— Adele Goldberg, **Learning Constructions, Learning Language**

We take *constructions* to be learned pairings of form with function, including morphemes, words, idioms, partially lexically filled and fully general linguistic patterns. Any linguistic pattern is recognized as a construction as long as some aspect of its form or function is not strictly predictable from its component parts or from other constructions recognized to exist. In addition, constructions are understood to exist, even if they are fully predictable as long as they occur with sufficient frequency. Knowledge of a language is knowledge of the constructions in the language.

Our current research investigates both how and why children form the argument structure generalizations they do, attempting to relate generally recognized facts about language acquisition to generally recognized facts about categorization.

New experimental studies are reported that indicate that children are able to generalize novel form-meaning correspondences beyond the input with remarkably little training[1]. The experiments also suggest that an especially high token frequency of a single prototypical token of the construction facilitates acquisition of the pattern[2]. This is exactly the way the actual input children receive is structured in the case of many constructions[3]. In this way, grammatical constructions may emerge as generalizations over lexical items in particular patterns.

We also investigate *why* speakers generalize beyond specific "verb islands" (Tomasello), to form more abstract argument structure constructions. It seems that the argument structure construction is at least as good a predictor of overall sentence meaning as the morphological form of the verb[4, 5].

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— Peter Ford Dominey, **The transition from holophrases to abstract grammatical constructions: Insights from simulation studies**

Simulation results will be presented to demonstrate how the progressive development of functional lexical categories (e.g., subject/noun, event/verb) permits the use of these categories as variables in progressively [more] abstract arguments. The model is based on the principles that (1) grammatical constructions are mappings between sentence structure and meaning structure, and (2) that construction types can be identified in sentences by the constellation of closed class words unique to each construction type (adapted from Bates et al. 1982). *Holistic constructions* thus reflect the case where no functional categories of open class elements can yet be instantiated as variables within abstract constructions. To simulate this phase in the model, open and closed class elements are bound into the identity of constructions in an undifferentiated manner, so that each utterance is represented as a holistic and distinct construction.

Transition from holophrase to abstract construction: When a functional category such as concrete object/noun emerges, holophrases begin to be replaced by partially generalized "pivot" schemas like "Gimme _____" where "_____" corresponds to an object name variable. In the model construction identifier, these nouns become represented by their lexical category, rather than by their identity, and this take on the property of abstract argument variables. Verbs remain undifferentiated and are this bound to distinct constructions. Leading to a "verb island" phase. The subsequent generalization on verbs allows for the full abstract construction capability. Simulations this general the testable prediction that the progressive emergence of functional lexical categories will be correlated with the emergence of progressively more abstract constructions that generalize over those categories. A mechanism for the subsequent development pf compositionality of these abstract constructions will be outlined, and open issues identified.

— Robert Maslen**, Acquisition of the English Transitive Construction: analysis of a dense naturalistic corpus**

These studies analyse the early utterances with transitive verbs of one English-speaking child. The data are taken from a dense naturalistic corpus of recordings/transcripts accounting for 8-10% of the child's speech between 2;0 and 3;2 (data from 3;3 to 4;0, with a similar density of recordings taken one week in every month, are sometimes referred to). Study 1 traces the development of the transitive construction from 2;0 to 2;6 and finds that: 1) There is little evidence for the 'pathbreaking' process envisaged by Ninio (1999); 2) Development of the transitive SVO structure seems to rely much more heavily on the VO rather than the SV frame – 66.67% of verbs used in SVO were previously used in VO, 14.29% in SV and 19.05% in both (the latter all at 2;6); 3) There is, however, a marked contrast in the categories of nominals which appear in subject and object positions in SV, VO and SVO frames: in VO, for example, the majority of objects are consistently accounted for by nouns and noun phrases ($\underline{M}$ (6 months 2;0 – 2;6) = 74.37%), while in SVO, objects are more likely to be pronouns ($\underline{M}$ = 53.26%). Proper nouns, though, are infrequent in both frames ($\underline{M}$ (VO) = 6.8%, $\underline{M}$ (SVO) = 12.48%); 4) Early transitive constructions show considerable lexical specificity, particularly between 2;0 and 2;4, when most verbs combine with only one or two nominals, and vice versa. When, at 2;5 and 2;6, transitive use grows in productivity, verb pivots are markedly more productive than nominal pivots. Study 2 compares transitive verbs acquired between 2;6-3;0 and 2;0-2;6. The two groups contrast sharply both in terms of the proportion of first occurrences that are transitive (81.33% for the later group, 42.48% for the earlier group) and full SVO frames (32.79% vs. 6.25%). A constructivist account is suggested as the best explanation for the findings of both studies.

— Simona Montanari **, Multi-word combinations in early trilingual development: one or separate syntactic systems?**

The present study examines the issue of syntactic differentiation in early trilingual development through an analysis of the language-specific multi-word combinations produced by a developing Tagalog-Spanish-English trilingual child between 1;9 and 2;1 of age. The child's utterances were tracked down from weekly diary reports and audio-recordings of her spontaneous speech in each language context, and the extent to which early combinations reflected the surface structures of the input languages was examined. In particular, the following questions were addressed: 1) To what extent can early multi-word constructions be organized around syntactic rather than pragmatic or semantic principles at a stage when functional categories have not yet emerged? 2) Do the frequencies of specific combination types in each language reflect target-dependent preferences, with the child building a separate "syntax" for each language? 3) If so, what about combinations with elements from more than one language (i.e. mixed utterances)?

The results indicate that, despite some instances of variation, the overall frequencies of particular word order sequences in each language reflect the basic sentence structures of Spanish, English, and Tagalog respectively. In particular, while subject + predicate and predicate + subject structures were equally frequent in Spanish, a language with both SVO and VOS orders in canonical sentences, over 80 percent of English constructions displayed subject + predicate word order, as in adult English; but almost 80 percent of Tagalog combinations, a language that is strictly verb-initial, exhibited the opposite predicate + subject (or topic) pattern. In addition, even those utterances with a mixed element, which more often than not constituted a lexical gap in the child's vocabulary, were found to follow the basic word order of the host language, indicating that the child was not merely repeating adult utterances but rather applying some type of combinatorial rule. These findings are interpreted as evidence that even the earliest combinations reflect syntactic organization, and hence, syntactic differentiation.

— Hiromi Ozeki &Yasuhiro Shirai, **The acquisition of relative clauses in Japanese**

Diessel & Tomasello (2000) presented an extensive analysis of conversational data from four children acquiring relative clauses (RCs) in English, and showed that the prototype of children's RCs is the ones that modify predicate nominals which asserts new information concerning the NP introduced in the presentational construction. (e.g. *Here's a tiger that's gonna scare him*). This paper analyzes longitudinal data from four Japanese children (0;11-3;11) to compare RC acquisition in Japanese and English.

It was found that the patterns of acquisition are very different. First, although English speaking children rarely produced RCs with subject of a matrix sentence as head nouns, Japanese children did so very frequently. The head nouns of the first 10 RCs from each child were: predicate nominals (English 75% vs. 20% Japanese), isolated NPs (7.5% vs. 32.5%), subjects (0% vs. 37.5%), objects (17.5% vs. 7.5%).

Second, Japanese children use RCs as modifiers right from the beginning, in contrast to English speaking children, who start to use RCs to assert new information concerning the head noun. The head nouns of early RCs (i.e. prototypes) for Japanese children are mostly abstract (pro)nouns such as *mono* 'thing', *tokoro* 'place', *no* 'one', and the modifiers are mostly stative/generic predicates. Functionally, RCs are used to single out the referent among various things of the same kind. That is, the discontinuity observed in English RC acquisition is not observed in Japanese. We argue that this is due to the continuous nature of RCs and adjectival modifiers in Japanese. Both adjectives and RCs are placed before the noun in Japanese, whereas in English RCs are postnominal but adjectives are prenominal. We discuss this observation in relation to Comrie's (2002) claim that noun-modifying constructions in Asian languages (e.g. Japanese) are fundamentally different from RCs in European languages.

— Cass Foursha, Gretchen Van de Walle, & Jennifer Austin, **Two-year-olds' comprehension of pronouns and word order in grammatical and ungrammatical sentences**

Children in the single-word phase of language production can comprehend word order in simple transitive sentences of the form "Big Bird's tickling Cookie Monster" (Golinkoff & Hirsh-Pasek, 1996). Little is known however, about young children's comprehension of common transitive sentences in which either the subject or the object is a pronoun (e.g., "Bob kisses her"). In this poster, we present preliminary results from a study on toddlers' ability to use word order in comprehending transitive sentences containing pronouns. We used the Intermodal Preferential Looking Paradigm (Golinkoff & Hirsh-Pasek, 1987) to collect data from children aged 26 to 29-months. Before the study, children were introduced to and taught the names of two novel characters. In the experimental sentences, the characters were referred to by either their names or by subject and object pronouns. During the test, the toddlers heard grammatical sentences such as "Ann kisses him" and ungrammatical sentences like "Ann him kisses" while viewing contrasting scenes (e.g. Ann kissing Bob vs. Bob kissing Ann). We found that the children preferred looking at the scene that matched the sentence heard on grammatical trials, but had no looking preference on ungrammatical trials. The lack of observed preference on the ungrammatical trials indicates that children do not rely on any single aspect of the syntax as a cue for meaning.

These findings illustrate that children can comprehend multiword transitive sentences describing the actions of novel individuals even when one individual is pronominally identified. Finally, the results demonstrate that children as young as 26 months can distinguish between sentences that are syntactically acceptable and syntactically anomalous, thus providing evidence of an early ability to give grammaticality judgments.

— Florence Chenu & Harriet Jisa, **The impact of language specificities in early verb usage**

In recent years the impact of language specific characteristics of maternal input has undergone considerable scrutiny (e.g., Sampson 1989, Goldberg 1995, Lieven et al, 1997, O'Grady 1997, Tomasello & Brooks 1999, Cartwright & Brent 1997). In this paper we attempt to contribute to this literature by examining three hypotheses concerning the acquisition of verbs by two French-speaking children recorded every two weeks in interaction with their mothers from the age of 12 to 28 months.

The **frequency** hypothesis postulates that the frequency of verbs (types and tokens) in maternal input influences the verbs observed in the child's production. Earlier work (Bassano et al. 1998) on one French-speaking child gives evidence for a "verb explosion" at 24 months, when verb and noun reach equivalence in types, and verbs dominate in tokens. Our longitudinal study compares the relationship between maternal verb use and the "verb explosion" in child production.

However, specificities of spoken French require consideration of two additional hypotheses. The **position** hypothesis postulates that the verb's position in the construction, either utterance-initial or -final, facilitates the child's extraction of the form (Naigles & Hoff-Ginsberg 1998, Goldin-Meadow et al. 1976, Caselli et al. 1995, Smiley & Huttenlocher 1995). New referents in spoken French are typically introduced by lexical items in post verbal position and subsequently referred to by clitic pronouns (subject or object) that precede the verb. In spoken French the verb is often in a salient utterance-final position. Our work examines the extent to which the verbs in maternal discourse are utterance final and whether those occurring most often in final position are the first acquired in children's production.

The third hypothesis we explore concerns the **diversity** of constructions and postulates that diversity of syntactic uses in the input facilitates the child's elaboration of the syntactic and semantic characteristics of verbs (Lederer et al. 1995, Naigles et al.

1995, Rispoli 1995, Braine & Brooks 1995, Maratsos & Deák 1995). Despite the fact that French word order is usually characterized as SVO, spoken French shows considerable variation (VOS, OSV) with dislocations abounding. In exploring this third hypothesis we will show the interaction between the diversity of word order in maternal speech and the acquisition of verbs by the children.

— Penelope Brown, **Learning to express three-participant events in Tzeltal**

From a typological perspective, there is reason to expect children to have some trouble expressing three participant events, as there is a considerable amount of variation both across languages, and within one language, in how these are linguistically coded. Verbs of transfer ('give', 'receive', etc.) are often considered to be the verbs which canonically appear with three arguments for children learning language (e.g., Slobin 1985, Gleitman 1990). Yet in the Mayan language Tzeltal, verbs other than transfer verbs appear routinely in the 'benefactive' construction, which is the basic Tzeltal three-argument (ditransitive) construction, the primary way to express three core arguments in this language. Arguments in Tzeltal are cross-referenced on verbs in an ergative pattern (ergative prefixes for the subjects of transitive verbs, absolutive suffixes for the objects of transitive and subjects of intransitive verbs). But if there are three arguments, the indirect object is promoted to a position where it, rather than the object, engenders absolutive suffixes on the verb. This set is used in canonical 'transfer' events (la k-ak'-bet "I gave (it) to you"), and in sentences with verbs of speaking and perception ("to tell", "to hear", "to perceive"), as well as more generally whenever the speaker wants to convey a participant 'affected by' the event (e.g., la s-maj-ben k-al, "He hit-for-me my-child."); it is almost always used to cross-reference the possessor when the direct object argument is a possessed noun (e.g., la k-il-be s-sit "I saw-her her-face"). In earlier work I have established that Tzeltal children use the 'benefactive' with a wide range of verbs and with

a culture-specific meaning ('affectedness', not just 'transfer') at an early age, well before age 3. In their early usage, many scenes which are not canonical transfer scenes are among those where the 'affected' participant is indexed. (For example, in complaints or tattlings: lo'-ben (j)-tomut antun i "Antun ate me my egg" (cf English "he ate my egg for/on me"). Based on analysis of spontaneous production data for four Tzeltal children (age 2;0 to 3;6), this paper reports how the children learn this construction, the semantics of the verbs they use it for – in relation to the input usage, and in relation to their usage of the same verbs in two-place (transitive) constructions – as well as their development of dative, locative, and benefactive uses. There is no evidence that Tzeltal children have trouble expressing three-participant events; it seems likely that a dedicated construction with relatively simple morphology makes the task easier.

— M. Bowerman, A. Majid, Marian Erkelens, B. Narasimhan, and J. Chen, **Learning how to encode events of 'cutting' and 'breaking': A crosslinguistic study of semantic development**

The English verbs *cut* and *break*, and their counterparts in other languages, often figure in discussions of verb semantics, constructional meaning, and the relationship between the two. Ironically, the core meanings of these verbs are rarely addressed: the critical portion of the meaning is typically rendered as a constant ("in need of further exploration"), as in *break*: 'x cause [y become ***BROKEN***]'. So what does it mean to 'cut' or 'break' something? And how are elements of meaning distributed across the predicate in different languages (e.g., simple verb, verb-particle or verb-verb constructions)? This study investigates how languages partition the semantic domain of 'cutting and breaking', and how children learn the system of their target language.

In the first phase of the research, descriptions of a set of videotaped 'cutting and breaking' events were elicited from adult speakers of 28 diverse languages. Multivariate

statistics show that there is considerable agreement on the 'semantic space' underlying this domain – e.g., all the languages recognize a dimension to do with the agent's degree of control over the point of separation in the patient's material integrity. But there is variation in how many categories languages recognize, where they place the boundaries between them, and how semantic elements are apportioned to different parts of the predicate.

In the second, developmental phase of the project, a new 'child-friendly' set of videotaped 'cutting and breaking' events was used to elicit descriptions from child and adult speakers of DUTCH, TAMIL, and MANDARIN CHINESE (3 age groups per language, 10 subjects per group: 4 yrs., 6 yrs., adult). Multivariate statistical and qualitative analyses reveal that although children identify the relevant construction patterns and approximate the semantic categories of the target language by as early as age 4, they are still shifting and fine-tuning category boundaries even as late as age 6. Discussion will highlight not only substantive findings, including the ongoing process of semantic category construction, but also the methodological innovations of this study: new techniques for exploring semantic structure in large crosslinguistic data sets.

— Jonathan Ginzburg & Dimitra Kolliakou, **Unexpected differences in the acquisition of non-sentential utterances**

Adult dialogue is full of intuitively complete utterances that lack a verbal constituent—here referred to as non-sentential utterances (NSUs). Estimates of the frequency of NSUs range from about 30% of all utterances (de Waijer 2001, based on a corpus study of a single family across 2 months) to 11% (Fernández & Ginzburg 2002, random sampling from the British National Corpus (BNC)). In this paper, we focus on the acquisition of three of the commonest types of NSUs according the latter source, drawing on the Manchester and Stephany corpora in CHILDES (Theakston et al. 2001, Stephany 1995); these are short answers (e.g., *Who's that? / B: My Aunty Peggy. My dad's sister* [BNC, G58, 33-35]), clarification ellipsis (e.g., *A: I do anything, roam about, go harvesting on the harvest fields. / B: Go harvesting?* [BNC, H5G, 51-52]), and sluicing (e.g., *A: Can I have some toast please? / B. Which sort?* [BNC, KCH, 104-105]).

These constructions pose a challenge to syntax-centric views of grammar: the primary way to distinguish them requires characterizing their context of utterance, not their external syntax. Indeed, our main finding is that there exist *prime facie* unexpected differences concerning the emergence of NSU types in child language. At a stage where the child has productive use of non-elliptical (*wh-, yes/no* and intonation) questions, and has mastered non-sentential declaratives (short answers), non-sentential questions (clarification ellipsis and sluicing) are dramatically lower. (For example, Becky at 2;6.29: answers: 78% are short answers, whereas 22% are sentential (n = 65); queries: 12% are elliptical, 88% sentential (n = 26); Becky at 2;8.2: answers: 88% are short answers, whereas 12% are sentential (n = 40); queries: 19% are elliptical, 81.3% sentential (n = 65); the figures for Carl averaged over the entire period are: answers: 74% are short answers, whereas 26% are sentential; queries: 24% are elliptical, 76% sentential.) This happens despite the fact the latter two NSU types are common in the speech of the child's carers. (Becky's mother

produces on average: answers: 71% are short answers, whereas 29% are sentential; queries: 49% are elliptical, 51% sentential (n = 94); Carl's mother: 12.5% are short answers, whereas 87.5% are sentential; queries: 27.5% are elliptical, 72.5% sentential.) Note also that the child ignores the presence of triggering context for sluicing and CE: she produces a non-elliptical query instead (e.g., Mother: *There's a picture of Pingo's igloo.* / Aran: *Where is it?* [aran.29a.cha, 198-199 [2;9.2]: cp. *Where?*, which is an available NSU for this context.)) This finding is problematic for virtually all previous approaches to ellipsis, which explicate elliptical constructions by means of a uniform operation (in the syntax or the semantics) that applies to a non-elliptical source (for a fairly recent survey of the state of the art, see Lappin & Benmamoun 1999).

We also provide evidence, based on the Stephany corpus, that the delayed emergence of elliptical queries is not due to language specific factors: clarification ellipsis and sluicing emerge late also in child Greek. Comparison with a language like Greek is crucial, as this language exhibits a rich morphology that English lacks. This feature of Greek allows us to track the emergence of syntactic parallelism (e.g., case identity) between antecedent and NSU. This characteristic of adult NSUs can be used as diagnostic of the maturation of child ellipsis.

We show that in order to state generalizations such as described above concerning, e.g., delay in acquisition of sluicing and CE vs. short answers, one needs grammars where constructions can be distinguished on the basis of constraints relating syntactic, semantic, and contextual information. Specifically, constraint-based grammar that explicitly represents constructions as well as a theory of dialogue context (Ginzburg & Sag 2000) provide tools for modeling NSU competence and the transition from the child to the adult system.