Argument structure
Grammar in use

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Language can be seen as responsive, in some degree, to the demands that are placed on it by its users. The question is how far this responsiveness goes. Is grammar implicated, or only the more malleable layers of lexical inventories? Clearly all grammars display some plasticity, as evidenced in the changes they continually undergo. But are these changes to be viewed as superficial or deep? Does the continual reconfiguration of the grammatical systems that organize form and meaning reflect anything profound about language?

On one view, the grammar of any language evolves so as to serve its users’ goals, whether to conceptualize, communicate, or collaborate. Within discourse, considered as the domain of language use, the functions most often implemented will play the greatest role, it is claimed, in shaping how grammars come to be as they are. From the speaker’s perspective, on the other hand, grammatical structures represent available resources, ready to mediate whatever actions are regularly undertaken with language. But this view raises a host of further questions. Among the more specific issues brought into focus is to what extent a given grammatical structure, such as a construction, a clause type, or a verb’s argument structure, can be said to subserve a well-defined function in the domain of language use. And if a functional role is to be recognized for grammatical structures, there remains the question of what kinds of function may be realized. There is as yet little agreement among linguists as to how to go about answering such questions. Differing views of the nature of grammar motivate different paths toward apprehending the functions of specific linguistic structures.

Argument structure in particular has attracted attention from diverse perspectives. How noun phrases relate to their verbs virtually demands a multidimensional and even multidisciplinary approach, one capable of bringing together aspects of
semantics, syntax, morphology, typology, diachrony, acquisition, cognition, and, some would urge, pragmatics. An uttered noun phrase token filling an argument role of a given verb exhibits properties along multiple dimensions: grammatically it is, say, a transitive subject, semantically a human experiencer, morphologically a pronoun, pragmatically given information. Of these dimensions, it was semantic structure that was the first to be taken seriously as a potential influence on — or even determinant of — argument structure, and it has remained the factor most consistently attended to. The attraction of the semantic approach stems partly, no doubt, from the fact that the meanings expressed by a particular verb, and by each co-argument within the verb's overall argument configuration, appear immediately accessible to intuition, even within the isolated constructed sentences that have supplied the primary source of data for much of the argument structure debate. Moreover, the verb word seems to concisely identify and isolate an event, which can then be systematically characterized through semantic analysis in terms of a small set of basic semantic features or entailments — just those aspects of the event's structure (or the verb's meaning) which are demonstrably relevant to the grammatical behavior of the argument structure it defines. Certainly such semantic analysis has achieved remarkable successes recently, and in some form is likely to constitute an indispensable dimension of any full explanation of argument structure phenomena. But the expectation that event semantics by itself could supply the entire basis for understanding argument structure begins to seem illusory to the extent that it overlooks significant contributions from other, more elusive, factors. The incompleteness of the semantic explanation becomes evident to the degree that one takes seriously the problem posed by grammar in use, and in particular, by how argument structures are used to do the full range of things that speakers need to do.

The dimension of the argument structure equation which has been most erratically attended to, though never entirely lost sight of, is pragmatics — specifically, discourse pragmatics. For many, an excursion into the referential-pragmatic and cognitive processes of introducing new information and tracking it through extended discourse would seem a distraction, the last thing that would come to mind as a way of resolving the challenges of argument structure. Argument structure already makes intense demands of its adherents, requiring simultaneous attention to a web of interrelated factors, including: semantic structure and conceptual structure, at the levels of both word and clause; semantic roles and grammatical relations, possibly at several degrees of abstraction; principles for linking or mapping between the domains of meaning and grammar; and questions of the role of morphology, lexicon, constructions, syntax, semantics, typology, universals, and learning in all of this. Apparently all these influences zero in on the one lexical category that lies at the heart of the matter: the verb. Conversely, a broad range of effects can be said to radiate out from the verbal center. With such a complex array of factors to attend to, all concentrated upon the narrow scope of a predicative word, a call to add discourse pragmatics to the picture may seem like a diversion from the more pressing concerns of syntactic description and semantic explanation. It is not immediately obvious how discourse pragmatic influences are to be integrated into the semantic and event-based explanations that currently yield such promising results. This reaction is the more understandable if we accept the commonplace view that discourse is several degrees removed in scale from the lexical level where argument structures are represented, and even from the clausal level where they spread their influence. But the assumption that discourse properly treats units larger than the sentence — and so by implication should leave the sentence with its clausal and lexical contents alone — is not well motivated. To understand what discourse pragmatics could possibly say about argument structure we need to address, if briefly, the scope of discourse research.

What does discourse imply? For many it denotes just more of the same: a larger stretch of speech extending beyond the sentence, which is to say, beyond the traditional scope of grammatical analysis. On such a view the proper domain of discourse begins where syntax ends, at the sentence boundary. Discourse research should look outside the sentence, while the sentence and its insides are left to syntax. But why, aside from the historical precedence of traditional syntax in this domain, should discourse limit itself to the outside of a sentence? To the contrary, some of the most interesting results are to be found by looking through the other end of the telescope — by bringing discourse analysis inside the clause. Within the narrow grammatical frame articulated by a verb and its dependent arguments may be discovered structural tendencies that respond not only to grammar and meaning, as has long been recognized, but also to the specific demands of discourse pragmatics. The noun phrase that is characterized by its grammatical category and by its syntactic and semantic relation to its verb is also, significantly, the carrier of information statuses such as accessibility or topicality, and pragmatic relations such as anaphora and contrast. It is only by pursuing the concerns of discourse inside the traditional territory of the grammarian that the powerful interaction of competing forces, and their systematic resolution through the processes of grammaticization, can be recognized as a foundation for the structural organization of the clause. On this view discourse is not a matter of size but of use. The utterances that comprise a discourse are taken as acts of language use regardless of their cumulative size relative to a sentence. Any natural discourse however brief represents a complex event fully invested with form and meaning at all linguistic levels, including morphology, lexicon, syntax, and phonology (including prosody); and bearing a totality of meaning in its semantic, pragmatic, and interactional dimensions. Out of this potentially overwhelming complexity it is nevertheless possible to abstract certain reliable organizing patterns, and speakers no less than linguists do this. It could be said that the business of grammar is to achieve a functional abstraction: to partial out a set of generalized architectural frames through which the enactment of function is organized.
In this light, the patterning of discourse has something to tell us about things inside the sentence, down to the level of verbal argument structures with their organizational influence across the clause. At a time when theories of argument structure have already undertaken to address the structural implications of interactions across domains of words, constructions, grammatical relations, semantic relations, lexico-semantic content, and conceptual construals of events and roles, there is still the possibility, indeed the necessity, to add the facts of discourse pragmatics to the equation. Discourse research has always dealt with interactions among diverse domains, and so can be expected to contribute a unifying perspective. Discourse-and-grammar studies regularly identify correlations between layered patterns in grammatical structure, semantic structure, and discourse-pragmatic structure, and seek to explain them through a strategic perspective on the grammaticization of language in use. Moreover, the discourse-functional approach has consistently embraced the typological diversity of languages, recognizing in the seeming variability of, for example, systems of grammatical relations (e.g., nominative-accusative vs. ergative- absolutive vs. actor-undergoer) a deeply revealing array of alternative resolutions of common, fundamental, and even universal motivations which compete for the effective organization of linguistic structure. Studies in typology have long provided grist for the mill of functional explanation, as other people's languages allow one to tease apart the factors that are already entwined, perhaps inextricably, in one's own language. Paradoxically, it is only by stepping up to the challenge of integrating across the multiple functional layers of language, and across the typologically diverse array of solutions to common grammaticization problems, that the most fundamental commonalities of language can be grasped.

The idea that discourse pragmatics constitutes a dimension of argument structure which parallels those of semantics and grammar, and in certain ways maps onto, interacts with, and even shapes them, will of necessity return as a theme in the narrative that follows. But we are getting ahead of ourselves. In this paper I first examine the idea of argument structure in light of the various roles it has played in the development of modern linguistics, particularly in its increasingly important role as a central organizing principle of language—a focus for the interaction of meaning, grammar, lexicon, and function. Argument structure is now core for several approaches to language, which makes it interesting to ask why it has become so important. The reality of this history demands that the larger share of attention go to developments in the grammatical characterization of argument structure, along with the semantically based explanations proposed for it. But the history also reveals an undeniable, if fragile, thread of pragmatic insight and analysis. The pragmatic observations of one generation seem continually to drift out of focus for the next, perhaps for lack of a framework to integrate them into the more highly valued grammatical and semantic analyses. It could be said that linguists have always been aware that certain pragmatic factors (for example topicality) played some kind of role relative to certain aspects of argument structure (for example subject selection), but they have never quite known what to do about it. Nevertheless they have apparently felt compelled, at irregular intervals, to record their observations of the pragmatic correlates of argument structure. I will present just a few selected highlights from this checkered history, as I ask where, if at all, discourse pragmatics fits into the argument structure picture. Among the specific phenomena I will foreground are what I call co-argument effects, which includes competition between alternative candidates for selection to the argument roles of a clause. I try to show that in addition to the previously recognized semantic co-argument effects, there are also pragmatic ones. The cognitive-pragmatic perspective also challenges the assumption that a verb's syntactic valence can be assumed to be a fixed target for argument linking. Next I bring up one of argument structure's perennially neglected problems, that of ergativity, especially split ergativity. Here I try to show that ergativity is not just a problem, it's part of the solution. Typological research on ergativity has prompted linguists to distinguish A, S, and O (transitive subject, intransitive subject, and direct object, respectively), which turns out to be a necessary precondition for uncovering certain covert patterns of grammar in use, with large consequences for understanding argument structure. With this background in place, I introduce the central hypothesis of this volume, that of Preferred Argument Structure, which concerns the relation between argument structure and certain patterns of grammar and pragmatics in discourse. I do not attempt to give a full explication of the theory here, since I have covered that territory elsewhere (Du Bois 1987a, 2003a), and further developments are well represented in the other papers of this volume. But I do discuss the significance of the model with respect to a number of the current issues in argument structure research. Next, I present a brief consideration of argument structure as an exemplar of grammar as architecture for function, a concept which provides the subtitle for this volume. Finally, I close with a survey of some of the applications of the Preferred Argument Structure approach to various current trends in argument structure research, and consider its implications for future work.

Argument structure

I turn now to the idea of argument structure as it has developed in modern linguistics, with a focus on the uses that linguists have found for it in their efforts to understand grammar and meaning. Modern linguistics first took on the notion of argument from philosophy, where it had long served as a conceptual tool for the logical analysis of abstract predication, with roots that go back at least to Frege. For Frege argument structure was an instrument for the formulation of 'pure thought' (1879 [1960]), and any application to the grammars of particular languages was a
secondary consideration. But the few remarks that Frege did venture regarding natural language present a surprisingly modern perspective, prefiguring issues that remain relevant for the understanding of argument structure and grammatical relations to this day:

The speaker usually intends the subject to be taken as the principal argument; the next in importance often appears as the object. Language has the liberty of arbitrarily presenting one or another part of the proposition as the principal argument by a choice between ... words, e.g. between ... 'give' and 'receive' ... (Frege 1879 [1960]:14–15)

In this passage Frege recognizes a hierarchy of arguments, differentiated along a scale of 'importance', where subject ranks above object. He observes that lexical alternatives within the same semantic domain provide alternative argument structures for different assignments of argument salience, as when verbs like 'give' and 'receive' define different subject selections. He goes on to point out that "this liberty is restricted by lack of words" (1879 [1960]:14–15), which is to say that lexical gaps may occur in a language's repertoire of available argument structures. Frege even speculates on the pragmatic role of argument selection in the cognitive processing of extended discourse (to put it in modern terms):

In language the place occupied by the subject in the word-order has the significance of a specially important place; it is where we put what we want the hearer to attend to specially. ... This may, e.g., have the purpose of indicating a relation between this judgment and others, and thus making it easier for the hearer to grasp the whole sequence of thought. All such aspects of language are merely results of the reciprocal action of speaker and hearer; e.g. the speaker takes account of what the hearer expects, and tries to set him upon the right track before actually uttering the judgment. (1879 [1960]:3)

As a capsule description of the pragmatics of argument selection (argument salience, attention management, argument reselection across clauses in sequence, discourse coherence marking, processing facilitation, speaker management of hearer expectations), this passage prefigures numerous issues which remain relevant today. But having gone thus far, Frege quickly distanced himself from the project of describing natural language, and reiterated instead his sole criterion for formalizing logic: "In my formalized language there is nothing that corresponds; only that part of judgments which affects the possible inferences is taken into consideration" (1879 [1960]:3). One can only imagine what might have happened had Frege traveled farther along the road not taken.

Once linguists appropriated the concept of the argument to their purposes, their intrinsic concern with language led them to pursue further the relation of argument structure to the organization of linguistic expression. Though at first
must be mapped individually in accordance with certain general principles, whose precise formulation remains an ongoing challenge. In one prominent formulation:

Argument functions are directly mapped onto semantic or thematic roles in lexical predicate-argument structures. They provide a uniform way of designating the participants in the events, actions, and situations which are depicted by various subclasses of lexical predicates (Bresnan and McChombo 1987:757).

The idea that argument structures and grammatical relations bear a motivated relation to something beyond themselves goes back quite a ways, as Frege’s comments indicate. Grammatical relations and argument structures have been seen variously as linked to the domains of logic, semantics, and pragmatics, in proposals that would assign values such as agency, volitionality, empathy, and topicality, to name a few. For many, the strongest extra-grammatical connections to a verb’s argument structure derive from its meaning. The semantic connection is consistent enough that well-defined rules of correlation can be specified, and verb semantics can be said to partly determine syntactic structure:

The most striking illustration of the role of meaning in the determination of syntax is the tendency for arguments bearing certain semantic roles to be associated with particular syntactic expressions. … we call the regularities in the association of arguments bearing certain semantic roles to particular syntactic expressions linking regularities, and the rules that effect such associations linking rules. To the extent that the semantic role of an argument is determined by the meaning of the verb selecting it, the existence of linking regularities supports the idea that verb meaning is a factor in determining the syntactic structure of sentences. The striking similarities in the linking regularities across languages strongly suggest that they are part of the architecture of language. (Levin and Rappaport Hovav 1995:1)

The robustness of such cross-linguistic parallels in patterns of argument linking (or argument selection) is a useful indicator of their power to shape grammar. That this should earn argument structure principles a place in the “architecture of language” is a theme worth returning to (see my discussion below, in a somewhat different sense, of the grammar of argument structure as “architecture for function”).

But the widespread recognition that a connection must be identified between argument structure and meaning (or other extra-grammatical function) does not imply agreement as to how this is to be achieved. Conceptions of argument structure vary widely, even among practitioners of the same theory. This is to be expected, according to Bresnan.

The reason for this is that argument structure has two faces, semantic and syntactic. On the semantic side, argument structure represents the core participants in events (states, processes) designated by a single predicate.

From this point of view it appears as a type of representation of event structure. On the syntactic side, argument structure represents the minimal information needed to characterize the syntactic dependents of an argument-taking head. From this point of view it appears as a type of syntactic subcategorization or valence register. Thus argument structure is an interface between the semantics and syntax of predicates (which we may take to be verbs in the general case) … (Bresnan 2001:304)

Nevertheless argument structure is for Bresnan “fundamentally a lexical syntactic construct, not a semantic one”, in that it encodes the quantity, type, and hierarchical organization of arguments, as a prelude to mapping them onto syntactic structures (2001:304). Given the complexity of the interrelated domains, it is natural that different conclusions may be drawn. For example, Goldberg starts from many of the same premises but emphasizes more the multi-dimensionality of argument structure, concluding that a ‘hybrid’ definition is needed that can accommodate the two domains interacting: “the argument structure of a clause is defined as the surface syntactic form together with the overall event-interpretation of a clause” (forthcoming). Given her interest in pushing beyond the usual scope of argument structure to encompass larger constructions, Goldberg (1995) includes not only the traditional transitive and ditransitive, but also resultative and clausal complement constructions as characterized by argument structures. It is noteworthy that she also recognizes a significant role for the pragmatic correlates of argument structures (Goldberg, forthcoming).

We can agree that argument structure is multifaceted — with at least two faces — and that it stands in the middle of things, as an aspect of words (and constructions) which crucially mediates the process of meaning expression. Yet this mediation is not likely to be a simple one, so that its full explication will likely require attention to multiple levels of interacting structures and functions, organized via processes of grammaticization into specific coherent grammars capable of effectively organizing all the necessary aspects of meaningful expression.

**Data**

At this point it is useful to look at some actual instances of argument structures in use. Most of the examples I will present in this paper are taken from an extensive body of recordings of spoken discourse (Du Bois 2000, 2003b).1 Due to space limitations, most excerpts are quite short — too short to properly represent the larger discourse context, unfortunately, but adequate to make the preliminary observations required here. Most of the cited examples are exactly one line long, where each line represents a single intonation unit (Chafe 1980, 1994, Du Bois et al. 1992). In syntactic terms, most of these intonation units correspond to a single clause. The first set of examples presented is limited to clauses in which all the
argument positions are filled by pronouns. (Sentences containing full noun phrases raise additional issues, which we will encounter soon enough.) While pronoun-only clauses may not be the most frequent type of transitive clause in most genres of spontaneous speech, they are reasonably common. (Personal pronouns are also useful in that they provide, in a language like English, a useful indicator of grammatical role, by displaying their morphological case overtly.) Consider the following:

1. ALINA: I grab her again. (sbc:CUZ 447)
2. LORI: He kissed her. (sbc:HOWARDS)
3. BRAD: And so you would hit that. (sbc:TAPEDECK)

These clauses contain what are thought of as canonical transitive verbs (hit, grab, kiss). Each of these clauses describes an event in which an agent performs an action which affects a patient. The agent is realized in transitive subject (A) role, expressed by pre-verbal position with a pronoun in nominative case (I, he). The patient is in direct object (O) role, marked by post-verbal position, with a pronoun in accusative case (her). (Of course not all pronouns in English show the morphological case contrasts, e.g. you, that.) The presence of two argument noun phrases in a transitive clause raises the question as to which is to be realized in which role; that is, which referring expression will bear the grammatical relation of subject to the verb, and which the object? One commonplace notion holds that it is the agent of the action which the object? One commonplace notion holds that it is the agent of the action which

In contrast is the intransitive clause, with its single argument:

4. REBECCA: .. (H) she moved again. (sbc:JURY 164)
5. JOANNE: ... he plays hard. (sbc:DEADLY 930)
6. JOANNE: (H) she was frantically running around. (sbc:DEADLY 1318)

Here the sole argument is realized grammatically as intransitive subject (S), expressed in English through pre-verbal position with nominative case (she, he). In the above examples, the verb expresses an action (move, play, run) which the subject referent controls and instigates — as player, mover, runner. But there are many one-argument predicates where the subject does not fit the actor-instigator-controller model:

7. PAM: # She’s sleeping. (sbc:RAGING)
8. LINDSEY: ... Oh you’ve grow=n. (sbc:VETMORN 472)

Verbs like sleep, grow, luck out, suck, vomit, and break do not denote (at least in the uses exemplified here) actions controlled by their subject referents; rather the subject referent undergoes an experience, event, or state of some kind, broadly speaking. Grammatical subject status is nevertheless confirmed by pre-verbal position and nominative case pronouns (she, we, he), showing that in English these formal features are governed not by semantic but by grammatical relations. Moreover, in a nominative-accusative language like English, they serve to overtly mark the grammatical alignment of all intransitive subjects (S) with transitive subjects (A). Lest this be taken for granted, there is nothing inevitable about this grammatical alignment, as is demonstrated by the fact that in other languages, the diversity of semantic relations motivates the differentiation of intransitives into grammatically distinct classes, expressed in so-called split intransitivity (Durie 1988, Merlan 1985, Mithun 1991). The grammatical heterogeneity of intransitive verbs has sometimes been argued to motivate a grammatical division into covert categories such as the so-called unaccusative vs. unergative verbs (Bresnan 2001, Dowty 1991, Levin and Rappaport Hovav 1995, Perlmutter 1978), a phenomenon which others would prefer to ground in semantic rather than syntactic explanation (Van Valin 1990).

The fact is, even two-argument predications often fail to fit the model of an agent performing an action that affects a patient, as has long been recognized (Dowty 1991, Fillmore 1968, Hopper and Thompson 1980, Jespersen 1924, Thompson and Hopper 2001). This is evident in verbs such as doubt, hear, notice, love, miss:

13. NATHAN: .. (TSK) I doubt it. (sbc:ZERO)
14. CAROLYN: And we all heard it. (sbc:RAGING)
15. DORIS: did you notice em? (sbc:RETIREMENT)
16. DORIS: ... and I love you. (sbc:RETIREMENT)
17. JILL: (TSK) I miss you too. (sbc:CUTIEPIE)

Although these verbs typically take a human referent as their subject (I, we, you), the semantic relation of this argument to the verb is not that of agent, but rather experience of a psychological state, whether cognitive or affective. As for the direct object, its role is not patient but stimulus, as the entity which evokes the state experienced.

The efficacy of a putative agent is clouded still further when a proposition is negated, questioned, or otherwise distanced from the domain of reals assertion.
Compare the following pairs of utterances:

(18) MARILYN: they eat it. (sbc:concept)
(19) JOANNE: They won't eat it. (sbc:deadly)
(20) REBECCA: ... (TSK) And she saw it. (sbc:jury 113)
(21) JEFF: ... (H) she didn't see me. (sbc:cutiepie 969)
(22) JILL: ... that would bother me. (sbc:cutiepie)
(23) LYNNE: And that doesn't bother em a bit. (sbc:blacksmit)
(24) HAROLD: You saw that. (sbc:lambada)
(25) RANDY: ... Did you see that? (sbc:runway)

Whatever role we might wish to attribute to the subject of the positive predication
above (eat, see, bother), the question arises as to whether that same role (e.g. eater, see, pest) should still apply when the verb is negated (not eat, not see, not bother) or questioned (did you see...?). Do we need to recognize thematic relations of non-eater, non-see, non-pest? It is hard to justify an analysis of 'agent affecting patient' when nothing happened and nobody was affected. The variability is only multiplied further if we consider the full range of actual clause tokens as realized in discourse. We might hope to escape these concerns by avoiding the full complexity of actual clause tokens with their problematic modality inflections, and restricting our analysis (and our accountability) to the domain of main verb types in the lexicon. But such a theoretical constriction would only sidestep the problem temporarily. Arguably, the effects of modality arise even within the lexicon, unavoidably impacting the problem of argument selection. As suggested by the work of Koenig and Davis (2001), an essential step toward the solution of this quandary may be to first factor out features of modality and negation, and then ground the argument selection process on those thematic relations which remain.

This is only one example of the kind of complexity which attends the process of argument selection. If we follow a single grammatical relation in isolation (e.g. subject) across a range of lexical verbs, the diversity of semantic relations that it encodes seems difficult to delimit or characterize. This has motivated many linguists to enlarge the view to encompass the full set of syntagmatic co-arguments within a given argument structure, so as to gain some leverage in considering how the several grammatical relations within a clause may interact and even compete, e.g. for subject selection. Challenges remain, however, in deciding how thematic roles should map onto grammatical roles. For example, consider:

(26) LINDA: and she admired him. (sbc:howards 182)
(27) MARY: ... And then of course he adores me. (sbc:tree 630)
Two questions

Fillmore's early work on argument selection (initiated under the rubric of case grammar) defines an influential starting point for much subsequent research in the field (see historical discussions in Ackerman and Moore 2001, Davis 2001, Dowty 1991, Goldberg 1995:10ff). While the particular rules and mechanisms he proposed have been partly superseded by later developments, and specific selection criteria have come and gone, what remains salient are the questions posed. The question most often addressed by researchers asks, concerning the participant roles in a given event, "which is to become the subject and which is to become the object?" (Fillmore 1977b:73). So stated, the problem is variously spoken of in terms of argument linking, argument selection, and so on. What is often overlooked is that for Fillmore, this was actually the second half of a two-part question:

The new question for the theory of cases is this: What do we need to know about the various participant roles in a situation in order to know which of these roles or which combinations of them can be put into perspective, and then, for those which have been put into perspective, which is to become the subject and which is to become the object? (1977b:73)

For Fillmore the question of how to rank participants in the "situation" (which subsumes the event, and more) in order to link them to particular syntactic functions depends on the prior question of which participant roles will be selected for inclusion in the clause nucleus. The problem of argument selection thus requires addressing (at least) two questions, which we may label participant inclusion and participant ranking. While both questions appeared in the widely-read "The case for case reopened", the second apparently eclipsed the first, to judge by its uptake in later research. Actually, Fillmore explored the inclusion question in far greater depth in an often overlooked paper from the same year (1977a). Here he posed the question of how "entities in a scene" are chosen for the clause nucleus (subject, object, indirect object), asking "What enters the nucleus?" With an answer to this question one can then go on to ask, "What determines the ranking of terms in a nucleus?" (1977a:94). But to focus only on ranking (or linking), taking the inclusion problem for granted, is to underestimate the scope of the problem of accounting for argument selection.

The inclusion problem is best understood with reference to what Fillmore called the scene, of which one illustration would be the commercial event of buying and selling (1977b:72). Fillmore saw the scene/event as key to the grounding of meaning, proposing the axiom, "meanings are relativized to scenes" (1977b:59). In relating the meaning of a given verb or noun to the scene through which it derives its conceptual framing, Fillmore's move prefigures the current interest in events and event structures as determinants of verb meanings and argument structures (Dowty 1991, Levin and Rappaport Hovav 1995, Levin 1999, Rappaport Hovav and Levin 2001, Talmy 1988). But Fillmore's scenes were broader, and less dependent on individual verbs. Moreover, he was careful to emphasize that the scene did not of itself necessarily determine argument selection, for the simple reason that speakers are in many cases able to choose among alternative verbalizations available for a given scene (cf. Frege 1879 [1960]). For some scenes at least, multiple verbs provide for the expression of alternate perspectives, with a corresponding difference in subject selection. An oft-cited example is the commercial event, in which verbs like buy, sell, or spend offer alternative perspectives with correspondingly distinct argument selection patterns. Consider the following examples, taken from three different conversations:

(30) JAMIE: ... They never buy clothes. (sbc: lambada)
(31) JIM:  he may have sold the rights. (sbc: notions)
(32) KATHY: You don't have to spend money on goodies. (sbc: raging)

Participants in the commercial event include the buyer (expressed in example (30) as they, in example (32) as you); the seller (he); the goods (clothes, the rights, goodies); and the money (money). But speakers don't have to include all of these participants in the nucleus of every clause — and indeed, for some combinations they can't. For example, there are said to be two agents in the prototype commercial event, the buyer and the seller. But for any given verb, only one of these agents is included in the nucleus, and hence eligible for selection as subject. In the prototype of the commercial event scene,

...two different individuals are agentively involved... any verb identifying any particular aspect of the commercial event will constrain us to bring one or more of the entities in the event INTO PERSPECTIVE, the manifestation of this choice for English being the selection of grammatical functions corresponding to the notions of underlying subject and direct object. For example, if I wish to take the perspective of the seller and the goods, I will use the verb sell. Should I wish to take the perspective of the buyer and the money, I will use the verb spend. ... And so on. (Fillmore 1977b:72–73)

Languages allow speakers to chose among alternative perspectives on a scene or event. To the extent that the different perspectives are realized by different lexical verbs, the pattern of argument selection may vary accordingly. Hence it becomes important to acknowledge that the set of event participants that is to be selected for inclusion among the core arguments is not a given, nor, consequently, is the identity of the role that will be linked to the subject function (or the object). In recognizing a role for speaker choice, Fillmore acknowledged an aspect of discourse pragmatics. Given the fact that what happens in the argument inclusion process will delimit from the outset which participants will form the set of candidates for
argument linking, it becomes difficult to escape the need for referential pragmatics in argument selection. Perhaps this explains why, among those who prefer to maintain a purely semantic basis for argument selection (e.g. Dowty 1991), Fillmore's inclusion question has so often been passed over in favor of an exclusive focus on the ranking (or linking) question.

Writing at the same time as Fillmore, Chafe offers a similar picture of the linguistic representation of events, though with more emphasis on the cognitive process of verbalizing an actual event (not just an abstract or prototype event): "Propositionalizing includes (1) the factoring out of objects from the event or situation that the [experiential] chunk embraces, and (2) the assignment of roles to these objects within the event or situation" (Chafe 1977:226-227). More recently, the role of perspective-taking in language has attained its most elaborate development in the work of Langacker (1987, 1991, 1995) and his associates working on Cognitive Grammar, under the heading of *construal*.

Fillmore's second question — "which is to become the subject and which is to become the object?" — led to his proposal of a hierarchical procedure to determine argument selection by way of participant ranking: "What determines the ranking of terms in a nucleus?" (1977a:94). The procedure is largely based on evaluating argument candidates with respect to pairs of features, with each feature pair potentially contributing to deciding which candidate outranks the other. The seven features, listed in rank order, are as follows (based on Fillmore 1977a:102):

- active outranks inactive
- causal outranks noncausal
- experiencer outranks non-experiencer
- changed outranks nonchanged
- complete/individuated outranks part
- figure outranks ground
- definite outranks indefinite

This is intended as a hierarchical procedure, with the paired criteria to be evaluated in the sequence listed, until a definitive ranking is reached when the hierarchy of nuclear roles has been filled (first subject, then object). This model has influenced a number of later authors, including Gawron (1983), Foley and Van Valin (1984), and Dowty (1991) (see discussion in Davis 2001:57ff). To this we could add Hopper and Thompson (1980), whose proposal that transitivity is a scalar property at the level of the clause (rather than the verb) invokes a number of these same factors (see also Keenan 1976).

Fillmore called this the *saliency hierarchy*. Notably it includes as determinants of argument selection both semantic features (active, causal, experiencer, changed, complete/individuated) and pragmatic features (figure, definite). It also foregrounds what we might call co-argument effects. Co-arguments are defined as members of the set of arguments of a common predicator. Co-argument effects are when the form or function of one co-argument depends on the form or function of another co-argument. The most obvious co-argument effect involves competition, as when various participant roles compete for subject selection based on a hierarchy like that presented above. A given participant role may be selected for subject in one clause but not in another, depending on which other co-arguments appear in the same clause and how they rank on the applicable evaluating criteria. Co-argument effects had figured in Fillmore’s earliest work on argument selection: “For most combinations of cases there is a ‘preferred’ or ‘unmarked’ subject choice; for some there is no actual choice — the subject is uniquely determined” (1968:33, emphasis added). The significance of Fillmore’s two questions comes together in co-argument effects. First, inclusion determines the membership of the co-argument set. Then ranking evaluates the co-arguments relative to each other to determine which is to be linked to a given target function. Note that the common predicator serves a crucial role as the unifying force that brings a set of nouns together as co-arguments, a fact which takes on expanded significance once complex predicates are considered.

**Terminology**

Given the number of different researchers operating in the area of argument structure and argument selection, the terminology is often quite variable, to the point of causing occasional uncertainty between researchers about whether they are referring to the same issue. It is probably inevitable that terminological variation will always be present, and even useful as an index of theoretical diversity in a complex research domain. Still it may be useful to have some general terms for conceiving the various issues that different researchers have put on the table. I propose to treat argument selection as a cover term for a complex process subsuming several logically distinct components. (Whether these components constitute separate principles, constraints, procedures, or stages, or are best treated in some more unified way, is another matter. For convenience I will speak of them as processes, though nothing immediately depends on this.) At least four issues have been more or less frequently recognized, albeit under various labels. To the four terms I will add a fifth, yielding, as candidates for the components of argument selection, the processes of argument inclusion, ranking, linking, targeting, and realization. To be sure, different labels are favored by different researchers, for whom they reflect different conceptions of the issues, so that these five terms are not necessarily conceived of as representing a co-existing set of processes which form part of a larger phenomenon of argument selection. For many researchers, in fact, one or another of these terms (for example linking) represents the preferred way of referring to the whole problem, rather than a part of it. By treating them as a set of processes to be conceptually distinguished, within a larger rubric of
argument selection, I am taking more than a terminological stance. I am suggesting that there is a unified problem of argument selection, more complex than has usually been recognized, which is characterized by the interaction of multiple aspects or processes like those labeled above.

I will leave the discussion of argument realization to a later section. Of the remaining four, inclusion and targeting could be seen as the starting and ending points of argument selection, respectively, though they are more often taken for granted than recognized and problematized. Inclusion specifies which of the possible participant roles in the scene or event source domain will be verbalized within the relevant grammatical set or unit, for example as co-arguments of a single predicator. Although inclusion depends partly on pragmatic aspects of perspective-taking, its partial sensitivity to speaker prerogative (among other factors) should not detract from its critical role in defining the candidates for linking. At the opposite end of the process, targeting specifies what set of functions are available as endpoints for linking. One version of this would be to specify the valence of a given verb as intransitive, transitive, or ditransitive (or of a predicator as one-, two- or three-place). Bridging the gap between inclusion and the target is linking, which is that part of the argument selection process that finally associates an included participant role with a target function. For most people the link would be to a syntactic function like subject or object. For some, linking would also include a subsidiary process of ranking, placing arguments along a hierarchy according to some established criteria. For example, arguments may be ranked along a hierarchy of thematic roles ranging from agent to beneficiary to experiencer and so on down. There may also be a corresponding ranking of target functions. (But ranking, as such, may turn out to be dispensable, as several recent approaches would have it.)

In the end, argument selection probably involves a highly complex interaction of at least inclusion, linking, targeting, and realization. In addition to these four (or five) processes, it may be necessary to recognize multiple tiers, cycles, or recursions of some of them. For example, if there is a funneling of fine-grained verb-specific participant roles down to a few broad generalized proto-roles (Dowty 1991, Foley and Van Valin 1977), this could be considered to constitute an additional cycle or intermediate level of targeting and linking. No great significance should be attached to the order of listing, and in fact there is no need to assume an ordered sequence, since they could represent constraints applying simultaneously, for example. Moreover, while it is important to recognize the five terms as representing distinct issues or aspects of argument selection, this does not necessarily mean that they can be separated in reality as distinct processes or phenomena. What is more interesting, actually, is to consider the possible linkages and interactions between them. For example, can targeting affect inclusion, or inclusion targeting? On another level, it should be noted that argument selection need not be thought of as entirely synchronic. Diachronic processes of grammaticization presumably participate in specifying at least the set of available structural targets in a given language, and probably shape much more of the selection process.

It may be noticed that the one term I have not attempted to define, not even as provisionally as the above terms are defined, is the one that appears in my title, that of argument structure. This term may be the most elusive of all of them. Its variable usage often reflects deep differences in assumptions about what structure is and what role it plays in language. Some approaches take argument structure's fundamentals as given in more or less fixed form by logic, semantics, conception, or syntax. As such it should provide a fixed target for local lexical processes of argument selection. But what if there are no fixed targets? If the target changes due to interactions among component processes, argument selection must be aiming at a moving target. For example, variable processes of inclusion and targeting introduce contingency into the outcome of linking, which interacts with the fluidity of the grammar itself in responding to forces of grammaticization. So there is reason to be cautious about taking even the syntactic frame of argument structure too quickly for granted, or assuming prematurely that we know just what kind of thing argument structure is. From the perspective of grammar in use, then, we can view argument structures as contingent products of grammaticization, responsive to a variety of complex functional demands on them, as mediated through complex processes of selection. And yet the label of argument structure remains justified, because in the end the grammaticization process results in a population of verbs with their argument structures, constituting, for the speakers of any given language, a repertoire of stable and predictable architectural frameworks for linguistic function.

Ergativity

Ergative languages present an interesting test case for models of argument selection, but most linguists seem only to have taken up the challenge, if at all, after first establishing their main theoretical commitments on the basis of the more familiar accusative languages. Early on, Fillmore proposed that his subject selection principles be considered universal, "given certain qualifications for the interpretation of ergative systems" (Fillmore 1977b:61). Dowty acknowledged that the problem of "argument selection in ergative languages" (Dowty 1991:581) was important for his proto-role model, but his outline of an analysis for ergativity does little more than revive the old "inverse" model, which "means in effect treating the transitive 'Patient' as a grammatical subject and the transitive 'Agent' as analogous to an object" (1991:582). Argument selection principles use the same proto-agent and proto-patient roles as in accusative languages, but merely reverse the syntactic association with subject and object (1991:582). But this move depends on an unrealistic image of "pure" ergativity, in which every relevant structure and
function is the mirror image of its counterpart in an accusative language. If only ergativity was so simple. One reason it's not is split ergativity (Silverstein 1976), which does not admit of any simple reversal but rather displays a complex interaction of the forces that motivate both ergative and accusative languages (Du Bois 1985, 1987a). Dowty sidesteps this most challenging type of ergativity (1991:581–582). Subsequent treatments of argument structure have tended to deal with ergativity only after their foundational theoretical assumptions have been set in place (Ackerman and Moore 2001:1, fn. 1), by which time it is typically too late to respond with sufficient flexibility to the deeper challenges of ergativity.

Argument selection proposals have overwhelmingly assumed the primacy of the syntactic subject, thereby taking for granted that there is one fixed target for argument linking at the top of the syntactic hierarchy, and that this grammatical relation can be applied indiscriminately to transitive or intransitive clauses. Against the background of such assumptions, ergativity looks like a spoiler. The claimed universality of grammatical relations, though buttressed by efforts like Keenan (1976) for the subject relation, faces a perennial challenge in the stubbornly distinctive structure of ergative languages. According to the traditional textbook characterization of ergativity, the subject of an intransitive verb is marked grammatically like the object of a transitive verb (these two arguments together comprising the absolutive category), while the subject of a transitive verb is marked differently (comprising the ergative category). But this way of describing the phenomenon tends to make ergative languages sound aberrant, as if they would split up a perfectly good category like subject and lump half its contents with some other category. To counter this, Dixon found it necessary to deconstruct the traditional category of subject, so as to arrive at a set of categories sufficiently neutral for the description of Dyirbal (Dixon 1972:128), and ultimately for the placement of ergative and accusative (and other) language types on an equal footing within a cross-linguistically viable typological scheme (Dixon 1979:59, 1987, 1994). In his three-way opposition, Dixon distinguished between transitive subject (A), intransitive subject (S), and direct object (O). Comrie invoked similar categories of A, S, and P (1978:332). The terms A, S, and O have since become widely used, though not necessarily with Dixon's assumption that they represent universal deep structure syntactic-semantic primitives (Dixon 1994:6, Du Bois 1987a: 807, fn. 1).

(For a critical perspective, see Chafe and Mithun 1999.) The typological neutrality of the terms represents an important starting point for attempts to understand ergativity, deflating the terminological presumption that the grammatical relations of accusative languages (e.g. subject and object) are more natural than those of ergative languages. (It should be noted that Preferred Argument Structure research uses the terms A, S, and O for the analysis of surface structure roles, not deep roles as Dixon proposed.)

While ergative languages may not be as common as accusative ones, they are spoken all over the globe and are not going away anytime soon. In this light, there is something to be valued in a model of grammatical relations which is capable of embracing the morphosyntax of ergative languages, rather than effacing it or treating it as a kind of distorted version of an accusative language. Here Silverstein's (1976, 1981, 1993) work on grammatical relations has been pivotal. Silverstein acknowledged the profound typological divergences between ergative and accusative languages in their systems of grammatical relations, but responded by building a framework which could give a unified treatment to this diversity by taking account of systematic interactions among multiple factors in semantic, pragmatic, and grammatical dimensions. The result is a model which not only addresses broad typological contrasts between different systems of grammatical relations, but is equally adept at treating diversity within a single language in the internal organization of its grammatical relations, as occurs notably in split ergativity. Silverstein's treatment, been quite influential (Dixon 1979), for example strongly influencing Role and Reference Grammar (Foley and Van Valin 1984, Van Valin 1993, Van Valin and LaPolla 1997), one of the few theories of grammar to devote serious and consistent attention to ergative languages at a foundational level of theory construction.

Given Silverstein's goal to account for, among other things, complex mixtures of accusative and ergative patterning within a language's system of grammatical relations, it is interesting that his model prominently incorporates a discourse-pragmatic dimension. As one of four key factors in his model, Silverstein specified "reference-maintenance relations of arguments of predicates (as expressed by noun phrases in non-linked clausal structures across discourse-level structures)" (1976:230). The other three dimensions distinguished are "inherent referential content of noun phrases;" case relation (Agent-of, Patient-of, etc.); and clause-linkage type (1976:229–230). But in his oft-quoted summarizing statement, it was agency alone that ended up with the starring role: "This hierarchy expresses the semantic naturalness for a lexically-specified noun phrase to function as agent of a true transitive verb, and inversely the naturalness of functioning as patient of such" (1976:113). This emphasis may partly explain why subsequent treatments tended to overlook the discourse pragmatic dimension in Silverstein's model, leading to a slimmed-down restatement as a linear implicational scale of "animacy" (Dixon 1979) or "agency". But Silverstein's multidimensional scale does not fit happily into its one-dimensional linearization, as Durie points out:

Thus, for example, the relative position of third person nominals above kin terms and human nouns in the hierarchy cannot be derived from a 'potentiality of agency' explanation, and points to something pragmatic like 'topicality', rather than something as semantic as 'agency' or 'animacy'; it is by no means obvious that an expression like aunt is less animate or agentive than third person pronouns like she. However third person pronouns would seem likely candidates to have higher topic continuity in discourse than kin terms or animate nouns, irrespective of 'animacy' or 'agency' (Durie 1994b:498).
Even the true animacy categories on the scale may owe their position partly to a proclivity for high or low topic continuity, since "animate nominal expressions have greater continuity than inanimates, and ... names or kin terms have greater topic continuity than expressions [involving] common nouns" (Durie 1994b: 498). (See studies in Givon 1983.) If anything, a one-dimensional reduction of Silverstein's scale might better be labeled the "topicality hierarchy" (Du Bois 1987a, Mallinson and Blake 1982). While Silverstein's work has been influential, the larger implications for argument structure research of his analysis of split ergativity remain to be fully explored. Even now, revisiting the famous "agency" hierarchy in its original form as a complex feature matrix could provoke important insights via its framework for understanding complex interactions such as those between agency, topicality, and grammatical relations.

What is the significance of ergativity for argument structure? Ergativity problematizes some of the most fundamental assumptions on which discussions of argument selection and linking have been built. For example, linking models have tended to uncritically accept a foundational role for syntactic categories like subject and object, taking them as putative universal targets for argument linking. But Dixon's replacement of the traditional subject-object distinction with the more neutral A-S-O distinction has turned out to be a key factor in typologists' advances in understanding systems of grammatical relations which depart from the familiar accusative mold. Based partly on typological research on such languages, Foley and Van Valin (1984: 32) state that they find no compelling reason to recognize grammatical relations like subject and direct object as universals. To simply assume an undifferentiated "subject" concept as a supposed universal argument linking target seriously underestimates the problem, as research by Fox (1987) and others suggests. The three-term A-S-O distinction affords an additional advantage, allowing researchers to foreground the question of what links S with O in ergative languages to motivate the absolutive category. But it equally problematizes the organization of grammatical relations in accusative languages, posing the question of what links S with A to motivate the nominative category. To turn the tables and seek, if only as a theoretical exercise, to motivate the coherence of the subject (S, A) category as a viable, and possibly preferred, target of agent (or topic) linking may help explain the widespread presence of subject-based phenomena in ergative languages, as opposed to simply taking such phenomena for granted as natural consequences of the supposed universality of subjects. Conversely, to motivate the absolutive (S, O) category as an alternative target of linking (perhaps partly motivated by proto-patient features, as effectively argued by Keenan [1984]; see also Mithun [1991]) may help explain the presence of ergative-absolutive grammatical patterning in accusative languages.

On another level, ergative and active-agentive languages offer invaluable yet relatively unexplored sites for research at the lexical level, regarding the properties of individual verbs and classes of verbs. Given the view that "morphology may be as much of a determinant of eventual linguistic form as syntax is" (Börjars and Vincent 2000), it becomes interesting to probe how differences in available morphosyntactic categories (e.g., ergative and absolutive, or actor and undergoer) may interact with the semantics of scenes and events to grammaticize argument structure behaviors. Much could be gained from a systematic survey of argument structure in the verbal lexicon of even one ergative or active-agentive language, on the scale of (Levin 1993) but addressing also the semantic, pragmatic and grammaticization factors discussed by Mithun (1991) and Durie (1994b). But there is no need to wait for such a study in order to begin learning from ergativity. Ergativity should not be seen as a chore to be handled when (and if) one finds the time to get around to it, but as already providing an indispensable early clue to the framing of the argument selection problem. To open argument structure research up to typological insight, a useful minimal starting point would be to distinguish consistently between S and A, for example in problematizing the target for argument selection.

The functional correlates of ergative-absolutive grammar figure prominently in my own earlier work on Preferred Argument Structure (Du Bois 1985, 1987a, 1987b). In the next section, I give a sketch of what this theory is about.

Preferred Argument Structure

Preferred Argument Structure has something to say about argument structure per se, but given its grounding in discourse data and functional theory, it takes some careful reflection to see just how it relates to other lines of research on the topic. Here I will present just the basic outlines of the model, which is described more fully elsewhere (see the papers in this volume, and Du Bois 1987a, 2003a). My main purpose is to convey how this approach to argument structure differs markedly from others, yet still bears consequences for aspects of the grammar of argument structure that are of interest to all researchers on the topic. I will begin by presenting some illustrations of what it means to say that there is a Preferred Argument Structure in a given language, such as English. I will follow this with some of the cross-linguistic evidence suggesting that the Preferred Argument Structure which I initially identified in Sakapultek Maya can be considered a discourse universal. Finally, I will briefly point out some of the implications for argument structure-related issues including verb classes, constructions, and the grammaticization of argument structure.

On the face of it, Preferred Argument Structure is a very simple matter. It represents a hypothesis that in spontaneous discourse, certain configurations of arguments are systematically preferred over other grammatically possible alternatives. Because it makes claims about actual instances of grammar in use, it can be
considered a model of argument realization (Butt and King 2000a:1), or what we might call argument token selection. The model singles out certain argument realizations in certain argument positions as preferred, while defining others as dispreferred. But because the dispreferred argument realizations still generally yield grammatical sentences, it can be difficult for linguists used to seeing the grammaticality divide as the defining limit of language to appreciate, at first, what the fuss is all about.

What are the specific preferences for argument configurations? There is a grammatical and a pragmatic dimension to the phenomenon, which can be described in two pairs of soft constraints, one pair for each of the two dimensions. In the grammatical dimension, the first constraint limits the quantity of full lexical noun phrases that may appear among a predicator's core arguments to not more than one. The second constraint limits which grammatical roles the single lexical argument may appear in, specifically excluding it from the A role. These grammatical constraints are paralleled in the pragmatic dimension. Here, the quantity constraint limits to not more than one the number of new information noun phrases that may be realized among the core co-arguments of a predicator. The role constraint limits where the one new argument may appear, again excluding it from the A role. Since all four are soft constraints, they can be violated without producing ungrammaticality; and yet in spontaneous language use, overwhelmingly they are not. The four constraints are summarized in Table 1.

Table 1. Preferred Argument Structure constraints

<table>
<thead>
<tr>
<th>Grammar</th>
<th>Pragmatics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity</strong></td>
<td>Avoid more than one lexical core argument</td>
</tr>
<tr>
<td><strong>Role</strong></td>
<td>Avoid lexical A</td>
</tr>
</tbody>
</table>

The claim is that, when attested spontaneous language use is systematically investigated, there will be consistent statistical tendencies marked by the predominance of certain grammatical configurations of argument realization, and the relative scarcity of others. Since the most obvious effect of the proposed constraints is on the use of multi-place predicates, let us look first at transitive clauses. For English two-place verbs like break, name, or miss, the prevailing grammatical configuration of argument realization is illustrated in the following examples:

(33) DARRYL: you just damn near broke the damn needle there? (sbc:death)
(34) KEN: he named like half a dozen viruses, (sbc:deadly 476)

(35) PAMELA: (H) ... but I still miss my grandmother. (sbc:death)

In each of these clauses, one argument is realized with a lexical noun phrase, and one is realized with a pronoun. But what is relatively rare among argument realizations is a transitive clause containing two full lexical arguments. Even when the verb's argument structure makes two slots available, speakers tend strongly to avoid filling each of them with a lexical noun phrase.

Note that the quantity constraint on lexical core arguments represents only an upper bound. There is no minimum number of lexical arguments per clause. This is evident from the numerous examples cited earlier showing no lexical core arguments at all, only pronouns in all argument positions:

(36) BRAD: And so you would hit that. (sbc:tapedeck)
(37) LINDA: and she admired him. (sbc:howards 182)
(38) JILL: .. that would bother me. (sbc:cutiepie)

The tendency to avoid more than one lexical core argument appears to be consistent across languages, in spontaneous spoken discourse. In no language is it an absolute avoidance, however. Table 2 summarizes studies of five languages which show that clauses with either zero or one lexical core argument are common, while clauses with two are relatively rare.

Table 2. Lexical argument quantity: Frequency of clauses by quantity of lexical arguments

<table>
<thead>
<tr>
<th>Quantity</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hebrew</td>
<td>261 (50)</td>
<td>252 (48)</td>
<td>9 (2)</td>
<td>522 (100)</td>
</tr>
<tr>
<td>Sakapultek</td>
<td>211 (46)</td>
<td>240 (53)</td>
<td>5 (1)</td>
<td>456 (100)</td>
</tr>
<tr>
<td>Papago</td>
<td>430 (57)</td>
<td>307 (40)</td>
<td>22 (3)</td>
<td>759 (100)</td>
</tr>
<tr>
<td>English</td>
<td>252 (47)</td>
<td>241 (45)</td>
<td>39 (7)</td>
<td>535 (100)</td>
</tr>
<tr>
<td>Gooniyandi</td>
<td>2318 (62)</td>
<td>1305 (35)</td>
<td>114 (3)</td>
<td>3737 (100)</td>
</tr>
</tbody>
</table>

There is a second constraint on the grammatical configuration of lexical argument realization in two-place predicates. The constraint we have already seen (as evidenced in Table 2) readily allows one lexical core argument per clause. However, while a transitive clause in principle provides two alternative argument positions for the one allowed lexical argument, speakers do not appear to treat the two argument slots equally as potential sites for lexical argument realization. Rather, as illustrated in examples (33)–(35) above, they avoid realizing the one lexical argument in subject (A) position, preferring direct object (O) position instead. Does this mean that speakers avoid the subject role when realizing lexical...
noun phrases? Not at all. Subject position welcomes lexical nouns (Assayag 1999), as long as the predicate is one-place — that is, if the subject is S rather than A.

(39) REBECCA: (H) = The .. jury .. sits here. (sbc:jury)

(40) ALINA: (H) @The @Black @guy @laughed. (sbc:CUZ)

(41) LARRY: this .. this wall is eventually gonna come out. (sbc:FURNACE)

More generally, any one-place predicate, verbal or not, will freely accept a lexical subject. For example, a predicate adjective construction takes just one argument, so its subject (S) is unconstrained:

(42) PETE: ... the rainy season was all off-. (sbc:CONCEPT)

(43) JOANNE: The bowl was about yea big. (sbc:DEADLY)

(44) SHARON: .. this kid is bad behaved. (sbc:RAGING)

And, in a precise parallel to the predicate adjective, the predicate nominal construction provides exactly one argument position, an (unconstrained) S:

(45) REBECCA: your case in Oakland will be a felony. (sbc:JURY)

(46) CAROLYN: Sweets are not the thing. (sbc:RAGING)

Here the post-copular noun phrases (which are almost always lexical, e.g. a felony, the thing, but rarely him) is not an argument at all, of course, but instead functions predicatively. Given its functional role as a non-argument, the predicate noun phrases are not governed by Preferred Argument Structure, and speakers do not treat them as subject to the relevant constraints.

As with the previous constraint, there is no minimum implied here. Although S allows a lexical argument, pronominal realizations are also common:

(47) REBECCA: .. (H) she moved again, (sbc:JURY 164)

(48) PAM: # She's sleeping. (sbc:RAGING)

(49) PHIL: (H) It broke. (sbc:ATOMS)

Similarly, the O role is allowed to be lexical, but is obviously not required to be so, as illustrated in examples (36)–(38) above.

The free occurrence of lexical argument realizations in S and O, combined with their relative avoidance in A, is the basis for the role constraint on lexical argument realizations, "Avoid lexical A". Table 3 summarizes evidence supporting this constraint from eight languages.

If we look at ditransitives, with their three structural opportunities for lexical argument realization, we nevertheless find that the same quantity and role constraints are observed as for transitives (Schuetze-Coburn 1987). Even with a three-place verb like send or pass, still only one of the three arguments is typically realized lexically:

Table 3. Lexical argument role: Syntactic role of lexical core arguments

<table>
<thead>
<tr>
<th>Language</th>
<th>A</th>
<th>S</th>
<th>O</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hebrew</td>
<td>18</td>
<td>103</td>
<td>111</td>
<td>232</td>
</tr>
<tr>
<td>Sakapultek</td>
<td>11</td>
<td>126</td>
<td>81</td>
<td>218</td>
</tr>
<tr>
<td>Papago</td>
<td>37</td>
<td>169</td>
<td>152</td>
<td>358</td>
</tr>
<tr>
<td>English</td>
<td>21</td>
<td>90</td>
<td>146</td>
<td>257</td>
</tr>
<tr>
<td>Spanish</td>
<td>35</td>
<td>215</td>
<td>341</td>
<td>591</td>
</tr>
<tr>
<td>French</td>
<td>32</td>
<td>290</td>
<td>324</td>
<td>646</td>
</tr>
<tr>
<td>BrPortuguese</td>
<td>48</td>
<td>320</td>
<td>293</td>
<td>661</td>
</tr>
<tr>
<td>Japanese</td>
<td>48</td>
<td>320</td>
<td>293</td>
<td>661</td>
</tr>
</tbody>
</table>

(50) JIM: ... he's gonna send me those forms, (sbc:Bank)

(51) NATHAN: ... Will you pass me some of that tea please. (sbc:ZERO)

Again, as with transitives, lexical mentions are avoided in A, while they freely appear in O. As for the third argument position, the indirect object (I) is typically realized with a reduced form, as illustrated in the above examples.

The grammatical realization of arguments in a clause does not take place in a functional vacuum. It is tied to cognitive and pragmatic factors like information management, which influence the realization of arguments as lexical or pronominal, with consequences as described in the previous two constraints. Corresponding to the grammatical contrast between lexical noun phrase and pronoun is the pragmatic contrast whereby the fuller form tends to be used for referents that are less cognitively accessible (Ariel 1990, 2001, Chafe 1987, 1994), while the reduced forms are used for more accessible referents. In the sentence below, the O role lexical noun phrase cake with rum in it represents the first mention of cake, while the A role pronominal he indexes a referent mentioned several times in the immediately preceding discourse:

(52) JOANNE: (H) He doesn't even eat ca=ke with r=um in it. (sbc:DEADLY 1072)

Not all definite forms are alike when it comes to the degree of accessibility of an argument realization. For example, a referent referred to by a definite lexical noun phrase will tend to be less cognitively accessible than one referred to by a definite pronoun:

(53) DARRYL: you just damn near broke the damn needle there? (sbc:DEATH)

Here the definite pronoun you refers to a discourse participant immediately present
in the situational context. The definite lexical noun phrase the damn needle there, on the other hand, though situationally present, refers to something not previously mentioned or made salient in any way. As a first mention in the discourse, it is relatively less accessible and thus requires a more substantial lexical realization, even though it is also identifiable (after the fact, as it were) in the situational context.

The motivation for a particular referential form often becomes evident once the prior discourse context is consulted. Consider example (31), repeated here:

(54) JIM: he may have sold the rights.

While the rights represents a first mention in the discourse, pronominal he tracks a referent that was mentioned in the previous clause:

(55) JIM: he may never see a penny of it.

he may have sold the rights.

Note that the referent of he appears in A role in each of the two successive clauses, regardless of its shift from “experiencer” (or perhaps recipient) of see to agent of sell.

In the pragmatic dimension, then, the general pattern for two-place predicates is that only one core argument typically carries new information, and this argument is not the A. For ditransitives, the pattern is similar to that noted earlier, with any new (or low-accessible) information typically realized in O role, while only high-accessible information appears in the other roles (A and I). As for one-place predicates, once again they are the least constrained, because the quantity constraint on new arguments does not affect them. This gives them special importance as a site for the introduction of new information. The S role freely realizes new information, as in the following example, where this new wave of people represents a first mention in the discourse:

(56) ALINA: this new wa=ve of people comes in. (sb:cuz)

In sum, the cognitively demanding task of introducing new or low-accessible information into the discourse is strongly avoided in A role, but is freely carried out in S or O roles. Counts supporting the quantity constraint on new arguments are presented in Table 4, while evidence for the role constraint is given in Table 5. Again, there is no lower limit on the amount of new or low-accessible information that is introduced in a clause’s argument positions. All roles may be filled with non-new information, as is clear from the first column of Table 4, and illustrated in examples (36)–(38) and (47)–(49) above.

Table 4. New argument quantity: Frequency of clause types by quantity of new core arguments

<table>
<thead>
<tr>
<th>Language</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakapultek</td>
<td>336 (73)</td>
<td>122 (27)</td>
<td>0</td>
<td>458 (100)</td>
</tr>
<tr>
<td>English</td>
<td>463 (87)</td>
<td>72 (13)</td>
<td>0</td>
<td>535 (100)</td>
</tr>
</tbody>
</table>

Table 5. New argument role: Syntactic role of new core arguments

<table>
<thead>
<tr>
<th>Role</th>
<th>A</th>
<th>S</th>
<th>O</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hebrew</td>
<td>6 (6)</td>
<td>40 (43)</td>
<td>47 (51)</td>
<td>93 (100)</td>
</tr>
<tr>
<td>Sakapultek</td>
<td>6 (6)</td>
<td>58 (55)</td>
<td>42 (40)</td>
<td>106 (101)</td>
</tr>
<tr>
<td>English</td>
<td>0 (0)</td>
<td>15 (21)</td>
<td>57 (79)</td>
<td>72 (100)</td>
</tr>
<tr>
<td>Spanish</td>
<td>2 (1)</td>
<td>56 (28)</td>
<td>142 (71)</td>
<td>200 (100)</td>
</tr>
<tr>
<td>French</td>
<td>0 (0)</td>
<td>75 (34)</td>
<td>143 (66)</td>
<td>218 (100)</td>
</tr>
</tbody>
</table>

(Ashby and Bentivoglio 1993, Ashby and Bentivoglio 1997, Bentivoglio 1994). Theory and method for studying the acquisition of argument structure were developed by Clancy in several papers on Korean (1993, 1995, 1996, 1997), leading to investigations of acquisition in several additional languages (Allen 2000, Bentivoglio 1998, Brown 1998, Guerriero et al. 2001, Narasimhan, Budwig, and Murty, forthcoming). Second language acquisition was documented by Kumpf (1992). While the primary context claimed for Preferred Argument Structure is spontaneous spoken language, evidence that at least some written language genres follow the constraints was presented for Brazilian Portuguese by Brito (1996). Implications for the syntax of complex sentences were explored in studies of relativization in English conversation (Fox 1987, Fox and Thompson 1990) and quantifier floating in Japanese (Downing 1993). The connection to intonation units and clauses was explored in Japanese by Matsumoto (2000, forthcoming). Arguments for the internal differentiation of the intransitive S category were given by Durie based on Acehnese (1988), and a finer-grained breakdown of S was also explored by Dutra (1987), Bentivoglio (1990), and Fox (1995). In computational linguistics, Preferred Argument Structure has been used in conjunction with a decision tree model of machine learning to parse Wall Street Journal articles, via the “fine-grained taxonomy of grammatical relations” of A, S, and O (Corston-Oliver 2000:1). On the critical side, a more skeptical approach to the categories A, S, and O as tools for linguistic analysis is urged by Chafe and Mithun (1999). The discourse alignment of S with A in English, rather than with O, is argued by Kärkkäinen (1996); see also...
Among the things that a speaker may know about the verb *come in* for example, is that its S role provides a reliably usable slot for introducing a new human protagonist into a discourse. Likewise, the O role of the verb *meet* may serve a similar function in some detail is how particular cognitive-pragmatic contributions. What Preferred Argument Structure shows is that of certain syntactic roles, to the exclusion of others. From the perspective of grammar in use, argument structures are resources for speakers to exploit, for cognitive-pragmatic as well as semantic functions. Among the things that a speaker may know about the verb *come in*, for example, is that its S role provides a reliably usable slot for introducing a new human protagonist into a discourse. Likewise, the O role of the verb *meet* may serve a similar function. While each of these verbs obviously functions to describe a particular kind of event semantics, this is not inconsistent with the claim that on at least some occasions their use is partly, or even primarily, motivated by their cognitive-pragmatic contributions. What these and other functionally comparable verbs have in common may be less their semantics than their distinctive absolutive preference for certain patterns in the realization of argument tokens in discourse. But the description is meant to support a broader significance as well. From a functional perspective, Preferred Argument Structure can be seen to carry implications for, among other things, strategies for information management, the discourse basis of ergativity, discourse profiles of verb classes and constructions, argument realization, and the grammaticization of the system of argument structure.

One task that all speakers must confront is that of managing the flow of information in discourse (Chafe 1980, 1987, 1994, Du Bois 1980, 1985), whereby speakers introduce new information, track old information, and so on. As a consequence, all languages provide resources for information management. Among these resources may be counted certain aspects of grammar. What Preferred Argument Structure shows in some detail is how particular cognitive-pragmatic functions are regularly associated with certain syntactic roles, to the exclusion of others. From the perspective of grammar in use, argument structures are resources for speakers to exploit, for cognitive-pragmatic as well as semantic functions. Among the things that a speaker may know about the verb *come in*, for example, is that its S role provides a reliably usable slot for introducing a new human protagonist into a discourse. Likewise, the O role of the verb *meet* may serve a similar function (Du Bois 2003a). While each of these verbs obviously functions to describe a particular kind of event semantics, this is not inconsistent with the claim that on at least some occasions their use is partly, or even primarily, motivated by their cognitive-pragmatic contributions. What these and other functionally comparable verbs have in common may be less their semantics than their distinctive absolutive argument configuration, with its capacity to evade limiting cognitive-pragmatic constraints, and to contribute to strategies for information management.

From a typological perspective, one long-standing question is why there are ergative languages in the world — or even just why there are ergative subsystems in some grammars. One way of specifying this issue, as noted earlier, is to ask what motivates linking S with O. This should be recognized as a prime test for any proposed theory of argument linking, but most theories have either not addressed the issue at all, or have had little of substance to say about it. At the very least, Preferred Argument Structure introduces a new type of empirical finding, which establishes a certain distributional and functional commonality between S and O, in contrast with A (and in contrast with the pairing of S with A). The cross-

Significance

On one level, Preferred Argument Structure is simply a description of a statistical preference for certain patterns in the realization of argument tokens in discourse. But the description is meant to support a broader significance as well. From a functional perspective, Preferred Argument Structure can be seen to carry implications for, among other things, strategies for information management, the discourse basis of ergativity, discourse profiles of verb classes and constructions, argument realization, and the grammaticization of the system of argument structure.

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linguistic evidence cited above cuts across the ergative-absolutive and nominative-accusative language types to support the claim that the absolutive (S, O) role set constitutes the universally preferred locus for the introduction of new information. These empirical findings present an implicit challenge to most theories of argument selection, whether they explicitly claim to explain S-O linking or not. As I have argued elsewhere (Du Bois 1987a), the Preferred Argument Structure pattern of functional alignment provides part of an explanation for ergative-absolutive grammatical alignment. But it remains to be shown in some detail how this broad pragmatic motivation is to be integrated with the local lexicosemantic aspects of a verb-by-verb account of argument linking in split-ergative or active-agentive languages (Durie 1994b, Mithun 1991, Silverstein 1976, Van Valin 1990).

One interesting point about the constraints described is that they are not enforced by a rule of grammar. In most languages, violating them usually produces no penalty of ungrammaticality. Certainly, the statistical preference in spontaneous language use is clear, such that it is rare for a transitive clause to have both argument positions filled lexically, or to have a lexical A. But it is not impossible:

(57) WALT: ... My wife would write a check for ten dollars, *(sbc:fear)*

(58) JOANNE: and a lot of the kids mentioned Ana. *(sbc:deadly)*

It seems that when there is legitimate occasion to produce a two-place predicate with both arguments lexically realized, the result is not stigmatized as ungrammatical. The absence of perceived ungrammaticality would seem to preclude the postulation of any categorial rule of grammar. (For some linguists this fact alone might seem to vitiate the constraints' relevance for grammar, but I would urge against such a hasty conclusion.) Nevertheless speakers tend strongly to avoid such argument realizations. One way to characterize this avoidance is to frame it in terms of soft constraints, representing strong but not inviolable statistical preferences. (Compare the use of violable constraints in Optimality Theory.) Moving beyond a merely descriptive generalization, we could try to show that the rarity, but not impossibility, of such clauses is explained by the fact that they push, but do not necessarily break, the limits of routine on-line cognitive processing capacity. Another approach would take a closer look at the kinds of noun phrases that tend to appear in A role (e.g. *my wife, a lot of the kids*) to try to show that they are just those which are relatively high on the scale of accessibility (Ariel 1990, 2001), and so make relatively low demands on cognitive processing resources. The constraints would be redefined in such a way that the observed A role noun phrases are not problematic after all, hence reference is made to scalar values for accessibility. Both of these lines of inquiry (which are not mutually exclusive) seem worth pursuing further.

The Preferred Argument Structure constraints as stated seem to be generalizations about syntactic roles like A, S, and O. But they can also be understood as implying generalizations about the discourse profiles of verb classes or predicate
classes, taken in a broad sense, and this could provide a clue to their present significance and future potential for development. The broadest division of predicates into classes would presumably be into intransitive, transitive, and ditransitive verbs, or one-, two-, and three-place predicates. Preferred Argument Structure shows that each predicate class at this level has its own distinct grammatical-pragmatic ecology, or discourse profile, as it were. Ditransitive verbs, for example, require that two of their argument positions be more or less strictly contained in order that the third may be pragmatically "open". Here it becomes useful to extend the notion of co-argument effects (see above) to include pragmatic factors, as well as semantic. The presence of new information in one argument slot of a predicate affects other co-argument slots of that predicate by precluding their use for realizing new information. In this respect one can interpret the development from intransitive to transitive to ditransitive verbs (Tomasello 1992) as a gradual growth in complexity. Grammatical complexity-building must take cognitive-pragmatic co-argument effects into account if it is to succeed. The complexity of a transitive or ditransitive verb, modest as it is, is achieved at the cost of constraining all but one argument position to express only accessible information. The perspective of complexity-building can be extended to causatives and more complex syntactic constructions at various levels.

Preferred Argument Structure lends itself well to a constructional approach to argument structure, of the sort advanced by Goldberg (1995, forthcoming). Goldberg proposes that argument structures are best understood as constructions which have a reality independent of individual verbs. Argument structure constructions may assign semantic (and presumably pragmatic) values to each of their argument positions, in addition to bearing meaning as a whole. They combine with semantically compatible verbs in well-defined ways to form particular verb-argument structure, of the sort advanced by Goldberg (1995, forthcoming).

The idea that argument structures have a reality independent of the specific verb (see also Fillmore 1968:27, García Velasco and Hengeveld 2002, Hengeveld forthcoming) seems quite compatible with the kinds of pragmatic-grammatical correlations we have been describing. From this perspective, Preferred Argument Structure can be seen as setting general constraints on which cognitive-pragmatic configurations can be linked to which argument structure constructions. Each high level argument structure construction (at the generalized level of valence types, for example) can be seen as having a pragmatic configuration associated with its argument positions as part of its value. To the extent that a given lexical verb, like break or give, can be used in more than one such argument structure construction, it will inherit the cognitive-pragmatic properties associated with that construction, thus allowing it, for example, to play different roles in strategies for information management depending on its argument structure.

As an empirical generalization about discourse data, Preferred Argument Structure identifies what we might call the "discourse profile" of verb classes at the broadest level of valence classes. The discourse profile of a grammatical type (such as the transitive or intransitive verb) represents the full array of systematically co-occurring elements in natural discourse, whether these be lexical, morphological, prosodic, syntactic, semantic, or pragmatic. The most consequential co-occurrences are those which statistically predominate in the "token aggregate", the mass of experienced linguistic form-meaning combinations (Du Bois 1987a). But if we take seriously the notion of verb classes or verb clusters (Goldberg 1995:135), there is good reason to pursue a finer-grained discourse profile of particular subsets of transitive or intransitive verbs than that currently offered by the broad-brush version of Preferred Argument Structure. (On the differentiation of sub-categories within S, for example, see papers in this volume and Durie (1994a), Fox (1995), and Bentivoglio (1990). At this level we are talking about potentially very specific discourse profiles providing more detailed information, even down to the level of individual verbs, such as about particular types of complements and their discourse-pragmatic correlates (Thompson 2002).

Finally we might ask: Is the term Preferred Argument Structure justified? Or should it rather be called Preferred Argument Token Realization (or some such)? Butt and King make a case for the importance of going beyond argument structure to describe argument realization, by which they mean that "the precise surface realization of any given argument must be accounted for" (Butt and King 2000a:5). The constraints we have described undoubtedly pertain to argument realization in this sense, though perhaps not in the way Butt and King intended. The constraints can also be seen as governing argument tokens rather than just argument types, at least at one level of interpretation. However, I maintain that the original Preferred Argument Structure label remains appropriate, although like any label it cannot be expected to provide an adequate capsule description of the theory and methodology associated with it. To be sure, from a traditional argument structure perspective the four constraints appear merely to govern the preferred morphological and pragmatic realization of noun phrase tokens in various argument roles. If we hew to the static conception of argument structure as being provided with one fixed valence target for argument linking (e.g. as given by syntax), then the preferences defined by the four constraints may indeed appear grammatically inconsequential. If argument structures are assumed to be already in place, how their individual noun phrases are to be realized would seem a kind of afterthought — a "late" rule, a surface enhancement,
a matter of cognitive style or speech production (which some would dismiss as performance) that ends in the local choice of a lexical noun or a pronoun in a particular morphological case form. But this makes sense only if we take argument structures for granted, as given either a priori or by some supposedly autonomous source like logic, syntax, or event metaphysics (Davis 2001, Dowty 1991, Levin 1999). From a more dynamic linguistic perspective, the functional demands of discourse preference may influence the “target” of argument structure itself, through such pragmatically driven processes as perspective and construal (Chafe 1977, Fillmore 1977a, Langacker 1995), with immediate consequences for event demarcation and argument inclusion (Carlson 1998). Taken together the four constraints amount to an effective preference, in some sense, for certain argument structure types. In fact, there is just one valence or argument structure target that turns out to be fully unconstrained in both grammatical (morphological) and cognitive-pragmatic dimensions: the one-place predicate. Other available argument structure types (transitive, ditransitive) are subject to various limitations in grammar and cognitive pragmatics. The preference identified by Preferred Argument Structure for one-place argument structures as the fundamental unconstrained architectural framework for linguistic function has large consequences throughout the grammar (Du Bois 1987a: 830–832), which are just beginning to be explored (Cumming 1994, Thompson and Hopper 2001). In addition, there are consequences for complex syntax, as when the “open” absolutive (versus “closed” A) freely accommodates grammatical expansion processes that build complexity, such as relative clause formation (Fox 1987, Fox and Thompson 1990). Over time such factors may influence the grammar of argument structure at the level of individual verbs, verb classes, and beyond, via general processes of grammaticization. Here the concept of discourse profile becomes especially important. Discourse profiles set the agenda for subsequent grammaticization. They represent the deeper regularities of discourse which activate or guide the grammaticization forces that in turn reshape the grammar of argument structure in the domain of types, affecting even typological systems of grammatical relations like the ergative or accusative.

One problem with emphasizing the role of new information introduction as a pragmatic correlate of syntactic roles, and a motivation for absolutive alignment, is that in spoken discourse, new information is not as common as is typically imagined. Speakers actually spend a lot of time continuing topics that have already been introduced. Thus they can speak for some time without introducing a new noun phrase. A close look at the counts in Table 5, for example, reveals that even though the S role freely allows new information, in general the majority of arguments in S express given (or accessible) information. Typically, given/accessible arguments are far more common than new ones in spoken discourse, and more evenly distributed. Still, if we keep focused on which aspects of the discourse distribution are likely to have the greatest impact on the grammaticization of argument structures, the conclusion must be drawn that what matters most is not the undifferentiated proliferation of unmarked elements (such as pronouns or given information) across all structural contexts, but rather the more limited and specialized distribution of marked categories — such as new information noun phrases — which show a well-defined avoidance of specific argument positions. Here we touch on the sensitive question of how pragmatic function can be said to relate to syntactic structure. Because the issue is an interesting one for theories of the functional motivation and grammaticization of argument structure, it is worth pursuing further, once we have explored one particular version of the popular linguistic metaphor of grammar as architecture.

**Architecture for function**

The Bauhaus slogan held that “form follows function”, but let’s not exaggerate how close it follows. There is a degree of connection between form and function but also, of necessity, a degree of independence. The design of any edifice cannot fully determine in advance exactly which functions will be performed in it, if it is to remain usable. A homely analogy is in order here. The stereotypical modern house contains a living room, a kitchen, some number of bedrooms, one or more bathrooms. In the kitchen are found certain features specialized for cooking (stove, oven, sink), while a different set of features typifies the bathroom (toilet, shower), and other rooms have their distinguishing affordances as well. We have no hesitation in saying that each of these rooms is adapted (by intentional design in this case) to the functions realized in it. Cooking takes place in the kitchen, sleeping in the bedroom, bathing in the bathroom. Yet the exact form of each activity is not fully determined by the facilitating structures. There is no way to predict in advance every action that will take place in the kitchen, and the architect who tries too closely to adapt the form to its ostensive function would create nothing but a straightjacket. But how does this homely stereotype correspond to reality? If we were to empirically monitor the time devoted to various activities performed in each room, we might well encounter some unbecoming facts — that in many kitchens, for example, the single commonest activity is conversation. Does this mean that the kitchen can no longer be considered as adapted to cooking? Turning things around, if it turns out that conversation is prominent all over the house but cooking occurs almost exclusively in the kitchen, we restore some sense to the meaning of architectural adaptation. Certain marked activities, like cooking, make considerable demands on supporting structures and hence influence their adaptation disproportionately. Other activities like conversing are not so particular about their requirements even though, or perhaps because, they are widespread. Likewise
in grammar, a marked function that generates intensive demands on cognitive resources, such as the introduction of new information, will motivate locally specialized grammatical configurations, even if it turns out to be numerically overshadowed by a function more pervasive, yet unmarked and territorially indiscriminate, such as the tracking of previously introduced referents.

Consider the relation between form and function for the absolutive category (including the equivalent S/O role set in accusative languages). Although the absolutive can be shown to be the primary locus in spontaneous discourse for introducing new information among core arguments, it still does not reliably signal new information as such. It simply accommodates it. Thus it contrasts with the A role, which does not freely accommodate new information. As the cross-linguistic evidence on the distribution of new information among A, S, and O shows, A is strongly avoided for new information, while S and O are not. But neither do S and O show a correlation with new information that approaches anywhere near totality. In fact, for many languages and genres the commonest sort of referential form in S and O roles may be reduced forms (pronoun, cross-reference, zero), expressing given or high-accessible information. (In A role, of course, given information is even more frequent.) Does this mean that absolutive doesn’t have a functional connection with new information? Only if we think that linguistic function must always be the (Saussurean) “sign function”, as opposed to what I call the “structure function” (Du Bois 2003a). The structure function does not signal, but simply provides structural facilitation for, a given function. New information represents a cognitively demanding processing task, so it is useful to be able to predict where it will happen — if it happens. The absolutive category can be seen as reserving a structural locus for this cognitive-pragmatic processing. If on occasion the locus isn’t needed for such demands, still there was no harm in being prepared. (And the co-existing event-semantic functions of the argument structure are still usefully implemented.) In general, argument structures can be seen as providing a predictable locus for unpredictable work. As noted earlier, accessible information is pervasive everywhere in the clause, and (like conversation in the house) can be taken as a more or less predictable default. But its very distributional promiscuity means that it does not exert the kind of localized and specialized functional pressures that new information generates. New information, being both costly in processing resources and localized in occurrence, exerts disproportionate selectional pressure on argument structures. This selective pressure has implications for the grammatical evolution, through general processes of grammatization, of the linkage between structure functions and the various constructions and verb classes.

When I speak of grammar as architecture for function I do not wish to invoke the grand scale implied in the usual talk about architecture of language, mind, or brain. Such metaphors tend to envision fixed structures and large centralized processing units (e.g. syntax) with pipelines channeling their output to (or input from) the next large component (e.g. logical form) in the assembly line. In comparison, my architectural frames are of modest scale, each covering no more than a single local grammatical structure (argument structure, construction, etc.), and they are rapidly reconfigurable. To employ a particular verb in discourse is to invoke via its argument structure a simple functional architecture, providing a local framework for linguistic action: for example, facilitating the introduction of new information or its subsequent tracking through the discourse, at the same time as semantic reference is made to an event or relation. But when these simple multi-functional architectural units are multiplied many times over the combined effect can be powerful. Variable populations of reconfigurable verbal and constructional resources are central to the process of building grammatical complexity from the bottom up, within a total ecology of grammar.

The grammar of argument structure constitutes architecture for function, inasmuch as it facilitates the enactment of multiple functions simultaneously. It provides the stability and generality needed for accommodating partly unpredictable high-demand cognitive tasks, like new information introduction, while at the same time and with the same structures fulfilling the expressive functions of predicative semantics. Rather than conceiving argument selection in terms of one-way causal effects linking taken-for-granted referents to assumed fixed targets, a more apt model might be one of co-selection between referents and argument structures, within an ecology of grammatical structures and functional demands like event verbalization and information management. Co-selection leads to co-evolution, as argument structures evolve to handle the semantics of event structures of the sort now widely attributed to them, but also simultaneously manage the distribution of cognitive attention for discourse-pragmatic functions. That there is so little conflict in actual language use between at once satisfying the semantic and cognitive-pragmatic demands calls for some sort of explanation. In part it is because of the strong discourse correlations that tend to make cross-domain pairings like agent and topic, or absolutive and new information, roughly compatible. But this can only work if there is a vast lexical conspiracy of co-evolving verbs, verb classes, and constructions that can guarantee their compatibility, for the most frequent patterns of demanding use.

On this understanding the grammar of any language provides speakers with, among other things, a large repertoire of low-level architectural frameworks for the organization of semantic and cognitive-pragmatic function in discourse. In addition to compatibility with verb-specific meaning, argument structures provide, in the cognitive-pragmatic dimension, a predictable locus for unpredictable work. The array of distinctive architectures, though reasonably stable over time, is highly susceptible to reconfiguration along new lines, through complex processes of grammatization. Populations of verbs and constructions may be seen as organized into collectives based on similarity. Membership in these collectives may be
restructured over time, as different groups compete to recruit new members based on similarities in semantic or discourse-pragmatic function, or more often, both. While the implications of conceiving grammar as architecture for function can only be hinted at here (see the papers in this volume), the idea may nevertheless provide a useful key for thinking about the nature of the connection between grammatical structure, semantics, and cognitive-pragmatic function.

Conclusions

Argument structure defines for itself so pivotal a locus in the organization of language that its influence is felt broadly. Because it impinges on so many linguistic domains, it attracts the attention of diverse researchers in language and cognition, who bring to the topic a variety of distinct concepts, methods, models, questions, and theoretical preoccupations. Still, the fans don’t always talk to each other. As successful as it has been, argument structure research still suffers from a division into separate spheres, where each group tends to pursue its favored problems and explanatory agendas with little awareness of the others. It will take a substantial investment of labor and insight, as well as communication and collaboration across specializations and disciplines, to work out the full scope of argument structure’s contribution to language. While it is too early to draw any definite conclusions regarding the precise role of argument structure in organizing grammar and use, I can offer my preliminary observations on why a collaborative effort to understand argument structure is likely to be worthwhile, and how the most valuable results are likely to be obtained.

This paper raises three closely linked questions. Why is argument structure important? Which aspects of recent approaches can be usefully combined to forge an integrated framework for understanding argument structure? Where does the perspective of pragmatics and grammar in use fit into the argument structure picture? I suggest that the importance of argument structure stems from its position at the crossroads — of meaning and pragmatics, lexicon and grammar, system and use. We could go so far as to say that argument structure creates this intersection and is created by it. Argument structure would not be what it is if it did not have to manage relations across disparate domains, forging compromises between systems with partly divergent and partly convergent demands, which are yoked together because grammar in use is useless unless it can meet all the demands simultaneously. In natural language it is not enough to come up with separate solutions for the problems of semantic expression, of referential pragmatics, of cognitive processing and speech production. There must be one integrated solution for all of these problems at once — though it need not be a simple one.

Argument structure is the focal point of this integration. Argument structure represents the most fundamental level at which relations are established between an event and the differentiated participants in that event. This brings with it the respective demands of verbalizing events and tracking participants. Prototypically, the event is an unrepeatable phenomenal moment, evoking issues of causality, aspect, time, manner, and such. In contrast, the event's participants have a stable identity which allows them to be tracked (or not) across successive predications, and hence treated as identifiable or not, given or new, and so on. Discourse, which is to say grammar in use, is where all these functions are realized at once. Discourse thus represents the critical environment for the evolution of argument structure and its integrative functions. Foley and Van Valin observe that "discourse, clause structure, and verb semantics are all intimately interwoven" (1984:373). The challenge is to understand just how the multiple functions of argument structure interweave across the domains of semantics, pragmatics, grammar, lexicon, cognition, and interaction to grammaticize into a verb-based repertoire of architectures for function.

Here it is useful to recall Fillmore's two questions for argument selection (1977b:73). The second question calls for an account of how each participant role in the set of co-arguments is linked (e.g. via ranking) to a particular grammatical role. But the prior question requires an account of how the initial co-argument set is selected from among the full range of participant roles present in the scene or event. If both the quantity and identity of arguments that are to be included in a particular event verbalization are contingent on cognitive-pragmatic factors like perspectivization and construal (Chafe 1977, 1994, Langacker 1987, 1991, 1995), as well as on language-specific grammatical encoding preferences (Slobin 1996, Talmy 1985, Talmy 2000), then valence can no longer be taken as a given, nor can the grammatical roles that constitute the syntactic target for linking. If correct, this is a major consequence, implying that argument linking is aiming at a moving target. A complete account will thus need to recognize the interaction of event-centered semantic factors and cognition-centered pragmatic factors, as verbalizable events are carved out — with the aid of linguistic argument structures — from the flux of human experience (Hopper 1997, Thompson and Hopper 2001). To clarify what kinds of factors are at stake under the broad rubric of argument selection, I have proposed to distinguish the processes of argument inclusion, ranking, linking, targeting, and realization. Cognitive-pragmatic factors like perspectivization and information management have their most obvious and direct impact on the "initial" and "final" processes of inclusion and realization, respectively, but may well participate in most or all of the processes, if only indirectly. For example, the quantity constraints of Preferred Argument Structure could be seen as inhibiting any argument selection processes that would tend to result in new information arguments being selected for each of two core grammatical roles. And the co-argument effects exhibited in semantically-based argument ranking or linking processes are paralleled by
pragmatic co-argument effects, for example, when introduction of a new referent in one argument role precludes its introduction in another.

The contingency of argument structure fits well with the current view of the lexicon as more dynamic, constructed, and creative than was previously thought (Bresnan 2001, Butt and King 2000b, Davis 2001, Hopper 1997, Langacker 1987, 1991, Levin and Rappaport Hovav 1995, Pustejovsky 1995, Talmy 1985, 2000, Thompson and Hopper 2001). Researchers from a variety of points of view are asking how words are built up in accordance with cognitive, semantic, and pragmatic principles, reflecting a perspective that could be called lexical constructivism. One crucial move has been that of Goldberg (1995), whose constructional approach to argument structure effectively frees argument structures from verbs. Once the various argument structures are recognized as independent constructions in their own right, there can be greater flexibility in combining them with verbs — for example, to produce transitive and ditransitive versions of the same verb. Among the factors motivating the choice of one argument structure construction over another for a particular verb is likely to be pragmatics (Goldberg 2001). Here Preferred Argument Structure can play a significant role, via the concept of discourse profiles. The Preferred Argument Structure model makes definite predictions about the grammatical and pragmatic configuration of argument realizations in any argument structure construction. The empirical basis for these predictions lies in the various discourse profiles documented for intransitive, transitive, and ditransitive argument structures. The constructional account is well designed to be extended to more specific, fine-grained constructions, including those tied to individual verbs or verb classes. Thus an important direction for future Preferred Argument Structure research will be to develop, for each such construction, the correspondingly more detailed discourse profiles of pragmatic and grammatical correlates.

One research avenue opened up by lexical constructivism concerns complex predicates (Ackerman and Weibelhuth 1998, Alsina et al. 1997, Durie 1997, Evans 1997, Hopper 1997, Thompson and Hopper 2001). This includes multi-verb constructions which are said to function more or less like a single predicate, and thus may have, under some interpretations, a single (complex) argument structure. As the constructional approach to argument structure (Goldberg 1995) extends to such complex predicates (as well as to other complex constructions), Preferred Argument Structure will extend naturally into the same territory. As structural complexity increases, Preferred Argument Structure has two roles to play. In its current form it sets definite limits on the quantity and role of new information that may be realized in any argument structure. From this perspective, complexity-building begins already with the transition from intransitive to transitive, inasmuch as the latter represents the first level of complexity at which an argument position must be pragmatically constrained (i.e. the “closed” A role). As referential-semantic complexity within a single argument structure continues to increase (through ditransitives, complex predicates, and so on), the overall cognitive processing limits are predicted to remain constant, which in turn predicts that additional argument positions must be constrained (e.g. the indirect object). But the empirical determination of the Preferred Argument Structure and discourse profiles for complex predicates remains to be determined by future research. This then represents the second role for Preferred Argument Structure research: to document the discourse profiles of complex predicates, including detailed pragmatic and grammatical realizations for all argument positions.

I have made a point of foregrounding the issues raised by ergativity, especially the question of what motivates linking S with O to form the absolutive category, while setting A apart as the ergative. This may seem a minority linguistic type, to be dealt with when convenient. However, ergativity should not be seen as a problem to be “handled”, but as a gift. The gift comes to us from typological research, which makes us aware of systematic facts about the world’s languages and the diverse ways they resolve the multiplex demands of language use. The fact is, I would not likely have discovered Preferred Argument Structure in my own native language, even though it is there. Being confronted with the ergative structure of Sakapultek Maya (Du Bois 1981) — and working from a theoretical stance that seeks functional explanations for grammatical structures — led me to ask what could motivate a grammatical system that has remained stable throughout four millennia of change in the Mayan language family (Du Bois 1987b). Typology contributes not only instructive problems but also some of the tools for solving them, and here Dixon’s (1972) deconstruction of the subject into A, S, and O is pivotal. Argument structure research would stand to gain considerably from giving up loose talk of “subject” selection in favor of a consistent discrimination between S and A — except, of course, where subject (S=A) has been explicitly justified as such. Equipped with such tools, the further gift of split ergativity (Silverstein 1976) is likely to yield profound consequences for the understanding of argument structure — with implications for all language types.

How does the pragmatics of grammar in use fit into the argument structure picture? The history of argument structure research is ambiguous on this question, reflecting a certain ambivalence among practitioners toward the influence of pragmatic factors on argument structure. Frege’s observations which began this chapter are impressive in the amount of pragmatic insight they pack into a few sentences, and his specific analysis of co-argument effects in the salience competition for subject versus object selection (1879 [1960]:14–15) closely prefigures several modern analyses (Fillmore 1977b, Langacker 1995:20). Yet he chooses to set this aside in favor of a logical conception of argument structure as an instrument for “pure thought”. The same tension seems to arise again and again, though not always with the same outcome. Fillmore (1977a, 1977b) recognizes a role for
pragmatic factors and embraces them in his model of argument selection. In contrast, Dowty (1991:564) recognizes pragmatic factors, such as topicality for subjects, but chooses to set them aside as not pertinent to argument structure, placing the entire explanatory burden instead on event entailments and semantic proto-roles (cf. Davis 2001:126–127). More recently the broad interest in lexical constructivism has opened up a more dynamic view of argument structure as responsive to multiple factors, which makes it natural to include pragmatic determinants among them. Especially the constructional approach of Goldberg (1995, forthcoming) is congenial to pragmatic factors, allowing for the more or less direct translation of Preferred Argument Structure patterns into properties of individual argument structure constructions. The flexibility of complex predicate formation also tends to open up argument structures to multiple potential influences, which would naturally extend to cognitive-pragmatic factors. Linguists have repeatedly recognized some kind of role for pragmatic influences on argument selection, but have not always agreed on the best way to account for the relationship. It seems that combining Preferred Argument Structure with a constructional approach to complexity may help clarify how pragmatic and semantic factors interact in a theory of argument structure.

It is often assumed that a lexical word (e.g. a verb) and its semantic meaning are more basic than how the word is used in context (e.g. how a given verb may be used to manage the pragmatics of information flow in discourse). On this assumption it would seem logical, in accounting for argument selection, to address the more basic matter first, or even exclusively. Other linguists see no harm in considering pragmatic effects on argument realization, as long as this is reserved for a suitably late stage, after the semantics of verbs or events has been consulted to determine the argument structure. But this is to mistake the linguist’s problem for the speaker’s problem. Linguists like to begin with a form, and ask in what ways it can be used. For example, a verb makes a typical starting point for the linguist’s inquiry. Speakers, on the other hand, start with something to say, and ask what forms will help them say it. And in the actual act of speaking, there is not only an event to be verbalized, but also information to be managed. In many discourse contexts this is likely to include a prior commitment to a continuing topic. Thus it often happens that, perhaps surprisingly, the subject argument may very well have been chosen already in the previous clause, before the question of choosing a verb for the current clause even comes up. In this sense it is risky to take for granted the standard assumptions of the linguist’s verb-first approach, if we are to take into consideration the speaker’s observable practices in managing extended discourse. Actually, at this stage of our knowledge about verbs’ semantic and pragmatic functions it cannot be said with certainty which, if either, has consistent priority over the other. To understand argument structure, then, it would seem judicious to include both discourse pragmatics and event semantics in the picture, and to attend particularly to their complex interactions in grammar in use. In the end, argument structure may best be understood as standing in the middle, mediating the competing demands of the local lexicosemantics of event description and the global pragmatics of cognitive processing and coherence.

From a cognitive and functional perspective, argument structure can be seen as a structure of expectations triggered by a form. Among other things, argument structure provides a predictable locus for unpredictable work, such as the introduction of new information in a clause. Against this background, where does Preferred Argument Structure fit in? Preferred Argument Structure is neither a syntactic structure nor a discourse structure, but a preference in discourse for a certain grammatical configuration of argument realizations. But even a preference can contribute to the organization of expectations, for example, regarding where in the clause the heaviest cognitive processing demands will occur. There is now extensive cross-linguistic evidence suggesting that the Preferred Argument Structure patterning of arguments in discourse is deeply systematic, stable, and consistent across typologically diverse languages. And yet these discourse patterns are not reducible to any grammatical rule, but must be recognized in their own right. Taken as fundamental universals of the patterning of grammar in use, they have profound implications for the grammaticization of argument structure and of the system of grammatical relations.

Argument structure is now recognized as a key locus for theoretical integration across multiple dimensions of language. Semantics and syntax, lexicon and grammar, are already brought together, and I have argued here for the key role of pragmatics and language use in the argument structure equation. As argument structure research opens up further to the theoretical and empirical potential of lexical constructivism, complex predicates, constructions, acquisition, typology, grammaticization, and other new developments, it will become still more important to address argument structure in its fullest context of function, which is to say, in natural discourse. The implications are just beginning to unfold of understanding argument structure as grammar in use — architecture for function.

Notes

1. As with most of the examples in this chapter, the data here are taken from the Santa Barbara Corpus of Spoken American English (Du Bois 2000, 2003b). The most salient transcription conventions are three dots for a pause, (II) for in-breath, (TSK) for a click, @ for a laugh, = following a lengthened segment, and [ ] to mark the beginning and end of simultaneous speech. For additional symbols and conventions, see page ix. Some transcriptions have been slightly simplified in details of their prosodic and interactional transcription for the sake of clarity. For example, where an excerpted utterance overlaps with an utterance that is not included in the cited excerpt, the square brackets that normally mark simultaneous speech are left out, to avoid confusion. And some details of vocal quality, etc., have been left out where not relevant to the immediate point. In general, speaker names are pseudonyms. For each Santa Barbara Corpus
example, the title of the discourse from which it was drawn is cited in parentheses (followed, in some cases, by the line number in the transcript). The full transcriptions, along with their corresponding audio, can be consulted in (Du Bois 2000, 2003b).

2. To highlight the distribution of pronounal and lexical arguments, which are important for Preferred Argument Structure, I adopt the following conventions (for spoken discourse examples only). Pronouns are underlined; full lexical noun phrases are boldfaced, and verbs are italicized. These notations are intended only as highlighting, not as linguistic analysis — especially for verbs, where the complexities of modals, particles, complex verbs, copular predicates, and so on far exceed what can readily be represented by a simple notation like italics. Please note that all of these highlighting notations (underline, boldface, italics) represent morphosyntax only; none is intended to indicate a particular prosodic stress or accent.

3. Labels for thematic roles (agent, patient, experiencer, theme, stimulus, and so on) are used here for descriptive convenience (as seems to be common practice nowadays — cf. Ackerman and Moore 2001, Davis 2001), without committing to a position that these categories operate as such in processes of argument selection.

4. Most of the papers by Fillmore cited in the present paper have been collected in one volume (Fillmore 2002).

5. One could say that the research program laid out in that paper is now coming to fruition in research on frame semantics (Fillmore and Baker 2001), which demonstrates significant relations between lexical semantics and argument structure, via their grounding in relation to the larger "scene"-level construct of the semantic frame.

6. The latter question was more fully developed as follows:

   When two or more elements from a scene get realized in the associated sentence as members of the nucleus, are there general principles that determine which of these is the subject, or first term, and which is the object, or second term? (Fillmore 1977a:94)

7. Fillmore's scenes and frames also have a broader application than events as currently conceived, in that they can account for the conceptual relations of nouns and other categories, not just verbs (1977a, 2002).

8. In this light I will sometimes speak of a noun phrase as being selected for a particular "argument role" where others might speak of a syntactic function like subject or object. This usage seems compatible especially with Goldberg's (1995) approach to argument structures as constructions (see below).

9. Adapted from Du Bois (2003a:62, Table 2.1). Sources for the languages cited are as follows: Hebrew (Smith 1996); Sakapultek (Du Bois 1987a); Papago (Payne 1987); English (Kumagai 2000); Gooniyandi (McGregor 1999). For further details see Du Bois (2003a:62, fn. 7).

10. Adapted from Du Bois (2003a:63, Table 2.2). Sources for the languages cited are as in the note for Table 2, plus the following: Spanish (Ashby and Bentivoglio 1993); French (Ashby and Bentivoglio 1993); Brazilian Portuguese (Dutra 1987); Japanese (Matsumoto 1997). For further details see Du Bois (2003a:63, fn. 8).

11. Adapted from Du Bois (2003a:69, Table 2.4). Sources are as for Table 2. For further details see Du Bois (2003a:69, fn. 13).

12. Adapted from Du Bois (2003a:70, Table 2.5). Sources are as for Table 3. For further details see Du Bois (2003a:70, fn. 14).


References


