that “the influence of lexical aspect interacts with narrative structure, suggesting that the investigation of either one alone provides only a partial picture of interlanguage tense-aspect use (pp. 335-6).” She also considers the pressure of discourse building to be one more way for advanced learners to expand on their prototypical associations (p. 315).

It seems to me that the discourse explanation could be useful in accounting for the production patterns of advanced learners. However, it runs into a circularity problem when trying to present narrative structure as bootstrapping beginning learners into acquiring the meaning of temporal morphology. Let us assume that learners have knowledge of discourse structure, either because it is a cognitive universal, or from their mother tongue. In trying to get their communicative message across, they divide their discourse into foreground made up of sequential dynamic events, and background states and overlapping processes. To highlight this distinction, they mostly use the (perfective) past simple in the foreground, and the past

progressive in the background. But don't learners have to *know* the meanings of the aspectual morphology in order to make these associations? It is hard to see, then, how the separate discourse functions are helping them to acquire these meanings. Of course, after they acquire what morphemes signal perfectivity and imperfectivity in English (at more advanced stages of development), they can exercise their viewpoint choices freely to mark the discourse functions. But this is a result of acquisition, not a means by which it takes place.

## **V Alternative explanations**

Probably because the books by Bardovi-Harlig and Salaberry deal exclusively with second language acquisition, they do not tackle the issue of what is innate and what is acquired based on input by children and interlanguage speakers. There is more of a descriptive, psycholinguistic approach to the data, which investigates the research question "How does the acquisition of temporal expression develop?"

Li and Shirai, on the other hand, explicitly consider and argue against "innatist" explanations of initial lexical aspect / verbal morphology asymmetries. Their research interests include the initial state of the child and interlanguage grammar. They argue that this initial state is not characterized by innate knowledge of any semantic aspectual features or lexical aspectual classes. In this section, I will very briefly discuss three innatist explanations that Li and Shirai consider, and then I will present a fourth account in terms of processing costs. I will argue in the next section that none of the available explanations has received clear, unequivocal support from the existing body of data, therefore, more hypothesis-testing experimental research is in order.

From a generative perspective, children map linguistic input onto innate constructs reflecting lexical aspect (e.g., semantic contrasts or phrase structure templates based on semantic

features). There may be parametric differences between languages with respect to which semantic features are salient, being often encoded in aspectual morphology. The input immediately reinforces the innate constructs, (maybe even activates them), so that learners do not have to spend a lot of time and effort figuring out how lexical aspectual classes are marked in the language they are acquiring. Earlier proposals of this spirit include Bickerton's (1981, 1984) *Language Bioprogram Hypothesis* and Slobin's (1985) *Basic Child Grammar Hypothesis*. According to Bickerton, two semantic contrasts are pre-programmed, so they emerge early in child language: the state-process distinction, and the punctual-nonpunctual distinction. Support for this hypothesis comes from creole grammars. Given that pidgins, the basis of creoles, do not mark tense-aspect distinctions, first generation creole-speakers invent aspectual distinctions that reflect the pre-programmed ones. Bickerton also interprets the fact that children do not over-generalize the *-ing* progressive marker to stative predicates as evidence for their sensitivity to the state-process distinction.

Similarly to Bickerton, Slobin (1985) argues that children come to the language acquisition task with a prestructured "semantic space," containing a universal set of semantic notions. These notions will have precedence over others for mapping onto morphological markers. Such privileged notions, according to Slobin, are process and result. In other words, whenever a language has a past or a perfective morpheme, it will be attracted in children's grammars mainly to events featuring a salient result. These are change of state, or telic predicates. The evidence for this hypothesis comes once again from the early studies of child tense-aspect acquisition. Li and Shirai's own work on L1 acquisition of Chinese supports Slobin's Basic Child Grammar Hypothesis rather than Bickerton's Language Bioprogram

Hypothesis, in ascertaining that the telic-atelic distinction is important in children's early acquisition of tense-aspect markers (p.119).

A more recent nativist proposal based on Olsen (1997) is Olsen and Weinberg's (1999) *Subset Principle explanation*. It makes the case for continuity between child and adult mental grammars by accounting for the well-known lexical aspect / grammatical aspect asymmetries in the following way. As standardly assumed in the generative acquisition literature, children can choose from a set of innately specified possible grammars. All of these possible grammars are attested in adult natural languages. Children begin the acquisition process constrained by these parametric options. Furthermore, due to learnability considerations, they initially hypothesize the smallest possible grammar, which they can later abandon in favor of a more inclusive grammar only on the basis of positive evidence. This learnability principle is known as The Subset Principle (Berwick, 1985; Wexler and Manzini, 1987). In the acquisition of aspect, the most restricted association that children can posit is one-to-one. Mandarin Chinese imperfective morpheme *-zhe*, for example, only occurs with durative predicates, while Korean aspect auxiliary *-e issta* only occurs with telic predicates. Thus these two natural languages exhibit the restriction "one lexical aspectual feature is always linked to one grammatical aspect morpheme". Since there exist natural languages that make use of such straightforward associations, it is argued that children assume this most restrictive mapping as their initial hypothesis. At the onset of the acquisition process, imperfective is mapped onto dynamic, durative predicates, and perfective is mapped onto telic predicates. If these initial values are incorrect for a specific language, upon hearing child-directed speech that disconfirms them, children will relax their initial undergeneralization. Olsen and Weinberg support this account with their own analysis of child and adult production from four CHILDES data sets. The *-ed* perfective morpheme is found

to correlate with telic verbs in the child production but crucially not in the adult production. This finding argues against input driven accounts like the connectionist account discussed earlier. The *-ing* progressive morpheme, however, correlated with dynamic durative verbs in the speech of both children and adults, therefore making it impossible to distinguish between nativist and connectionist predictions.<sup>4</sup>

I would like to propose here a fourth account of the same developmental asymmetries, making reference not only to the syntax and morphology but to the pragmatics of aspect as well. In a Discourse Representation Theory account of French aspectual tenses, de Swart (1998) argues that the eventuality description (basically, lexical class) of a predicate can be shifted, or modified, by different aspectual operators, of which grammatical aspect is only one. The syntactic structure is as follows:

(1) [Tense [Aspect\* [eventuality description]]]

The Kleene star on Aspect indicates zero, one, or more operations. De Swart defines “aspectual operators” as imposing a certain viewpoint on the eventuality, and mapping one eventuality onto another, of a possibly different type. The tense operator then introduces closure over this eventuality, and maps the event onto the time axis. Here is an example of how grammatical aspect can shift the eventuality of a telic event to a process:

(2) write a paper → Sheila was writing a paper.

Duration adverbials of the type *for X time* and *in X time* are another type of aspectual operator. In

(3), the adverbial shifts the telic event to a process.

(3) Sheila read the paper for a few minutes.

*Aspectual coercion* is a process of contextual reinterpretation. Aspectual shifts for which the language has no explicit marker but which are supported by the context, are illustrated in (4b).

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<sup>4</sup> See also Li and Shirai (2000: 74) for criticism of Olsen and Weinberg’s methodology.

- (4) a. My program ran for a few minutes.  
b. My program ran in less than four minutes (this morning).

While (4a) has the expected interpretation of process, (4b) describes how long it took the program to start running, adding a preparatory phase which will culminate in the program running. This aspectual coercion is supported by the adverbial and by the context. Since it is not signaled by a grammatical marker, this coercion operation happens at the semantics-pragmatics interface.

Using the concept of aspectual coercion as a pragmatic aspectual operator, de Swart argues that French (and possibly all Romance) perfective and imperfective past tenses, the *Passé Simple* and *Imparfait*, are aspectually sensitive tense operators. The *Passé Simple* sentences refer to events, and the *Imparfait* sentences denote states or processes. Thus, when the *Passé Simple* combines with an event description, nothing further needs to happen, and the tense operator applies. When the aspectual requirements of the two operators are not satisfied, however, a contextual reinterpretation (coercion) operator has to be introduced before the tense closure can apply. In other words, when the *Passé Simple* combines with a process or stative eventuality description, or when the *Imparfait* combines with an event, two operations apply instead of one. In addition, when a simple tense operator applies on an eventuality description, the interpretation process is within the realm of syntactic composition; when aspectual coercion applies in addition to the tense operator, the process involves the pragmatic module as well as the syntactic module (see Reuland, 2001 for a recent treatment of modularity).

It is conceivable, then, that producing these more complex combinations would result in added processing time for children as well as adults. Some evidence that this is indeed the case comes from the experimental psycholinguistic work of Piñango, Zurif, and Jackendoff (1999).

They define aspectual coercion as a combinatorial semantic operation requiring computation over and above that provided by combining lexical items through expected syntactic processes. The experiment seeks to investigate whether or not parsing of a string requiring coercion – in addition to syntactic composition – is more computationally costly than parsing a syntactically transparent counterpart, a string that provides for an interpretable representation via syntactic composition alone. The prediction of a higher computational cost for this process is borne out by the results.

Recent investigations of child language development (e.g., Avrutin, 1999, among others) suggest that pragmatic knowledge is absent in 3-year-old children and appears at 5 or 6 years of age. Children's errors in applying Binding Principle B are argued to be due to this underdeveloped knowledge of pragmatics. If this explanation is on the right track, then it can be extended to account for the lexical class / grammatical aspect asymmetry. If the so called "prototypical" combinations are interpretable only using the syntactic module of grammatical competence but the nonprototypical combinations necessitate pragmatic competence over and above the syntactic competence, then the latter will not be expected to be fully developed until the age of 5 or 6. Indeed, a recent study of grammatical aspect comprehension by Italian children (van Hout and Hollebrandse, 2001) indicates that the subtle semantics associated with the perfective and imperfective Italian past tenses, the *Passato Prossimo* and the *Imperfetto*, have not been acquired at the age of 3, although children use these forms in their linguistic production much before the age of 3.

## **VI The hot topics of future aspect research**

As van Hout and Hollebrandse's (2001) and Wagner's (1998) research findings suggest, even children who produce adult-like aspectual morphology may have non-adult aspectual *interpretations*. Explaining why this is the case is one of the most promising areas of future research on aspect acquisition. In other words, going beyond production data into comprehension experiments, and especially incorporating insights from theoretical research on aspectual semantics and pragmatics should be a good way to account for these puzzling findings. The economy of computation account proposed in the previous section certainly provides testable predictions. Research on the second language acquisition of aspectual interpretive properties is just beginning (see Slabakova and Montrul, in press), but it has the potential of contributing meaningfully to the child language debate, and especially the effect of pragmatics in aspect acquisition, since adult L2 learners' pragmatic competence should be fully developed and is arguably universal.

The effect of a learner's native language on her acquisition of aspectual properties in a second language has been curiously neglected so far. To take one among many examples, Salaberry formulates his research hypotheses (p.113) in terms of the POA Hypothesis but not in terms of what the learners know from their native English, and what exactly their learning task is in acquiring Spanish, including areas of typological difference where they may have most difficulties. I believe that this tendency in the extensive research on aspect L2 acquisition is ripe for change. Much more precise research questions can be formulated if L1 transfer is taken into account and only properties that differ in the L1 and the L2 are investigated. If the POA is a language universal, then it should be manifest in production and comprehension of properties that *are not* transferred from the mother tongue. If research neglects this important typological

consideration, claims for universality of the POA Hypothesis will ring hollow indeed (see Shirai, 2001 for arguing this point in more detail).

Finally, in the extensive body of research on the relationship between tense-aspect morphology and inherent verb semantics in language acquisition, explanation has largely followed observation. Only theoretically driven hypothesis testing is capable of tackling the yet unanswered questions and of reliably teasing apart the existing explanations. One example of formulating the opposing predictions of two theoretical frameworks and then checking them against the data is Bardovi-Harlig (1998), reported in the book under review (pp. 299-317). In this study, she compares predictions of the Discourse Hypothesis and of the POA Hypothesis, and concludes that the two factors conspire, or interact, in shaping the distribution of aspectual morphology in interlanguage. Much more of this type of goal-oriented hypothesis testing research is certainly called for.

In conclusion, three decades of tense-aspect acquisition research have amassed a mountain of (mostly production) data, for which numerous accounts have been proposed from a variety of theoretical perspectives: generative, functional, and emergentist. The three books under review, all published in the same year, attest to this embarrassment of riches in terms of data. However, there seem to be good reasons to argue that, in spite of the rich data and the obvious attractiveness of the topic for the language acquisition research community, we are still far from a definitive explanatory model. The traditional appeal “further research is necessary” needs a new twist this time: *only* hypothesis-testing, prediction-comparing research is necessary.

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