Cognitax Tool Grammar: Re-factoring the Generative Program
A pervasive action dimension for linguistic description, theory and models [1][2]

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For a short introduction to the approach and concepts of Tool Grammar please consult the following publication (Smith L. , 2017): "On Tool Grammar", *Inference: A Review of Science*, Vol. 3 Issue 3 2017 In response to: Noam Chomsky "The Galilean Challenge" (Vol. 3, No. 1), a somewhat different version of which appears here in section 4.
http://inference-review.com/article/on-tool-grammar

This is a preliminary and frequently changing dynamic document responsive to reader critique and is likely not the latest version available by contacting the author. (Note the title has changed.[3]) The later version always supersedes the earlier and typically may include major revisions. Comments and challenges are welcome for future versions. The extended version under development is freely available on request from the author.

Change Log
- 2018-12-19
  - Two sections now published as journal articles
  - Inverted Number chapter expanded and updated, largely excised here
  - Reflexivization chapter expanded and updated, largely excised here
  - Added preliminary rough working section on ergativity.
  - Misc. changes

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[1] We are indebted for the incisive comments of readers who suggested constructive improvements even as the ideas presented here were sometimes at considerable variance with their own current working frameworks. We owe special thanks to the following for comments on either parts or the whole of this work: John Hewson, Paul Postal, Vit Bubenik, Pieter Seurens and Willem de Reuse.

[2] We had considered an alternative title for this paper since it seeks to explain malformation: "A Review of Verbal Misbehavior"

[3] From version 12.9 'Cognitax' replaces 'Pragmatax' to clarify that Tool Grammar is distinct from pragmatics, as well as separate work that may refer to grammatical tools. Both were absent from the title in an earlier version.

Operative Motivating Hypotheses of Tool Grammar

1. A modest change in the generative grammar paradigm adverting to structural intention results in a superseding architecture enabling oversize new descriptive and explanatory advantages, as well as reintegration within larger theories of cognition. This remedies the difficulties arising from a generative model of cognition which has no inputs.

2. There exists an empirically evident necessity for representation of linguistic structural action intent which has been generally overlooked in the theory of language, including centralized configurational syntax in the generative program. A matahematical system without inputs is ill-suited to model a human generative process. Linguistic structural actions are atoms of human language: they write on a mental blackboard to which linguistic (trans)formations and insertions refer.

3. Linguistic structural action intent extends the basic Chomskyan focus on linguistic creativity (unbounded generation from finite means) to a new level of representation useful for explaining and constraining the inventive means by which the species-specific features of human language are effected Theoretical gains are sought by extending the Chomskyan idea to generation of structure from intent.

4. The inclusion of intention in linguistic rules both enables solutions of resistant and intractable problems, and otherwise enables a wider set of more generalized and more natural solutions while probing explanations for the profoundly important syntactic observational effects uncovered by generativist methodology (e.g. locality, crossover, C-command, control).

5. The exclusion of linguistic intention and action from generative rules introduces artefactual complexity and precludes the strongest possible natural constraints on characterizations of the human faculty of language.

6. Theorizing based on linguistic action intent leads to thinner, simplified, more directly empirical argumentation compared to the indirections necessitated by complex syntactic analysis based on central configurational syntax.

7. The inclusion of linguistic action intent in generative rules enables a deepening understanding of the role of generative constructs such as C-Command and Merge in the computational facility which underlies human language, revealing a new level of significance for Minimalism's most basic claims.

8. Functional explanations based on linguistic intent for a wide range of unacceptable sentences contribute to an understanding how human languages are readily learned largely in the absence of exposure to negative data.

9. Careful examination of linguistic intent as a methodology can greatly reduce the

entropy of syntactic, semantic, and pragmatic theory by independently explaining a plethora of ill formed sentences in a straightforward way, leaving a more tractable set of separate theoretical problems for these disciplines.

10. Scientific validity is enhanced by revising the architecture of generative linguistics from a bi-directional sound-meaning connection to a functional connection between linguistic action intention and external linguistic representation.

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1 Introduction and Summary[4]

Are there alternate paths to explanatory theories based on extensions or revisions of Chomsky's programmatic axioms and architecture of linguistic competence? Specifically, might scientific validity be enhanced by re-factoring the architecture of generative linguistics from a directly mathematical sound-meaning connection to a functional connection between linguistic intention and linguistic expression? Can the operational presence of structural intention in generative grammar illuminate further the fundamental significance of C-Command and Merge operations of the Minimalist Program? Might linguistic structural intent extend the basic Chomskyan focus on linguistic creativity (unbounded generation from finite means) to a new level of representation useful for explaining and constraining the inventive means by which the species-specific features of human language are effected? Can theoretical gains be achieved by extending the Chomskyan idea to generation of structure from linguistic intent oriented more to the creative generative process of sentence creation than interpretation by the listener? Is Chomsky's profound attention to the creativity of human language enhanced by extension to the domain of linguistic structural intent?

The main thesis of the present work is that there exists an empirically evident necessity for the representation of linguistic structural intent which has been generally overlooked in the theory of language, including notably centralized configurational syntax in the generative program We propose and motivate Tool Grammar[5], in which a sentence is an action, a performance wherein intention is central rather than syntax A sentence intention is a formative set of decisions for external representation of thought by means of highly constrained, conventional, interlocking structures and processes, which we call 'tools' Each tool is an intentional device for specific effect in the process of utterance generation, distinguished from the traditional concept of a linguistic 'rule' by the explicit specification of intent added to the standard structural input and output conditions. The data essential for motivating linguistic descriptions is thus enhanced by explicit field transcriptions of evident user action and intent using a controlled scientific vocabulary Tool Grammar (TG) postulates that sentence generation exhibits linguistic cognitive actions most fundamentally and syntax processes more procedurally, parallel to but distinguished from the Chomskyan hypothesis that humans are fundamentally "syntactical animals". (Searle, June 29, 1972) The crux of resolution for this contrast is whether TG better can enable stronger constraints on the definition of human language than more rigidly syntax-centered accounts A revision of the architecture of competence shifting away from the strict centrality of syntax can increase the potential for explanatory power in the generative program.

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[4] We recognize that Shakespeare's admonition will apply as much to what might be said here as it is to what has gone before: "There are more things in heaven and earth, (…),
Than are dreamt of in your philosophy. " Hamlet (1.5.167-8)

[5] The term "tool grammar" (TG) is intended as a handier nickname for "Instrumental Grammar". Importantly, the term 'tool' is not used in any anthropological, archeological, anti-generativist, or reductionist sense, but only to signify that in the formation of a sentence a speaker has access to an array of devices, lexical and structural, for the purpose of externalizing an intended representation of meaning. Since TG does not derive from the toolkit approach of (Culicover & Jackendoff, 2005) or other proposed systems presented as tool sets we sometimes identify it as Cognitax Tool Grammar.

Several specific conceptions of language characterize the TG approach to linguistic analysis

- While the Generative Program has not always built on a clear definition of the basic units of language, TG defines a sentence as that externalized communication structure which carries the selective representation of meaning resulting from the targeted set of speaker decisions made for the purpose of effecting linguistic intent. This definition orients the sentence to speaker action rather than interpretation thereby distinguishing linguistic intent from the wider phenomena of interpretation and implication that characterize receptive activities A language therefore is conceived not so much as a set of sentences that need to be accounted for, but a set of structures considered in the context of active decisions about structure and representation on the part of the speaker. [6]
- While the Generative Program has classically taken as its basic problem to develop a theory of the non-directional syntactic connection between meaning (logical form) and output (e.g. phonological form), (Chomsky, Sophia Lectures, 2014) TG re-factors the architecture of language competence rather to connect linguistic intentions to output as a directional generative process This at once adds an intention generator as a new module in the competence framework and also defines a new relationship to truth functional interpretation semantics and the study of implication For TG, the meanings hearers take from an utterance, which are evidently various and diverse, involve a different set of processes from the speaker's intentional engagement to represent particular meaning structures This means that the various interpretations that might or might not be taken from a particular utterance warrant a separate analysis from that of the representation the speaker intended to make Another consequence of this re-factoring is that the source of creativity and recursion is moved outside the purveyance of syntax to the intention module.

TG holds that language has the external representation of meaning as a purpose and tools as a means of action Natural constraints on the inter-compatibility of tools render many rules and constraints on configurational syntax unnecessary, since unacceptable sentences often reflect the incompatible misapplication of tools A broad swath of linguistic ill-formedness can be attributed to structures involving incompatible intents.

As an illustration, the following examples provide a taste of how the intention of the passive tool can conflict with the intentions of other tools: the passive structure, drawing attention away from the agent, is vulnerable to conflict from a tool centering on the agent.

> Al visited the sick woman.
> The sick woman was visited by Al.
> What was surprising about Al was that he visited the sick woman.
> *What was surprising about Al was that the sick woman was visited by Al (him).

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[6] The development of a formal definition of the word is implicit in the procedures and results of TG but is not elaborated here. Suffice it to characterize a word as a prepackaged structure that is merged into an incrementally expanding hierarchical structure as a speaker makes decisions of representational and structural intent. The means by which words are selected in accordance with pattern matching against internal semantic representation are sufficiently involved and interesting that they deserve separate treatment not undertaken here.

We observe here incompatibility between tools in opposition, at cross purposes, to both add and take away special attention to the agent This is one tip-of-the-iceberg example of the myriad issues, far beyond the simple topic/focus conflict seen here, that can be handled in a straightforward way if intention is represented in linguistic rules When this approach is extended to many other areas of syntax, attractive and simplified solutions become available for a surprisingly wide range of problems

The operative hypotheses of this paper surround the question whether linguistic rules are preferably formulated in terms of linguistic structural intentions, a theoretical position that has perhaps not heretofore been fully examined to resolution. From a preponderance of diverse cases involving linguistic problems that resist authoritative solutions, we seek to demonstrate that linguistic theory is strengthened when it inclines toward incorporation of components of linguistic action and intention.

The goal is to show that the exclusion of linguistic intention and action from generative rules introduces artefactual complexity and undesirably precludes the discovery of powerful natural constraints on characterizations of the human faculty of language The inclusion of intention in linguistic rules both enables solutions of otherwise intractable problems and enables simpler, more natural solutions generally while probing explanations for the profoundly important syntactic observational effects uncovered by generativist methodology (e.g. locality, crossover, C-command, control).. Theorizing based on linguistic intent leads to thinner, simplified, more directly empirical argumentation compared to the indirections necessitated by complex syntactic analysis based on central configurational syntax TG argumentation, by adding a new dimension of recordable and verifiable data subject to independent validation, thereby enjoys resistance to the view that it is merely stipulative or reductionist and facilitates a new way of looking at generative grammar By accounting for a wide range of unacceptable sentences in terms of natural limitations on linguistic intent, TG contributes to an understanding how the complexity of human languages can be learned largely in the absence of negative data.

2 Re-factoring the Generative Program

To test our theses we select from among difficult and vexing problems in syntactic theory. We present and defend empirically transparent and radically penetrating mechanisms for these problems while rigorously constraining the notion of a human language in support of the primary Chomskyan goals of explaining infinite linguistic creativity from finite resources and rapid child language learning in the context of poverty of stimulus data We conclude that syntactic theory requires specification of structural intent in order properly to solve a set of the most difficult theoretical challenges.

When syntactic phenomena are understood to be conditioned by linguistic action/intent descriptors, difficult problems yield to straightforward solutions: conflicting intents yield ill-formed sentences. When generalizations are sought at an incorrect and incapable level of representation, unnatural and unnecessarily contrived solutions unavoidably result By incorporating intention action directives into linguistic structure building, syntactic problems generally acquire a facilitative utilitarian resolution: much of syntax is transformed into

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functional processes of cognitive mechanics Important fundamentals of syntax are reducible to a particular form of structural cognitive manipulation and syntax is no longer so autonomous a component of linguistic competence Much of the Chomskyan Weltanschauung and the resulting theories can be retained and revalidated, but much also is to be gained by re-factoring the organizational structure of linguistic science.

TG represents a sub-paradigmatic shift in syntactic theory to the extent it can be integrated to the minimalist program Some tenets are revised but important elements are retained. The concepts of poverty of stimulus, universals, ill-formedness, recursiveness from Merge, interpretation, generative capacity, filtering, and so forth are reapplied in an alternative architecture of linguistic competence

We present a range of arguments from linguistic and poetic data that action intents are at the generative core in a set of syntactic processes When the intentions underlying structural decisions are examined, separate from the internals of syntax, semantics and pragmatics, all three may be subject to simplification, potentially increasing the scope of constraints on the operations of human language.

The entire enterprise of investigating linguistic intent is seen finally to highlight the thesis that constructs such as C-Command and a lexical merge operation may be deeply fundamental to a linguistic ability wherein tools are used to produce sentential products TG brings out the essential theoretical importance of a Merge operation since it is logically inescapable that lexical choices in any realistic process of sentence generation become assembled into hierarchical structures, and the latter are among the best motivated of linguistic theoretical constructs. Merge is a tool for assembling other tools.

To the extent that the generative program can provide explanations in terms of universal grammar, it becomes less perplexing and paradoxical how children can learn highly complex natural languages so expeditiously, while at the same time developing intuitions about classes of sentences that they deem unacceptable despite never having been exposed to those them Since TG provides an architecture and modularization oriented to linguistic intent and affords simple and natural explanations for many types of ill-formedness, it has the potential to contribute to an understanding how languages are learned in the absence of this negative data.

It may bear emphasizing that the Cognitax Tool Grammar approach to human language builds on, rather than undermines, the generative program of the Chomskyan School of linguistics The main impetus is to use as a database the vast collection of linguistic effects to be found in work on generative syntax These would not be available and could not have been conceived were it not for the Chomskyan insistence on theoretical rigor as a required framework for targeted data collection of a kind that is necessary for scientific progress Far from aligning with positions that are antithetical to the Generative Program such as (Tomasello & Ibbotson, 2016) or (Everett, 2012), TG carries the direction of research to a new sphere in the same domain Chomsky identified early that rule recursion can be associated with one dimension of linguistic creativity, the generation of an unbounded set of structures from finite processes but it is a misrepresentation to identify linguistic creativity merely with recursivity Chomsky later provided a further profoundly insightful formulation whereby the merging of pairs of subunits into larger

structures also satisfies the need for structural unboundedness By providing that pairs of units can be combined into a larger structure, whether lexical items or phrasal substructures, the Merge process of the Minimalist Program affords even greater formal explanation for the unique capability of human linguistic capability.

Rather than seeking to undermine or displace the generative program, the proposed revision in the present work would amplify its importance even further to any extent that additional explanatory power is made available Chomsky's massively influential foundings of generative grammar builds from profound observations on the creativity of human language To the extent that a revised architecture can uncover a new level of linguistic creativity it validates the Chomskyan proposal by judiciously extending its initial programmatic formulation The inclusion of linguistic structural intent in linguistic analysis opens further the possibilities for discovering new dimensions of linguistic creativity.

3 Background: Cognitax is Linguistic Action

Architectural work on large symbolic systems frequently leads to the observation that undue complexity arises when there is an attempt to capture and express regularities at the wrong level of generalization, i.e. where natural conditioning properties are inexplicit or unexpressed A primary thesis of TG is that there has been excessive idiosyncratically contrived complexity and resulting instability in Chomskyan theories of syntactic competence when generalizations have been sought apart from the factors that condition them This implies that superior solutions might be achieved at a different level of representation The vast syntactic literature seeking explanations for which sentences of a language may or may not be acceptable can be reviewed for potential reanalysis if the fundamental reasons for linguistic structure formation are examined in detail Syntax might be significantly reduced in a utilitarian context to cognitive mechanics of a utilitarian kind TG explores the world of syntax with the mindset of cognitive functional mechanics.

The origin of the present works goes back to discussions with an anthropologist finely attuned to the linguistic actions of a native language. As she gathered material and made progress on the phonology, morphology, lexicography, etc. of the language she was so carefully archiving, it seemed a gaping insufficiency that linguistics could not offer elicitation field tools for the vocabulary of social life actons that interested her Linguistics offered methodologies for phonetic transcription, phonemic discovery and transcription, morphological analysis, syntactic description, and promising scientific frameworks for theory, but there was little tradition for recording or analyzing the semantics of the actions that are so obviously carried out in the process of speaking This stood in stark contrast with the myriad expressions available in every language to characterize what a speaker is doing with words Elicitation of semantic detail can be difficult, yet every field linguist asking what something means has likely known the experience of hearing rather what the speaker is doing when words are used This suggests a dimension of semantics which is closer to the surface origination and easier to elicit and describe than the intricacies derived after difficult thought about receptive interpretation in a truth functional model theoretic semantics framework TG assumes the validity of a particular methodology: when a linguist elicits or records data s/he could well write down an answer to the question what a speaker is doing when a certain form is used What is the action?

Chomsky's massively influential generative program has fundamental attributes which are

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unassailable, but nevertheless extensible. Language is cut up into competence and performance to put scientific focus on cognitive ability, adding a divide and conquer strategy necessary in the midst of the overwhelming complexity of human language. It brings to center stage rapid language learning in childhood and the startling recursive creative potential of language, while also imposing empirical constraints on putative theories and mechanisms Generative mapping, with its emphasis on formalization, testing, and minimal contrasts of sentence acceptability, provides discipline to guide hypotheses toward the counterexamples necessary for progress There has been an extraordinary collection of distinctive facts and patterning effects for a large number of diverse language phenomena Its methodology has been highly effective as a stimulant to scientific advancement, but can also entail forward interests involving new perspectives. For all the fecundity of the unfolding Chomskyan vision, theories have retained syntax, and neither semantics, pragmatics nor higher congition, as the core focal center of language generation.[7] While the range of data has widened broadly, the area of focus, syntax, has remained narrow relative to the full range of operational linguistic phenomena. The fundamental unit of study, the sentence, has arguably remained without a satisfying definition In TG we explore whether a shift in perspective can be advantageous, wherein language is viewed not so much as centering around syntax as the structural action semantics of intentional[8] purpose.

Among many dimensions of scientific challenge, the generative program has focused on the speed and ease of child language learning but has not so much set a paramount goal to explain why in the worlds' languages there should be such variability, or instability or ambiguity.

TG adopts the idea that elements of language are to be understood as having an intentional functional purpose Elements of this idea have existed in linguistics for some time, generally involving the analysis of a relatively limited set of abstract functional concepts such as focus, theme, {fore|back}ground etc, TG is distinguished by placing an elaborated system of functional intention at the controlling generative core of language and elaborating a rich set of functional concepts/categories used to explain linguistic phenomena We advert to tangential prior work by a wide range of researchers, including Halliday's systemic functional approach (Halliday, 2004), lexical functional grammar (Bresnan, 2001), the psychomechanics and psychosystematics of Gustave Guillaume, Walter Hirtle and John Hewson (Hirtle) (Hewson), cognitive linguistics of e.g. Wallace Chafe, , George Lakoff, and Leonard Talmy (Lakoff) (Talmy), construction grammar of e.g. Charles Fillmore George Lakoff, Goldberg, and Ronald Langacker (LANGACKER, 1986) (Langacker, 1999)¸ André Martinet's Functional Syntax: (Langue et Fonction, Paris : Denoël, 1969, ©1962, Studies in Functional Syntax, München, Wilhelm Fink Verlag, 1975, Syntaxe générale, 1985, Fonction et dynamique des langues, Paris, Armand Colin, 1989.), the Prague School, and so forth,, A goal of TG is to bring diverse elements of various theories into a unified, inter-compatible linguistic framework, while discarding orphaned beliefs disconfirmed by ongoing empirical work.

TG is compatible with, and benefits from, restricted elements of each of these traditions but distinguishes itself by extending the role of specifying linguistic intention to a much greater degree and in much greater resolution than has previously been proposed It also seeks to

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[7] Paradigmatic and other systematic aspects of morphology have on occasion also been overlooked.
[8] Since much of this work is about linguistic 'intention' it should be clarified that what is meant is the plainer meaning related to planning and not the philosophical sensee of 'intentionality' relating the representations to the content they refer to. The latter topic, which is not considered here, is clarified, for example in (Georges Rey, 2015).

integrate with Chomsky's generative program re-combining characteristics of various approaches at the same time

Special mention should be made of Pieter Seuren's work on Semantic Syntax and his pioneering formulations of the computerized means by which semantic initiatives can result in syntactic results His work showing how lexically driven patterns result in syntactically formed configurations in a computationally transparent style are helpful in conceiving the manner by which linguistic intentions might resolve into patterns of acceptable and unacceptable sentences While our theoretical framework is different, we take from Seuren's endeavors the belief that linguistic theory is enhanced, not just by the notion of formalization emphasized by Chomsky, but by actual formal implementation as a generative computer program, which is arguably an optimum goal for formalization in linguistic theory.

Whereas various authors have shown overlap between the syntactic and pragmatic components of linguistic competence, e.g. (Chierchia, 2004) (Horn, 2000), etc., our aim is to explore a reorganized view of linguistic generation based on the central concept of linguistic tools which are used to realize a generative component of linguistic intent Rather than examine only the structural and configurational generalizations, i.e. syntax-generative rules, and what their projection onto truth functional semantics might involve, we propose to investigate more narrowly what the speaker intends to do and how s/he does it structurally A sentence intention is a formative set of decisions for external representation of thought by means of highly constrained, conventional, interlocking structures and processes, which we call 'tools' We refer below to this general area of investigation as 'cognitax' tool grammar. Cognitax concerns the decisions speakers make in formulating the structure of sentences Without proposing that the full-blown inferentially derivable meaning of a sentence underlies and explains syntactic structure, it presents a view in which syntax is not so autonomous as it is often conceived Cognitax as a discipline is separate from truth semantics and pragmatics insofar as the intentions underlying utterances can be demonstrated to have psychological reality separate from the processes of truth semanics, interpretation and inference By demonstrating its independent necessity in explaining the phenomena of language we aim to demonstrate its psychological reality as domain of representation in linguistic processing. Cognitax is neither inferential semantics nor pragmatics but a set of separate representations marking linguistic structural intent.[9]

The present work on TG is limited to core phenomena roughly associated with syntax and its semantic correlates It bypasses for the most part important broad areas of linguistic science such as truth functional semantic interpretation, discourse, background encyclopedic awareness, and so forth In this way the work may seem initially less ambitious than works such as (Seuren) and (Halliday), but since many of these wider fields of research involve pre-linguistic cognitive processing in one way or another, TG may be found by adjustment to be compatible and to interact with these and other theoretical frameworks as part of a larger program of re-factoring linguistic analysis We see advantages to encouraging more of a theoretical lingua franca for linguistic science,

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[9] Investigations of the evident interactions among cognitax, semantics and pragmatics best awaits preliminary exploration of the former.

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4 Some Philosophical Context

Tool Grammar conforms to a view of sentence generation that has emerged in the literature of philosophical linguistics, as led and exemplified by Paul Pietroski While we adhere to different lines of approach, Pietroski provides discussion of a number of important theses which open many of the questions we do:

- Verbs and nouns can be associated with instructions how to access combinable concepts that are formed into conjoined larger concepts.
- It is implausible that the theory of semantics be limited to truth-conditional semantics in the sense of functions involving "satisfaction conditions" on truth and reference.
- Theories of conceptual construction may involve conjunction of monadic concepts to produce derived monadic concepts in a way that suggests conceptual structures tend more to the binary than directly to higher orders of adicity.
- The central role of syntax may be to enable instructions access or constructs into a format that allows to be conjoined to create larger concepts.
- If one extends the model of concept combination looking for an analog in grammatical combination by the inclusion of a concept of construct labelling, there emerges an understanding for the existence of grammatical types.

Tool grammar significantly adds the concept of named instructions for the formation of grammatical structures.

[NB: This updated section is available on request in the extended document.]

5 Variations on Chomsky's Galilean Challenge

A version of this section is published as (Smith L. , 2017).

[NB: This updated section is available on request in the extended document.]

6 Ill-Formedness and a Working Methodology

If language engages the application of a set of tools, ill-formedness, in all its variation, can result from picking the wrong tool for the intended task, or combining incompatible tools, or not having the prerequisites for some tool In general, unacceptable sentences don't occur in normal usage and it is natural to seek the most direct explanation Syntactic theory has never come close to explaining all the sorts of ill-formedness documented in the literature. (Ross J. R., Haj Ross's papers on syntax, poetics, and selected short subjects, 2014) We present the hypothesis that there are so many manners of ill-formedness because there are many tools in a language that have natural restrictions on their use Examples of ungrammatical sentences might be likened to trying to paddle an elevator or forcing square pegs into round holes, or where there is no hole at all A goal of this paper is to demonstrate new resources for the explanation of patterns of unacceptability

Since we claim that structural action semantics can be transcribed, and is at the core of the language faculty, an operative question arises whether problems which have been considered unresolved, controversial, or even intractable might succumb more easily when the fundamental

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actions of language are factored in.

The methodology for exploring our hypotheses will be to survey and comment on selected problems and key data from the following sources, with some emphasis on central or difficult problems:

> Standard textbooks in generative grammar

> Well documented unresolved problems and issues

> Specific works documenting areas where generative grammar is incapable

> Problems of metaphor, stylistics, and poetics which in their finesse can be regarded as quality control on syntactic theory

We pursue this program of investigation below, undertaking preliminary analyses to explore a theoretical goal of discovering strong constraints on the limits of human language.

7 Specific Objectives and Scope

A full exploration of the relationship between linguistic intention and expressed linguistic realizations is a vast project so we must begin by limiting the scope of initial work From one perspective, our purpose here is initially somewhat negative insofar as we aim to show that there can be alternative explanations to be explored for many unacceptable sentences which have been attributed only to configurational aspects of linguistic generation So our first goal is to look again at why sentences may not be grammatical or acceptable, from another angle, based on the premise that for transparent and coherent reasons many recombinant structures, which may look possible when viewed from the limited perspective of independent variation, may not, instead, ever be of a nature ever to be preconceived due to cognitive constraints In the context of these original questions, we begin to explore the nature of a system that uses linguistic intention to preclude instances of what would not be said for utilitarian cognitive reasons A number of scholars have pursued a more functional view of linguistic structure and have conceived certain linguistic rules as functional elements using a limited range of operational concepts such as theme, focus, background, and so forth Our goal, in contrast, is to envisage a larger framework where the role of functional intent is massively expanded to provide operational workings that support and pervade the manifestations of syntax in a more encompassing way that also can enable more powerful constraints on universal grammar in the sense fundamental to the generative tradition Our use of the term 'tool grammar' reflects an interest in analyzing as many syntactic phenomena as possible for underlying functional explanations.

Tool grammar presents a minimal hypothesis that careful examination of linguistic intent can greatly reduce the entropy of syntactic and semantic theory by independently explaining a plethora of ill formed sentences in a straightforward way leaving a more tractable set of separate remaining theoretical problems.

Whereas Chomsky's minimalist program proposes a generative account of the syntax-centric connections between sound and meaning to include the creative, recursive component within those connections, we advert to the challenge of integrating such a system with cognitive

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creative linguistic intention and explore the implications of reconfiguring the program of research to incorporate such a level of creative linguistic cognitive action into the generative enterprise We contemplate steps beyond a minimal revision such as adding a linguistic action interface to the syntactic component in addition to the phonological and semantic ones, and put it rather at the center of sentence generation It is beyond the scope of initial work to proceed the full distance into this research program so we limit our goals to demonstrating the feasibility and advantages of such an approach while programmatically outlining some directions that seem promising for future progress, and also observing in passing evident opportunities for imposing strong general constraints on for form of possible language structures.

Formalization of linguistic theories is important to afford testability and to guide data collection toward an understanding of important structural effects Linguistic science has progressed to the point where theories have begun to be formalized as actual implementations in computer code Implementations as computational prototypes, even strictly within the domain of linguistic theory, may be especially revelatory for generative systems since they can not only validate the empirical claims but can bring new theoretical questions to light Although we are not aware of a data base of regression tests for the acceptable and unacceptable sentences of any language we are preparing to implement our own proposals as a working prototype This aspect of TG studies is beyond the scope of the present work but should be understood as an important longer term goal for scientific validation. While focusing on theoretical linguistics, we also envisage work toward a model of linguistic competence which lends itself to incorporation in active computational models that generate and interpret sentences Unlike the Chomskyan model of syntactic competence which statically and declaratively represents syntax knowledge in a standalone system, we intend, by flowing from structural intention to syntactic output, to encourage a view of syntax which might eventually be incorporated in engineered solutions for natural language problems While we adhere to the importance of linguistic analysis and modeling, we also anticipate a possibility of machine learning algorithms attempting automatically to mediate between specifications of linguistic intent and surface syntactic structures Hidden Markov models and other statistical techniques may produce valuable linguistic engineering systems without hand crafted linguistic rules, and may bear useful similarity to neural models of brain functioning While there may eventually be computer implementations, cognitax TG is initially formulated in the tradition of linguistic theory rather than computer science and as such neither inherits nor exhibits meaningful similarities to semantic grammars in the discipline of artificial intelligence

We intend this work to be empirical but programmatic and incremental We present arguments that a set of syntactic phenomena are attractively explained if the analysis includes a specification of linguistic intent for structures observed in data, but the objective is programmatic and exploratory with limited goals The sole objective is to show that structural decision actions can contribute to an explanation of linguistic patterning Discussion is limited to classic, challenging or resistant problems which motivate use of structural action conditioning factors that impose general constraints on generation by eliminating incompatible co-occurrences.

Since we can practically address a only subset of linguistic problems we leave open the possibility that some well-studied phenomena with settled solutions might or might not have

purely configurational solutions as presented in mainstream work in autonomous syntax without a component of linguistic intent. We motivate the need for a linguistic action dimension in a set of cases and outline a preliminary alternative architecture of competence, but it is beyond the intended scope to examine the full range of syntactic processes which might thereby be impinged, nor to present a complete alternative system To the extent our arguments are successful, theoretical syntax can benefit from incorporating a new dimension, but it would be premature to try to anticipate the full range of implications There remain a wide range of deeply studied syntactic phenomena to be examined from the perspective of linguistic action intents. We do not here exclude autonomous syntactic solutions For this reason, and since many questions are left open, any definitive conclusions about the degree of difference between alternative systems and architectures of competence would be premature and speculative This caveat allows for the possibility that previous solutions presented in the literature may be not impinged by specifications of structural intent.

In summary, the objective, therefore, is only to argue that linguistic intent can condition syntactic patterning while outlining an alternative architecture of linguistic competence without articulating a full technical proposal in detail Our process of analysis is an exploratory pilot to consider whether evident constraints on structure tend toward strong generalizations to help define the notion of what a human language is and can be.

We do not address issues of semantic analysis or semantic theory beyond thenarrow and functionally restricted domain implicit in the tool grammar concept The specification of linguistic structural intent has a qualified semantic nature but is limited to actions affecting structural choices and excludes issues of interpretation, compositionality, implication, inference, possible worlds, as well as the wider spectrum of linguistic truth-functional semantics as a general discipline Notably, we do not propose that the full specification of the meaning of a sentence underlies the generation of syntactic structure as in the earlier tradition of generative semantics Our position is that one very limited tranche of semantic information is associated with linguistic choice, leaving issues of interpretation apart for separate study Where work on generative semantics was challenged for not providing sufficient constraints on universal grammar, our hypothesis is that the theoretical use of one dimension of semantics in syntactic analysis, structural intention, opens the possibility not only of providing a stronger level of universal constraints, but one that covers data more completely Generative semantics derives syntax from meaning; TG derives structure from intentions that result in selections of lexical items and constructions In TG, syntax is not completely autonomous from a semantic realm, but neither is it fully enmeshed with the elaborations of interpretive semantic theory.

Our proposals include preliminary statements of compatibility constraints on the combination of structural elements To the extent that these provide simpler explanations for complex phenomena, or preclude unresolved exceptions and resolve residual puzzles they become subject to comparison with systems of purely configurational constraints in generative. We argue that constraints on generation using representations of linguistic intent hold promise generally to simplify the statement of linguistic universals, thereby advancing the Chomskyan goals for a specification of competence The ideal result would be a simpler system of constraints that stabilizes and grows as new discoveries are made, while providing better coverage for a wider range of data with fewer exceptions It is interesting when analyses we develop in the TG

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framework seem to validate and replicate a set of Chomskyan conclusions that were not based on linguistic intent.

Finally, it is noted that many syntactic phenomena can be analyzed either as alternative related structures introduced into an utterance as a formational process, or as a basic pre-compiled lexical structure which is optionally transformed to an alternate form by a transformational rule We do not in the present work undertake a comparison of the differences between lexical and derivational patternings, that is, between alternative formative constructions and options in the dynamic process of construction For this reason we refer to the constructions involved in such alternations using the non-committal term '(trans)formation'.

8 Illustrating Linguistic Action: Passive is Not Active

In this section we do not analyze passive structures in detail but only demonstrate that the passive construction involves a cognitactic action and is not simply a mechanical or configurational manipulation We call a structural linguistic action (or a combined set of linguistic actions) an '***actioneme'*** and symbolize its transcription using a dollar sign ('$'). An actioneme is analogous to but different from the 'sememe' of traditional linguistics. It is understood as a basic psychological component of linguistic structural intent

Actionemes are introduced as pseudocode (see below) in the spirit of computer system design where it is useful to summarize actions as part of the preliminary process of examining system architecture and coding strategies prior to later formalization in machine executable form We discuss this aspect of actioneme representation below The actionemes presented are useful to facilitate discussion for a system eventually to be formalized in executable computer language, but they are also primarily useful for analysis of linguistic theory.

The actioneme is a basic recording of what users are doing, the originating linguistic action, when a linguistic element or structure is selected, but it does not include any full semantic specification of utterance meaning The term *actioneme* is introduced to signal an emphasis on what forms are used to do, while larger traditional questions of what they mean are not directly engaged Semantics generally involves discovering what a speaker is saying In cognitax the focus is on what the speaker is doing in structuring an utterance It is the difference between the content of a message and the strategies used to present the content What is said, versus what is done, and how.[10]

The sememe is an element of meaning while an actioneme is an element of cognitax, or structural linguistic action We take the meaning of an utterance to be the thoughts which the speaker undertakes to represent, while the cognitax is the set of decision actions the speaker takes in formulating how the meaning should be represented in external form An actioneme is

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[10] We differentiate our work from the earlier contentious tradition of generative semantics since we do not advocate that syntax should be directly derived from an underlying semantic representation in logical or other form, but that it is useful to posit an intermediary action phase involving cognitactic decisions that determines aspects of how structures will be built. Tool grammar involves this indirection and in any case does not address the historical arguments for or against generative semantics.

not an element of meaning in a normal broad sense In the way that it can be considered semantic, it is reduced in a very restricted sense, oriented to linguistic action that results in particulars of sentence formation as a result of linguistic decisions for particular intent.[11] Since actionemes involve structural decisions, it might be asked why they should ever be characterized as 'semantic' The answer is that linguistic structural actions originate in the speaker's thought processes, which is the domain of semantics as we intend it.

We propose that every linguistic (trans)formation[12] has cognitactic content and introduce one example here to illustrate.[13] The passive form of a sentence evidently is not functionally equivalent to the active form:

(1) Al visited the sick woman.
(2) The sick woman was visited by Al.
(3) What was surprising about Al was that he visited the sick woman.
(4) *What was surprising about Al was that the sick woman was visited by Al (him).

This indicates that an actioneme is operative in the passive example: $bringPatientIntoAgencyEventFocus The active form can be explained as an unremarkable default or, possibly, since one can posit two possible functional intentions, as reflecting $exhibitExplicitEventAgency When a phrase highlighting special characteristics of the agent (such as "What was surprising about" or "Of all the foolish acts given her allergies") is added, the tool drawing focus away from the agent becomes incompatible.

(5) Of all the foolish acts given her allergies, Al visited the sick woman in his wool sweater.
(6) *??Of all the foolish acts given her allergies, the sick woman was visited by Al in his wool sweater.

These examples show a cognitactic conflict[14] between tools in opposition, trying in a single sentence, at cross purposes, to both add and take away special attention to the agent We discuss a Cross Purpose Constraint further below.

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[11] Traditional linguists might object to the introduction of a new linguistic term since 'sememe' is available to refer to any basic unit of meaning formation, but we prefer to introduce a new term here to signal the contention that if fieldwork centers on eliciting the intended action of sentences, and linguistic theory incorporates intention in a theory of tools, that a new understanding of linguistic processes will result.

[12] Or construction as the reader prefers. Throughout this paper transformations may be cast as alternate constructions depending on considerations which we do not presently take up.

[13] In case a theory denies the existence of a particular transformation and construes syntactic alternations to have been produced directly our arguments still apply because at some point in sentence production a choice of structure is made and must be reconciled with other choices.

[14] A cognitactic incompatibility is a situation where the use of one tool does not make sense in the context where another tool has been used. A representation involving both puts them in conflict. These may either be viewed as constraints on construction as we do here for purposes of demonstration, or might possibly be built into the individual tool structures so they are not candidates for insertion in the same structure. In either case we maintain that the filtering of incompatible structures follows from the common sense utility of the structures rather than abstract configurational structures.

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As actionemes are proposed as operative in syntactic processing they should not be viewed as unredeemable subjective intuitions without rigorous scientific basis or theoretical foundation We maintain that actionemes can be regularized and codified in ongoing investigations, and their validity as data can be established and replicated in a scientific process Actioneme elements can be validated by properly interviewing linguistic consultants, by social science research practices, and by psycholinguistic experimentation A properly motivated set of actionemes would have status beyond initial intuitions as formally validated linguistic constructs.

TG suggests possible explanations for the many dimensions of variability of structured expressions. A grammar might be understood as a repertoire of mental tools used in building actions based on conceptualizations rather than a fixed mechanistic generative competence What are sentences built with? We propose TG or sentence action grammar as a utilitarian construction and delivery system; it makes use of linguistic structural action semantics defined in a broad but intuitive sense: What is the speaker doing with the utterance?

We aim to demonstrate the explanatory value of transcribing evident features, such, for example, as "assert completed" where such an action is manifestly present in the use of perfective structures. We call these features, when transcribed and presented *actionemes* We envisage constraints on tools for the realization of linguistic actions, implemented in downstream syntactic processes, and call the holistic system *cognitax*. Sentence action meaning, unlike the predicate calculus of truth functional meaning, is viewed as procedural knowledge, i.e. methods for accomplishing things, rather than declarative knowledge, the static summarization of dynamic possibilities.

9 Actionemes as Pseudo-Code

Actionemes are clusters of properties that represent linguistic action intent We present hypotheses about linguistic actions using dollar sign actioneme symbols such as '$insertReflexive' Actioneme symbols (represented with '$' symbols) represent preliminary hypotheses aiming toward a standard vocabulary of linguistic action intents They are utilized as a form of pseudo-code for methodological convenience with an understanding that the process of formalizing TG should call eventually for a range of mathematically explicit, more rigorous elements and forms The purpose of pseudo-code is to engage higher level questions of structure, process and organization without falling into detailed questions at a lower level of generalization. Actionemes are shorthand in discursive presentations for a feature and function formalism which is conceptualized for a machine implementation as a generative system A useful and conciliatory default assumption is that actioneme features inhabit and extend the feature space often referenced in syntactic and semantic theory but are given a revised and radically more enlarged role than has been countenanced previously. Pseudo-code representations abstracting away from the higher resolution of the most detailed analysis can be borrowed from computer architecture where it is exceedingly useful for preliminary analysis of procedural processes and is essential for discussions of alternative

approaches prior to formalization into machine executable form

The current work primarily considers issues of theoretical linguistics but can also be part of a design process for a computerized system that aims to properly formalize TG theory as an operational generative system subject to regression testing against a database of sentence forms Actionemes often require phrases and reflect an internal complexity This suggests the possibility either of a form of feature representation (e.g. $inquireJudgment [+inquire, +judgment]) or of embeddable function representation. (e.g. inquire(judgment())), and might possible involve mixed representations The use of embedded functions implies a tree representation, begging the question, which we leave open, whether representation of action intentions fits naturally into the merged tree structures that result from lexical selection and assembly into increasingly larger units. Whatever the form of improved theoretical statements our hypothesis is that constraints on cognitive compatibility among linguistic tools can be formulated as patterns of actioneme feature or function complexes, and that, furthermore these can be integrated into the larger matrix of a linguistic theory. The general thesis is that linguistic tool intents are involved in a restrictive cognitive utilitarian mechanics, which can explain many linguistic phenomena, and is compatible with a variety of linguistic theories. Our current purpose is to advocate for the general approach so issues of formalization are not here addressed.

10 Motivation for a New Orientation

It is possible to look at the tradition of generative mechanical syntax and intuitively feel incompleteness with regard to an understanding of the essence of human language Meaning is treated in generative grammar, but it doesn't have the central role that can seem from the outside as indispensable to any well-ordered discipline of linguistics. The present work attempts to address a void by bringing the particular semantics of linguistic action, what a user is doing when a particular structure is chosen, back into central focus, albeit in a controlled and limited way.

There is an essential tradition of transcription in linguistics As a profession, linguists record data to systematically reflect structure in phonetics, phonology, morphology, syntax, semantics, etc. But what of the particular purposes of the uses of language structures?   Syntacticians don't generally systematically encode the elements of sentence intent as a commonly accepted practice, as they do the basic elements in other domains. Yet, structural action semantics is the glue that connects semantic intention to form.

All of language, considered as a phenomenon, is oriented around intended meaning, and syntax in particular is in service to it Syntax can be understood as a meaning representation and delivery system, so one would expect, a priori, the severest of epistemological problems to arise should it be abstracted sufficiently away from the glaring reality of its essential purpose. Semantics has not found the centrality of its role in linguistic syntax perhaps because in its various manifestations it is not so directly observable or accessible and brings inherent difficulties as a

result. [15] Even the narrower spectrum of linguistic ntention cannot be recorded except indirectly It must be inferred to an extent beyond other dimensions of more direct representation. Yet, just as physical particles are discovered without any means of direct observation, contempory linguistics has recognized the necessity to investigate central phenomenon with inferential work While there are many scholars engaged productively in the **broad** generative enterprise of meaning theory, we propose here to focus directly on one particular and highly constrained dimension associated with meaning, the connective processes of utilitarian intent, as integral to the analysis of syntactic phenomena .

Syntactic work has historically inclined toward semantic analysis insofar as it has regularly imported quasi semantic elements (tense, modality, aspect, case, subcategorization, selectional restrictions, etc.) to accomplish its work In TG similarly, we propose to extend the reach of syntax into the domain of structural intention so as to identify underlying factors and investigate their role in explaining linguistic patterns

We propose an incremental ground-up approach to developing conventions for sentence action transcription. Our exclusive interest is in the inventory of linguistic actions rather than truth functional intensional systems, or other variants based on formal logic. We bring a narrow selection of semantico-intentional elements forward for their relevance in syntactic construction and patterning Tool grammar distinguishes itself from traditional semantics, among other ways, by refraining from an insistence that all meaning representations be compositional in order to leave open the possibility that generative systems may be compiled for speed and function in ways that do not reflect the expectations of truth functional semantics.

It is crucially indicativew that uman languages aready have built-in vocabulary for expressing what one speaker posits another is doing in the course of language use These expressions are a valuable basis of preliminary action transcription because they emanate from inside the system we would like to study Users interpret linguistic intentions and report them using vocabulary already in the language.

We begin by extracting from everyday language terms that describe what some speaker is doing, or intending, or trying to do, by using a particular linguistic construction We propose to draw upon this innate natural vocabulary as a stimulus to widen the scope of the study of grammar We limit ourselves in semantics only to descriptions of conventionally recognized linguistic actions and the intentions that underlie them.

The TG approach does not in wholesale manner begin by rejecting the general thesis of configurational explanations for syntactic patternings, but only presents the advantages in particular but theoretically important cases of an amplfiedanalysis, controlled in the domain of structural intent, which, after all, is prima facie quite natural to a functional view of generative processes Arguing prior to full formalization, we use pseudo-code actionemes to explore the fundamental issue of the controlling factors for the occurrence of many patterns from reflexive anaphors to poetic structure We refer to the TG regularities conditioned by linguistic action intent, and thereby having characteristics different from purely syntactical

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[15] There is a well known principle of psychology whereby one's beliefs and attitudes are formed much by exigencies of circumstance, possibility, and realistic ability.

rules, as components of the *cognitax* of a language The structures and processes of cognitax constitute a *tool grammar* for a language so may be thought of as synonymous terms for our purposes. The former is intended to convey the inseparability of cognitive sentence planning decisions from the understanding of syntactic structure, while the latter denotes the utilitarian aspect.

As noted, Tool Grammar is inspired by the observation that natural languages include numerous terms to describe linguistic actions (*assert, deny, ask, tell*, etc.), so there is reason to believe that external observations about action intents can be refined to a form of scientifically valuable data for theorizing about the processes underlying language behavior Language itself thus provides some metadata about language which can afford a basis for developing a closed, controlled scientific vocabulary for systematically transcribing the linguistic intents associated with linguistic structures The TG framework includes the hypothesis that those competent in a language are thereby able to ascertain intents underlying linguistic utterances, albeit in a naïve, unformalized form, that, for linguistic analysis, ultimately will require ongoing development in a standard scientific processof empirical rectification

Beyond conscious awareness and the formulation of a controlled vocabulary of actioneme primitives, a central goal of a theory of action intents is integration with processes of structure formation in an overall theory of structural linguistic action. TG furthermore has the potential to reveal that constraints on well-formedness correspond often to high level cognitive disciplines and strategies for managing complexity, uncertainty, integrity, consistency, information density and other cybernetic principles of information representation TG can be summarized as a fully formalizable theory of cognitive utilitarian meta-linguistic structural action intents. An important goal is to achieve over time as work product a scientific controlled vocabulary for the range of linguistic intents available in human communication

11 Evidence from Meta Reference

John Ross in one of his squibs raises a point of direct interest to the hypothesis that cognitax tools underlie human language use. (Ross J. , 50 Years of Linguistics at MIT, 2013)

> One mystery squib of mine was a question: what is the source of *that* in this sentence: "The rules of Clouting and Dragoff apply in that order."?

The sentence implies a decision regarding which of conjoined terms to order leftmost/first This evidently reflects a tool $specifyConjunctOrder, and it would seem 'that' must refer to this ordering, i.e. to the cognitax actioneme This shows linguistic structure is self-aware and can refer to itself at the level of actionemes The referent of 'that' is direct evidence that actionemes exist per the decision to place one item before another.

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The example suggests that syntactic structures are connected to a process of construction which is improvisational and on occasion even self-conscious and self-referential It is evidently prima facie evidence that syntax offers tools in a manipulation matrix, such as perhaps a whiteboard pointer in computational representations, rather than a contained generative automaton.

We take Ross's questions as primary direct evidence for the existence of cognitax tools and their usage in sentence formation.

12 Some Historical Antecedents to Cognitax

In and from (Austin, 1975) there has been extensive work on the pragmatic and related aspects of language via linguistic use groupings such as locutions, illocutions, perlocutions, performative verbs, illocutionary acts [16], and so forth.[17] Classical work into the pragmatic effects on syntax includes (Searle J. , 1979), which gives a taxonomy of pragmatic types, examples and analysis of verbal classes, and specific discussion of effects on syntax In early generative studies there was interest in pursuing concrete derivational relationships between verbs of linguistic action and other aspects of syntactic study John Ross pursued a performative verb hypothesis (Ross J. , On declarative sentences, 1970) that would have a verb like 'say' underlying indicative sentences. The mainstream of the generative enterprise veered quickly away from generative semantics (involving syntactic decomposition of lexical items and other abstract devices.

Later traditions of generative work constructing purely syntactic solutions have indirectly provided evidence for what we present as actionemes An example of this, among many, is Landau's postulation of underlying locative elements for experiential verbs (Landau, The Locative Syntax of Experiencers, 2010), which in our terms outlined below would be recast as an action intent (actioneme e.g. $assertLocative). This is example illustrates a body of work pointing in the direction of cognitax analysis but stopping short of any proposal to orient linguistic syntax itself to structural action semantics.

This initial scaffolding is seminal, but does not portray the large universe of diverse language actions that are evidently at work in the full spectrum of language constructions, nor does it provide a systematic means for construction solutions using them.[18]

The European functionalists proposed that pragmatics and semantics underlie syntax. (Dik,

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[16] (Sadock, Speech Acts, 2004) summarizes Austin's rough-out of illocutionary types
1. VERDICTIVES: acts that consist of delivering a finding, e.g., acquit, hold (as a matter of law), read something as, etc.
2. EXERCITIVES: acts of giving a decision for or against a course of action, e.g., appoint, dismiss, order, sentence, etc.
3. COMMISSIVES: acts whose point is to commit the speaker to a course of action, e.g., contract, give one's word, declare one's intention, etc.
4. BEHABITIVES: expressions of attitudes toward the conduct, fortunes or attitudes of others, e.g., apologize, thank, congratulate, welcome, etc.
5. EXPOSITIVES: acts of expounding of views, conducting of arguments, and clarifying, e.g., deny, inform, concede, refer, etc.

[17] See (Sadock, Speech Acts, 2004) for an overview.

[18] A useful and far -ranging treatment that maintains the formal separation of pragmatics from syntax also includes analysis of reflexives and other phenomena used to show interaction effects and some operational intermingling. (Ariel, 2008)

1981) Although there are sufficient differences to make a full contrast with his theories of secondary interest, the role of intention as the initiator of linguistic events appears in Dik's work. (Dik, 1981) (p.8). Dik does not identify a level of linguistic action or elaborate a level of linguistic intention so distinctly or with such a functional load for the generation of syntax as we propose here Nor does he explicitly relegate the generation of linguistic intention, the anticipation of addressee interpretation, or addressee interpretation definitively to a higher cognitive domain. He views them more as intertwined in general with syntactic processes than as separate higher cognitive function In contrast, for TG we propose linguistic action as an explicit level of generalization justified by its facility for explaining syntactic and other phenomena.

13 Basic Constraints on Focus Constructions

Cleft and Pseudo-Cleft constructions are documented in many treatments of English syntax, illustrated, for example, by (McCawley, 1998) p. 66

(1) I gave a watch to my brother.
(7) *It was a watch to my brother that I gave.
(8) *What I gave was a watch to my brother.

These contrast with acceptable clefting (our examples):

(9) It was a watch I gave to my brother.
(10)   It was to my brother I gave a watch.
(11)   What I gave to my brother was a watch.
(12)   Who I gave a watch to was my brother.

It is evident that these (trans)formations exist to move material to a focus position, but rules of syntax have not included a dimension to capture their functional purpose We posit an actioneme for constructions such as these: $giveFocusToSalientElement If such an actioneme is associated with the syntactic (trans)formations the unacceptable sentences above which attempt to focus more than one element at a time, would seem to be ruled out by a common sense constraint.

> Single Focus Constraint
>
> Given that the purpose of a focus construction is to bring an element to the fore, it is counterproductive to focus transform more than one element since focus on two elements is contradictory and detracts from the purpose The focusing of two elements interferes with the proper focusing of either.

The focus item 'only' provides independent support for a variant of this constraint as illustrated by data from (McCawley, 1998) p 68 Contrastive stress is indicated by underlining.

(13)   John only put flowers in the vase.
(14)   *John put only flowers in the vase.

Here we see both 'only' ($assertNoOther) and contrastive stress ($assertThisOverThat) insinuating focus in the same sentence When 'only' adds focus to the entire verb phrase, it can co-occur with contrastive stress on the locative phrase But when 'only' focuses the direct object

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and contrastive stress focuses the locative phrase, they are not compatible In this case we see that a corollary of the Single Focus Constraint operates within the verb phrase.

> Overlapping Exclusion Constraint
>
> Don't use multiple focus devices that exclude possibilities when one exclusion is inclusive of a narrower one.

This example serves to illustrate the simplicity, directness, and empirical basis of cognitactic analysis, for which evidence can be marshaled in a wide range of syntactic environments.

14 Tools versus Rules

A tool is not equivalent to a rule It encompasses more and serves a different purpose A rule is a productive regularity observed by a linguist It can be a generalization or a requirement or a tendency but it cannot in our view purposefully be used by a speaker to build a communication structure A rule is for the theorist describing an observable pattern, a tool is for someone with an intention trying to accomplish something A linguistic tool is useful in building a communication structure, which is an assembly of intentions represented by their particular forms A set of sentences can be described statically or be abstractly generated by rules, but these auto-generated sentences do not serve a utilitarian purpose Tools, in contrast, can be wielded to specific effect As the product of tools, sentences are inherently useful, whereas a purposeless generation of a syntactic structure is not.

We posit two fundamental types of linguistic tools: lexical and (trans)formational.[19] A user constructing a sentence amalgamates a complex of intentions by selecting and assembling lexical items Lexical items are merged into integrated structures according to constraints of phrase structure and phrase merging As lexical items become merged they form configurations which become eligible for (trans)formation Transformations are linguistic tools that reflect the intention to configure or modify the communication in a particular manner for particular effect They take syntactic structures in configurational syntactic complexes as input and generate modified configurational syntactic complexes as output, but always with some stylistic or other informational intent.

Formally, a rule can be characterized as a well-known schema with two basic parts: structural requirements and structural effects

> RULE
>
> Structural input requirements
> Structural output effects including optional introduction of new material
> (Extraneous parameters)

The structural requirements specify under what conditions of structure the rule is applicable The structural effects specify the effects on the input structure when the rule applies. A third part

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[19] An alternative view of grammar would create the respective constructions independently without the intervention of transformation mechanisms. We do not consider this possibility here.

records extraneous parameters of applicability as required by a particular theory A rule may thus be characterized as 'optional', or can be selected as 'active' among a collection of universally available rules and conditioning effects which may or may not be activated in a particular language Any number of ancillary parameters can be considered.

A tool, in contrast, can be specified with these same parts, but including, crucially, an additional part to specify utilitarian intent.

> TOOL
>
> Utilitarian intent
> Structural input requirements
> Structural output effects including optional introduction of new material
> (Extraneous parameters)

To illustrate the difference, consider one simplified case of adding a lexical item and effecting a (trans)formation A user chooses to insert a perfective morpheme to communicate that an event is completed There is an input requirement that there be an event of continuance instantiated in a verb New material is specified The effect of the tool is to merge the new material, the perfective marker, into the input structure.

> Perfective Tool:[20]
>
> Intent: $assertCompleted
> Input requirement: verb of continuance: "He eats"
> New material: 'have + en'
> Output effect: merge perfective marker: "He has eaten"

Now, consider the operation of a classic stylistic (trans)formation.

> Passive Tool:
>
> Intent: $ bringPatientIntoAgencyEventFocusFrontToSalientPosition
> Input requirement: verb plus object: "He eats the cake"
> New material: 'be + en' ('by_')
> Output effect: The cake is eaten by him.
> > Move object to front, subject to by-phrase, Merge passive marker: "The cake is eaten by him" Note: This structure might alternatively be analyzed as a lexical choice involving no transformational restructuring.

A main difference from standard generative grammar is that TG would incline to natural utilitarian solutions as part of the human endowment for problem solving with tools. The linguistic mind is projected as not so abstractly foreign to the conscious utilitarian human mind All grammatical devices have been intantiated, given the contstraints of universal limitatiaons, by humans Rationales for tools may be recognizable and understandable as intuitive inventions

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[20] Operations are not formalized where we intend only to illustrate high level concepts.

Every linguistic rule may have been some inventor's novel idea at some point prior to adoption by a community, and must be understandable with regard to motivation and intended effect. Empirical investigation will determine whether we risk a disservice to the tradition of a human linguistic lineage if we assume all intricate language capacity results from no other processes than a simplified setting of parameters. (Chomsky, The minimalist program, 1995) A language may, alternatively as here, be understood as an inventory of tools, selected from a universally available tool construction set (limited and extensible under meta constraints), together with a selection of parameters to determine how tools are individually configured and interact with one another This possibility for innovation and invention beyond n-ary parameter choices can be advantageous in the case it is verified, as we suspect, that the variety of language constructions cannot be insightfully understood as a simple setting of parameters..

The crucial analytical difference between a rule and a tool is that the latter specifies intent using vocabulary of linguistic action descriptors We anticipate these can be conventionalized over time from linguistic fieldwork in order to develop a putative universally available set, even while the structures realized from them can be differentiated and diverse We hypothesize is that the listing of intents in a sentence involves a necessary operational characterization of meaning which will be more useful in the understanding of syntax than those associated with semantic interpretation and deriving from formal logic, which are less tractable and more removed from the psychological mechanics of utterance generation For the purposes of TG, meaning is circumscribed as a series of functional and intentional steps taken to enact a plan for desired effects. These are able to be observed and captured by the field linguist undertaking the analysis of language.

15 Distinguishing Grammar from Meaning

Since TG endeavors to motivate syntactic rules using action directives of intent, expressed in a controlled and circumscribed semantic vocabulary, the question naturally arises as to the fundamental distinction between grammar and meaning, and how it might be characterized in linguistic theory Chomsky's original contrast usefully distinguishes types of ill-formedness that intuitively seem either structural or semantic: (Chomsky, Syntactic Structures, 1957) p. 15

   (1) *Colorless green ideas sleep furiously.
   (15)   *Furiously sleep ideas green colorless.

Whereas the first of these is viewed as grammatically correct but semantically amiss, the second lacks even grammatical well-formedness in the common view Since TG views linguistic tools as devices for building structures to represent ideas externally, we are led to a natural expression of the grammar vs. semantics distinction based on the proposal that lexical items and syntactic structures are complementary tools for representing configurations of thoughts:

> Semantic ill-formedness results from the combination of incompatible ideas in the formation of an utterance.

> Grammatical ill-formedness results from the use of functionally incompatible tools, lexical or (trans)formational, in building structures for external linguistic representation

In the first example above, green is a color, ideas cannot sleep at all, let alone furiously, which factors put the ideas at odds In the second, less than optimal, example, assuming no expressive license, commas, or the like, which are other matters, the tools have requirements which are not met:

> 'sleep' has a slot designed for following/predicating a noun
>
> 'furiously' is a tool designed to fill a slot modifying a verb
>
> 'ideas' is a tool designed to fill a slot/predication calling for a noun
>
> 'green', 'colorless' are tools designed to fill slots preceding/modifying a noun

This original pair of examples was used to make a particular point by Chomsky, which is not quite the same as our concern here, so the contrast is not so targeted for our purposes It combines elements of semantic and grammatical conflict and is also subject to various expressive and stylistic interpretations rendering them more acceptable A better example for our purposes illustrates the point more directly:

(16)   *In sleeps the.

We propose that the inclusion of a dimension of structural action semantics in the formulation of rules as tools still enables a clear distinction between meaning, which concerns ideas, and grammar, which concerns representational structures.

In general there are two types of linguistic tools: lexical and structural Lexical tools are selected to map configurations of ideas to a conventionalized word structure They bring with them constraints on the selection of other words that can co-occur with them Structural, or (trans)formational tools build structure and determine the form of presentation of the source ideas as they are represented in the external medium Because there are two types of tools[21] there are three main types of grammatical ill-formedness depending on whether a tool conflict is

- lexical-lexical (e.g. subcategorization) e.g. *In sleeps the.
- structural-structural (formational conflict) e.g. *It was a watch to my brother that I gave.
- lexical-structural (e.g. government). e.g. *I wonder you are meeting?

In later sections of this paper we undertake to illustrate various types of tool conflict in reference to standard and difficult problems in linguistic analysis.

While on the subject of the grammar/meaning distinction it is useful to lay out what a linguistic utterance is in TG terms, and to clarify the relationship to semantics TG holds that there is a higher context of cognitive ideation from which an utterance emanates, but it is not an intended

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[21] There are more to the extent that one considers the exigencies and incompatibilities that arise when lexical items are merged into larger structures. These questions are elaborated in a later section.

part of the output linguistic utterance A linguistic utterance is conceived as action directives selected in a higher pre-linguistic cognitive component There are two types of action directives from which an utterance is formed:

- A selection of lexical items, which are pre-packaged objects of expression with semantic affinities at the level of the higher cognitive domain, deemed sufficient (pattern) matches for the ideas to be represented The intent of lexical tools is always the same, to represent in conventional form configurations of ideas to be represented Lexical tools include constraints specifying restrictions on other lexical items that co-occur in their presence Lexical items do not include full semantic specifications, which must be constructed for the utterance by the addressee by reverse engineering based on the conventional packaging of words.

- A selection of formational tools, which are directives determining various aspects of how the utterance will be structured Each formational tool is associated with an action intent such that some tool intents may not be compatible where the objectives in the tool use are in conflict Passives, clefts, focus constructions, and so forth, including the full range of syntactic constructions discussed in the syntactic literature, are products of formational tools.

With these two inputs, procedures of tool application suffice to generate the utterance A sequence of merge operations renders the complex of lexical items into a single hierarchical structure while the formational tools render the structure per their input and output specifications into a derived form of representation The generated structure is linearized as output in the expressive medium, e.g. sound, signing, etc.

Here it is worth re-emphasizing that for TG the utterance generation does not envisage the full range of possible semantic interpretation There can be, and often are, misunderstandings. The understanding of what is meant or intended or implied or anticipated for an utterance is in the province of the higher and more general cognitive realm. It can of course be modeled by the speaker prior to the generation of the output representation, and is characteristically interpreted by the addressee on receipt Nevertheless, interpretation is a separate process from intention so a restricted set of specific action intents must at some level be specified for the formational structure tools. A thesis of TG is that unacceptable conflicts can best be identified and understood in the domain of intention. This involves a restricted aspect of linguistic action semantics which must be associated with the process of syntax formation In this way semantics is partially but not fully separated from syntax for TG in the way that Chomsky once prescribed:

> [T]he study of meaning and reference and of the use of language should be excluded from the field of linguistics…[G]iven a linguistic theory, the concepts of grammar are constructed (so it seems) on the basis of primitive notions that are not semantic …, but that the linguistic theory itself must be chosen so as to provide the best possible explanation of semantic phenomena, as well as others. (Chomsky, Essays on Form and Interpretation, 1977) p. 139

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In a larger sense, the fields of full semantics and syntax are modularized apart in TG because the full meaning of an utterance is associated with independent cognition before and after the generation of its output representation TG includes a limited range of semantic actions in syntactic specifications.

This partial similarity to the Chomskyan approach, in separating full semantics from syntactic generation, belies, nevertheless, a major difference While the generative enterprise characteristically has syntax at the center of linguistic competence, embodying the essential language properties of creativity, productivity, recursion and infinite range, TG places all of these in the cognitive sphere which generates directives to a less empowered and more compact syntactic component Cognition is central to the TG view of generative linguistics with the syntactic component in a service role and one dimension of structural action semantics active at the interface For this reason TG syntax can appropriately be labeled "cognitax". The organization of the TG system and its utterance derivation processes are discussed further in a later section.

To illustrate briefly, consider a substantial case, among many, where these limited semantic factors play a role in generative syntax is the selection of complements for verbs. A small subset of these admits of indirect question complementation. (Johnson, 2004) p. 51

(1) a. Martha denied that John has left.
(17)   b. Martha said that John has left.
(18)   c. * Martha wonders that John has left.
(19)   a. * Martha denied whether John has left.
(20)   b. Martha said whether John has left.
(21)   c. Martha wonders whether John has left.

Here we see that 'say' and 'wonder' allow an indirect question. We propose that they can implement the action $countenanceAlternative In contrast, 'deny' doesn't Furthermore 'wonder' doesn't allow 'that' clauses for the meaning under consideration

(22)   *Al wonders that Sue will leave.

This illustrates a role we propose for cognitax actions The indirect question complementizer 'whether' is a tool used by the speaker to $raiseAlternativesAsQuestion, while 'deny' has the action $ruleOutAlternative The complementizer 'that' effects $assertSpecificFact This allows unacceptable sentences to be ruled out by a constraint based on actionemes more direct than configurational syntactic mechanisms.

Cross-Purposes Constraint

Don't introduce structures that work against each other in basic utilitarian intent such as raising and excluding the possibility of alternatives in the same construction.

In this case we see some verbs explicitly raise the consideration of alternatives and are compatible with complementizers that envisage the same There is no practical point in raising alternatives while also denying them A verb like 'deny' that works to narrow the possibilities to a

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single specific action requires a complement that is consonant with that intent, and is restricted to a specific action These evident characterizations tend only to be available by direct representation of intention in syntactic theory and are obfuscated by indirection in approaches which do not retain action/intention at the core of linguistic generation.

16 Linguistic Fieldwork and Actioneme Transcription

TG views meaning as being projected by action, so the corresponding approach to data collection may be quite different from the direct asking of what forms mean For cognitax what one does with a sentence and its parts is more useful for development of a tractable linguistic theory than questions such as what a sentence or other item might imply or "mean" in a truth functional setting The operative question is what the user seeks to achieve by using a form We advocate that elicitation frames generally take the form: What is the speaker doing with a word, morpheme, phrase sentence, etc.? This includes minimal contrasts against expressions lacking the form in question. For those doing anthropological or other field work it is daunting to specify all the implications of a meaning of a linguistic element. The TG view of meaning is operational An element may conceal a readily accessible meaning in any declarative sense but have operational effect to be understood by contrasting examples with and without the form in question What, for illustration, is the declarative meaning of 'even' There may be no answer prior to asking what speakers are observed to be doing when using this item in specific circumstances Even as lay speakers, subjects are aware of a plethora of linguistic acts at all levels of structure, and are able to express and refer to these routinely, albeit in crude and raw form, with a general or dedicated native vocabulary A single sentence or any of its units may, and characteristically does, involve a multiplicity of actions and subjects are not in general at a loss for vocabulary to describe them.

TG can rely on elicitation techniques such as the following, which are well-known to field linguists in any case:

1) What was the speaker doing when s/he used that element?
2) Why is that element there?
3) What's missing if you take that element out?
4) Can you say something to show me how you would use that element in a different context?
5) If you took that element out what could you put in there that would do about the same thing? What are the differences?

To illustrate this general idea of transcribing linguistic acts, it is instructive to look, first informally, at everyday words that describe the kinds of actions speakers have in mind even independent of any theoretical linguistic interest In English, for example, the vocabulary describing language actions is very large It is premature to pursue a fixed conventionalized list of descriptors but it is useful to explore the domain by means of a sparse sampling of illustrative examples.

Some are common and general:

Speak, Talk, Verbalize, Say, (promise, swear)

 Many describe the structure of argumentation:

Argue, Contend, Deny, Refute, Contradict, Prove/Disprove, Counter, Give a reason,

Reason, Imply, Presuppose, (Dis)Claim, Associate, Deduce, Generalize, Correct, Reinforce, Assert, Hypothesize, Support, Evade, Suggest, Ignore

Some are essentially social beyond the basic interpersonal component inherent in other examples:

Deliberate, Discuss, Consult, Set expectations, Confer

Others have to do with rhetoric:

Introduce, Expand on, Summarize, Emphasize, Hedge, Indicate, Highlight, Insist, Gloss over, Be ironic

A good many are judgmental

Flatter, Insult, Denigrate, Praise, Bemoan, tattle, blab, babble

Many pertain to specific contexts:

Joke, Sermonize, Read, Lecture, Pray, Preach, Rhyme, Wax poetic, Sing, Order (at retail)

They can be idiomatic:

spill the beans, let the cat out of the bag,

Some terms describe language use but do not reflect a speaker intent:

Be boring, Make no sense, Is confusing, stumble over words, be unclear

Of particular note, some such terms are of such general linguistic utility that they might be segregated out for the frequency of their utility

Negate, Question, Declare, Declare Unknown, Command, Indicate, Express doubt, Express certainty, Leave unspecified, Emphasize, Downplay, Focus on.

Others are so basic and general that they can be inferred from and associated somewhat reliably what has been held to be a grammatical construction.

Quantify ('the dogs'), Locate (locative case), Attribute (bike's color), Modify ('run quickly')

This is but a small sampling of what is a large inventory of such terms It is a major, albeit ultimately valuable, undertaking beyone the present scope to map out and analyze the full descriptive taxonomy While some terms can be used to describe non-linguistic acts, they also have major or central uses where they do reflect language behavior Many terms have such a dual role

As natural language terms, linguistic action descriptors often overlap and cross-classify one another Just as the phoneme is an abstraction[22] often composed of multiple parts (/p/ bilabial, voiceless, /au/ [a] [w]) so these can be thought of as popular emic elements, which we refer to as linguistic 'actionemes' made up of analytical distinctive features that can combine in a variety of ways.

Usage of natural language descriptors in the field have the benefit of reflecting the interpretation

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[22] The term 'abstraction' here is used in a non-technical sense when referring to phonemes, etc. in this paper without wanting to raise questions of exact theoretical or psychological status.

of actual participants While they can be used profitably in transcription of linguistic passages, scientific refinement and regularization can provide a formal, principled, canonical set over time While further work is required to fully inventory, categorize, interpret and codify such expressions, we illustrate transcription of intention in an informal and exploratory way in this paper Even with some informality, such transcriptions are empirically verifiable Since they are manifest in popular usage, inquiry and experiments can determine and validate when and whether particular transcriptions have been accurately imposed on data.

There has been a recent focus on field methods for semantic and pragmatic research and regular coverage in conferences, including Semantics of Under-Represented Languages in the Americas (SULA). (Matthewson, 2004) (Gibson, 2010) (Sprouse, 2012) These areas of methodological interest are important for recording linguistic actions in syntactic and general studies as well.

In summary, speakers are typically doing many things at once when they utter a sentence, and it is valuable for the linguist explicitly to record individual actions implicit in the use of each sentence There would be two primary questions to investigate in field explorations:

> Generalizations: Generally, what is the speaker doing when s/he uses a particular form or structure X?

> Scenarios: Given an element X, what would typically be going on when a speaker uses X and what would a speaker be doing by the use of X in that context.

Directing field work toward the discussion of scenarios and situations, as advocated, in recent studies, enables more specific descriptions of what is being done with each tool This is an important dimension beyond the bare judgments of acceptability and the glossed translations that have historically been the focus of syntactic studies For TG the most fundamental records would be the actions in a sentence without involving a full exploration of inferences, truth conditions etc., which speak more to theories of anticipation, interpretation, inference, and so forth We see linguistic action and intention explicitly mentioned when speakers talk about language This provides an important empirical basis for linguistic theory.

17 Labrador Inuttut Inverted Number Marking: Ongoing Questions

To appear

Abstract

There is a fascinating and prima facie perplexing patterning in Inuttut, the Labrador dialect of Inuktitut, wherein the quite regular markers of singular and plural in verbal inflectional markers appear inverted in second person forms. We explore this linguistic problem and show two things: that progress toward a solution is facilitated by incorporating representations of linguistic intent, and also that the consideration of intent, by adding a level of data, opens the phenomenon for deeper understanding by presenting new hypotheses to be explored. Making such features available in grammatical derivations allows the systematic generation of patterns which would

otherwise be impossible, thereby obviating gaps in the potential for grammatical explanation and highlighting psychologically plausible mechanisms for diachronic change. It is disadvantageous for any theory of grammatical competence to allow any phenomenon of strong grammatical patterning to remain unaccounted for. By viewing grammatical structures as the result of tool invention by individuals and groups in the linguistic past, the study of the intellectual history of linguistic innovation can potentially uncover particularly clever and insightful processes related to desiderata of cultural adhesion. This approach opens new hypotheses for the evolution of the language from the proto stage.

[NB: This updated section is available on request in the extended document.]

18 Inverse Number Marking Phenomena Elsewhere

We now turn to a set of apparent examples of inverse number marking apart from second person inflection These occur in Dagaare, a language of the Niger-Congo group, and have been discussed extensively, including summary of previous work, in (Grimm, 2009) (Grimm, 2013). Grimm presents data suggesting that there is in Dagaare a single synchronic suffix, /ri/, which marks singular in one class of nouns, but plural in another (data from Grimm):

"same stem, yet -ri codes the plural interpretation for 'child' and the singular interpretation for 'seed'":

Singular	Plural	Stem	Gloss
bɪ́ɪ́e	bɪ́ɪ́ɪrɪ́	bi-	'child'
bɪ̀ɪrɪ́	bɪ́ɪ̀e	bi-	'seed'

He gives further examples illustrating the plural interpretation for lexemes glossed 'child, tree, forehead, basket, pig, scorpion', and singular interpretation for 'seed, hoe (metal instrument), prop/pillar, root, dry spot, horn' Grimm notes this sort of inverted number marking may be rare in the world's languages but is nevertheless attested in Kiowa and Pacific New Ireland languages.

This data raises a number of questions and Grimm advances the discussion by analyzing and documenting the semantic source of the two classes in terms of individuation He points out difficulties in the theory of markedness for this data since singular/plural are generally regarded as unmarked/marked respectively, while their patterning is contrary to this in the Dagaare classes Grimm does not address the thesis of (Smith L. R., 1979) wherein it is considered whether morphemes may function as markers of markedness, i.e. that singular and plural may be unmarked for two different classes, allowing a single morpheme to refer to the marked case in each We deprecate this alternative position in the interest of pursuing a tool grammar solution as a deeper and potentially better motivated probe into the inverted number phenomena.

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What is unmistakable in data presented is that all of Dagaare lexemes illustrating the singular interpretation clearly illustrate nouns referring to a collective system, and, furthermore, the ones with plural interpretation do not [23]

This data points clearly in the direction of an actioneme which reflects semantic dimensions of individuation per Grimm, and also count classification Namely we posit that the morpheme seems cognitively unified around an actioneme $assertCountable The logic of this is that for a collective system countability arises and only makes sense where the individual element underlying the collection is conceptualized, while for the individuated noun, the possibility of counting arises just when the individuals are collected into a plural grouping.

This solution is related to a theory of individuation but offers an explanation why a single morphological form might be used to represent opposing valences: they are unified in the higher conceptualization of imposing countability This solution illustrates an advantage of a tool grammar approach If we analyze in terms of what the speaker is doing new possibilities arise, and in this case we open a window into a process that is natural and inherent as speaker action moves in the direction of counting An analysis based on markers of markedness might unify the sense of the opposing forms, but, unlike tool grammar, it cannot provide an explanation why they should be unified in the first place, or at all There is an apparent requirement here for the representation of linguistic intent in generative rules.

19 Crossover Phenomena

(THIS SECTION IS THE ROUGHEST OF PRELIMINARY DRAFTS SUBJECT TO UPCOMING REVISIONS IT IS PROVIDED IN THE PRESENT FORM ONLY FOR THOSE WHO CARE TO JOIN THE TOOL GRAMMAR WORKING GROUP AND PROVIDE PRELMINARY COMMENTS.)

Consider crossover phenomena in the following sentences where subscripts mark coindexation (co-reference). (Wikipedia) Words with subscripts refer to the same person.

(23)
a. **Who$_1$** said **he$_1$** was hungry? – Crossover absent, intentional coreferential reading available
b. *__Who$_1$__ did **he$_1$** say __$_1$ was hungry. – Crossover present (strong), intentional coreferential reading unavailable
(24)
a. Who told **Jill$_1$** that Fred would call **her$_1$**? – Crossover absent, intentional coreferential reading available

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[23] It is possible here to observe how a marker of markedness might present as an appearance in morphological patterning.

b. *$\textbf{Who}_1$ did $\textbf{Jill}_1$ say that Fred should call $\underline{\quad}_1$? – Crossover present (strong), intentional coreferential reading unavailable

(25)

a. $\textbf{Who}_1$ will call $\textbf{his}_1$ mother? – Crossover absent, coreferential reading available

b. ?$\textbf{Who}_1$ will $\textbf{his}_1$ mother call $\underline{\quad}_1$? – Crossover present (weak), coreferential reading unlikely

(26)

a. $\textbf{Which student}_1$ called $\textbf{her}_1$ instructor? – Crossover absent, coreferential reading available

b. ?$\textbf{Which student}_1$ did $\textbf{her}_1$ instructor call $\underline{\quad}_1$ - Crossover present (weak), coreferential reading unlikely

The reading of the a-sentences is acceptable. For only the b-sentences, the wh-word seemingly has moved, crossing the pronoun to the sentence beginning.

From an actionemic perspective this insightful configurational patterning succumbs to a more functional and naturalistic solution It is evident that the pronouns assert a known reference back to an antecedent element $assertKnownReferenceToElement, while wh-words posit an unknown variable: $declareUnknown It is therefore evidently counterproductive at an actionemic level to declare unknown a known reference In the a-sentences, there is a known reference to an unknown, which does not involve an inherent contradiction because the known reference is directed toward an unknown target whatever it may refer to.

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20 A Tool Grammar Theory of Reflexives:

[NB: This updated section is available on request in the extended document.]

A modest change in the generative grammar paradigm adverting to structural intention results in a superseding architecture enabling oversize new descriptive and explanatory advantages, as well as reintegration within larger theories of cognition. This remedies the difficulties arising from a generative model of cognition which has no inputs.

What is reflexivity? Beyond a focus on how it might be generated (self-referentially in a mathematical syntax without inputs), what is it? We propose that it is a structured system of actions for managing uncertainty and show significant evidence and benefits for adopting this hypothesis.

A solution is proposed for the acceptability patterns and syntactic effects of reflexive anaphors, as a competitive alternative to purely configurational syntactic approaches By associating a specification of linguistic action intent with each formational process, the distinguishing feature of Tool Grammar (TG), a simple, functionally motivated analysis is achieved which probes beyond the undergirding configurational elements of C-Command control and the Extended Projection Principle This alternative TG opens a scientific window and poses questions and alternatives for the architecture of competence.[24]

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[24] Note that we use dollar sign pseudocode for architectural investigations into a system which is amenable to proper

[NB: This updated section is available on request in the extended document.]

20.1 Overview

In the following we proceed with an aim to:
- Survey the principles of reflexivization classical/standard binding theory from the perspective of generalities to show how they are derivative from underlying structural linguistic actions The syntactic principles are motivated by higher principles.
- Present the mechanics of the Tool Grammar analysis of reflexivization from the perspective of generative processes based on a standard data set of phenomena to be covered.
- Expand the coverage of discussion to Chinese and recent discussion around general properties
- Extend the discussion to current overarching discussion of the relationship between reflexivization and logophoricity in French.

20.2 Common Pedagogy: A Step-wise Rationale and Justification

There is a long and varied tradition of analysis of reflexives in generative grammar so it is useful to place a theoretical alternative within that context. For a review consult: (Harbert, 1995) (Dana Cohen, 2018) (Reinhart T. a., 1993). There is considerable variation in questions, analyses, controversies and unresolved issues related to theoretical treatments, often reflecting unresolved or discontinued lines of inquiry but these share a historical and theoretical basis and typically recapitulate the same or similar fundamental issues We orient to the foundational dependence on Chomsky's original treatment (Chomsky, 1981) insofar as it has partially persisted in later treatments

The well-known, persistent and prevalent early binding theory analysis is a touchstone for theoretical studies and lies beneath a wide spectrum of continuing research For coverage of a wide sampling of this work consult: (Harbert, 1995) (Dana Cohen, 2018) (Reinhart T. a., 1993). We address the shared generative cornerstone, considering commonly held parts even when they sometimes lead to disjoint alternatives. Later work typically depends in fundamental ways on these earlier foundations.

As is sufficient for a disjunctive alternative, we address the reflexivity literature via its data, obviating consideration of its various and conflicting theoretical manifestations. Lacking a fully satisfactory treatment, we rely rather on data and phenomena than the intricacies of specific proposals. We attend to standard materials representing an informal orthodoxy of the history of reflexivity studies. (Richards, Binding Theory) (Bhatt, 2001)

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formalization and machine implementation.

In this section, we survey the principles of reflexivization classical/standard binding theory to show how they relate to underlying structural linguistic intentions and actions.

20.2.1 Recapitulation and Comparison of Coverage

We refer to the thematic commonalities as "standard binding theory" (SBT) for contrast with our TG hypotheses. We use the factored argumentation of publicly available syntax course materials, such as at MIT. (Richards, 24.902: Language and its structure II: Syntax)

Consider a simple pair of examples such as is used to introduce SBT, adapted from Chomsky's original paper (Chomsky 1981):

(1) John criticized himself.
(2) John criticized him.

In 1, the anaphor *himself* refers to John in self-criticism, while in 2 the pronoun *him* does not refer to John, although it can under different conditions

(3) Mary criticized him.

The SBT analysis is within structure:

"… there's something crucial about the structure of (2) that makes it impossible for *him* to refer to John there"

We refer to this as the Structural-Configurational Hypothesis for syntactic explanation. It is both insightful and *prima facie* valid at its level of analysis, but there is only an assumption and not an argument that nothing beyond structure is at play in the competence of linguistic expression for such referring terms.

We contrast this limitation with the hypothesis that there is an additional class of observables that can be incorporated in the analysis We can ask what the speaker is intending to do when s/he includes a word, morpheme or structure What does the speaker do when the word *him* or *himself* is chosen? The speaker has done something by uttering *himself*; it is a linguistic action, necessarily with a specific intention, and evidently not only an amorphous side effect of thinking or communication It contrasts with the alternative choice of *him* and reflects a decision somewhere in the expressive process A sub-system is available here to purpose, and linguistic analysis is not complete without inquiring what that purpose might be.

We refer to this alternative and complementary perspective as the

Intentional Construction Hypothesis

Syntactic theory can be enhanced by the incorporation of features of linguistic action intention as input to sentence formation rules

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The analysis continues with the previous basic sentences:

(4) John$_i$ criticized himself$_{i/*j}$
(5) John$_i$ criticized him$_{*i/j}$

In (1)', *himself* must refer to John and not to anyone else Within empirical beginnings, there is a philosophical bent One can subtly commit to a view of grammar wherein unacceptable sentences must be ruled out configurationally in optimistic disregard of prior intention. They must be ruled out of course, but the generative framework can be widened beyond grammatical configuration. Bad sentences can be ruled by virtue that they would never be generated in the first place, lacking integral intention in prior cognitive processing Structures are evidently created by intent, so it is not surprising that certain features of structure may not co-occur when the intents are not compatible Certain features may not arise together, because, before the fact of their co-occurrence, preclusion at the level of intent obviates the need for strictures after the artificial fact of their artificial co-incidence. These become a formative impossibility, of themselves a defective co-occurrence We make the subtle distinction between what cannot be said and what would not be said. We identify this thesis as follows:

<div align="center">Intent Preclusion Thesis (IPT)</div>

> Some unacceptable sentences, which otherwise would need to be excluded from generation on a purely configurational/structural basis, are preferably more simply precluded by principles that involve conflict in features of structural intent.

In the following, SBT would specify that the anaphor *himself* cannot co-refer to *I* as a form of generative filter when features of person and number do not match, whereas under the IPT the former might never be introduced lacking as it does a functional purpose.

(6) *I$_i$ criticized himself$_j$.

Rather than formulate a static principle for application after the fact of potential co-occurrence, as proposed in the SBT:

<div align="center">**SBT Principle A** (preliminary)</div>

<div align="center">An anaphor must have an antecedent.</div>

We observe that the basic function of the anaphor *himself* is to reduce potential ambiguity and uncertainty in a context of a conventional assumption, which are each orthogonal in the example.

To see the role of uncertainty in syntax, consider the situation where a language might lack reflexive marking If there were no –self forms speakers would be faced with severe confounding ambiguity in the form of homophonous utterances:

(7) John$_i$ criticized him$_i$

(8) John$_i$ criticized him$_j$

Or, to push the point to an extreme, involving also case and position, one might even imagine 'He criticized himself' rendered as 'He he criticized' [or even 'It it criticized']. Such is the mounting uncertainty as intentional tools for uncertainty management are removed in imaginary experiments.

The additional empirical observation that the –self type anaphors are intentionally introduced in order to reduce uncertainty is already an empirical enhancement of theory relative to any that are mute on functional purpose There is an Anaphoric Principle from the perspective of utility and intention of the linguistic system It is as evident as it is essential.

<div align="center">Anaphoric Purpose Principle (preliminary)</div>

> The anaphoric –self forms are introduced with the intent to clarify that pronoun reference is to a particular antecedent nominal in contrast with a default assumption of no co-reference for the purpose of managing uncertainty.

This is built on a crucial basis that there are contexts where there is a default assumption that an anaphor and referent are less likely to co-refer giving a benefit that marking is only required on exceptional cases in order to clarify intention. This system is predicated on the notion that a lack of co-reference is more probable so needs no expression beyond the potential contrast. This is the *Default Assumption of No Co-reference*. This fundamental mechanism of reflexivization is discussed more technically in later sections.

There are conditions of appropriateness for the –self tool:

(9) *John$_i$'s mother criticized himself$_i$.

The anaphor tool seems not to function when too far structurally removed from the antecedent, here by virtue of being embedded inside the subject The SBT solution is to introduce a configuration constraint roughly precluding positions more distant than through the structural sister. This is the widely potent concept of C-command that is pervasive in the SBT:

<div align="center">

C-command

A c-commands B iff every node dominating A dominates B.

</div>

A refinement is necessary: For the relationship to hold A must not dominate B, nor vice versa Thus B must be the sister or within the sister of A This formalistic detail is essential for the concept to operate as intended, but is also revelatory of further significance The adjustment shows that what is at stake is not some concept of inclusion but of cognitive juxtaposition at some level. For TG, this is easily and correctly interpreted as inseparable

from the act of predication. Importantly, as we shall see, this adjustment has the effect of bringing the concept of subject/predicate into the analysis of reflexivization.

The SBT penetrates and is effective as far as it goes, but analyses based on C-command are less than fully explanatory. Analysis can be taken further by asking why C-command should be operative Specifically, the relation to a syntactic sister reflects the fundamental linguistic act of predication, that is, an intentional assembly of elements typically merged from the lexicon (including morphological components) We can formalize this observation as follows:

Merged Constituency Thesis

Merged elements in a structural sister relationship reflect the intent to predicate, namely to configure a super-element by application of one element to another. Merge is an operation which effects the action we notate in pseudo-code as $InsertPredication. It is always done for the purpose of building out a mental representation. [25]

For the SBT, the antecedent must c-command the co-referential anaphor, and the commanding co-referential DP is said to bind the commanded one This bounding domain accounts for the accessibility limitation when using purely structural means.

To account for the previous example, the SBT Principal A is anchored:

Principle A (adjusted)
An anaphor must be bound.

(i.e. later, by a C-commanding antecedent)

SBT effectively identifies syntactic factors in the levels of data structure, but functional information is progressively lost in the process Principal A can be enhanced by including the evident functional facts of intention.

General Principle of Scoped Insertion for Reflexivity

Restrict reflexive marking of a pronoun to a co-referent nominal in the restricted local domain of its predication sister to limit the range of possible nominals available for interpretation to a limited scope of relevance.

Corollary

Do not attach a marker outside this scope of predication since, beyond the domain where a default assumption of no co-reference is a proper expectation, uncertainty

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[25] If the name "Chomsky" begins to glow here, it is intentional.

of reference becomes combinatorially unmanageable in an unconstrained domain allowing increased numbers of predicate arguments.

Using an alternative metaphor, this restricts reflexivization to local clauses.

This treatment refers not to C-command but to the functional unit of structural computation, the predication It captures the generalization and elevates the level of explanation The basis for this treatment is that the validity of the Default Assumption of No Co-reference becomes untenable as a likelihood when the scope of expectation is widened beyond the local context to where a surfeit of additional possible nominals become available for reference interpretation.

This approach does not use configurational/structural relationships in order to crash derivations. Instead, for simplicity and efficiency, reflexive features are introduced where needed for purpose as a result of structural intent. In-line procedural preclusion is posited in place of post facto filtering of promiscuously productive over-generation.

Continuing the SBT argument sequence for understanding reflexives, it is necessary to account for the following:

(10)   *John$_i$ thinks that I like himself$_i$.

So far, SBT has no means of explaining this unacceptability since the antecedent c-commands the anaphor, but it is significant that they are further separated here than in the foregoing There is some limit to the permissible distance when considered in structural terms This is known in SBT as the **binding domain** of the anaphor.

<div align="center">

Principle A (refined again)
An anaphor must have a binder which is in the anaphor's binding domain.

</div>

This presents the essential problem of defining the extent of the binding domain The solution in SBT is insightful, to the depth it penetrates, orienting to the most immediate smallest tensed sentence, i.e. the local tensed phrase, TP:

<div align="center">

Binding domain (preliminary)
The binding domain of an anaphor α is the smallest TP dominating α.

</div>

This is satisfactory in the previous example and for a sentence such as the following, in which *himself*, under a standard SBT analysis, would remain subject of the lower complement and have access to *John* in the higher and most immediate TP:

(11)   John$_i$ believes himself$_i$ to be smart.

But this leads to a subsequent problem because it entails wrongly that e.g. the following is well-formed:

(12)   *John$_i$ believes me to like himself$_i$.

So if afforded only configurational solutions we must account for the observation that e.g. *himself* can be in a different clause from its binder if it is subject of its clause This is handled in SBT as follows:

Binding domain (enhanced)
The binding domain of an anaphor α is the smallest TP containing α and a DP which c-commands α.

This measure affords the special behavior in the case where the anaphor is at the level of the subject position It also brings in tense as a variable. It does this, however, without a functional explanation. It is a descriptive account extracting a generalization from the form of the externalized utterance data without any reach into the functional workings, which evidently are at play in a decision to utter a reflexive.

This situation draws special attention to the use of tense as a conditioning factor. Lacking an explanation why it might come into play, tense can still supply apparent configurational utility to account for reflexive in the face of the lack of surface subject in *to* complements such as *Al wants to calm himself* Alternatively, in our framework *John,* as the covert logical subject of *calm,* is permitted participation in the reflexivization process; there is no need for tense since there is no countervailing necessary reason. Because a speaker must hold in mind the logical subject, the simplest assumption is that a covert subject would be available to reflexivization An extra burden is placed by the opposite assumption, with an onus to support that it must be held We therefore assert a general principle:

Covert Logical Element Principle

Linguistic actions to implement structural intent can be conditioned by covert logical operators such as understood subjects that do not appear in the string of output formatives.

A need for this flexibility is evident in the following, where reflexivization occurs twice, triggered by both a grammatical and logical subject.

(13)   Al appealed to himself to help himself.
(14)   Al hypnotized himself to help himself.

Proceeding on the lines of SBT logic, as we consider in parallel an alternative formulation, we have accounted for the data recapped below:

(1) John$_i$ criticized himself$_i$
(5) *John$_i$'s mother criticized himself$_i$.
(8) *John$_i$ thinks that I like himself$_i$.

(10) John$_i$ believes himself$_i$ to be smart.
(12) *John$_i$ believes me (Tom$_k$) to like himself$_i$.

In addition to this data, we have accounted for missing surface subjects as in the following:

(15) Al wants to calm himself.

SBT appears neither a simple or unified solution. We are separated in this progression of SBT logic from why the configurational pattern should be as it is, as well as from any indication that we are operating at the right level of analysis. Higher functional contexts are not considered. Why is the domain limited to the local superordinate TP? Why the restriction to contain a subject? The SBT insights proceed descriptively per the data, but forego a necessary step to achieve a higher level of explanation in a functional context

The controlling factor is that each level of sentence embedding brings the possibility of additional nominal DPs, and each of these, were there no constraints, could introduce new nominal candidates for pronominal antecedence Constraint is necessary because, otherwise, the –self mechanism to reduce uncertainty would have the effect of introducing uncertainty of its own by the possibility of multiple references We postulate a general principle:

Linear Uncertainty Meta Principle

A mechanism for reducing uncertainty is prohibitively countervailed by introduction of a secondary uncertainty about how the primary mechanism is to function.

This *inter alia* explains why some analog of C-command is operative: it excludes the possibility of co-reference to nominals outside a context of immediate relevance. Syntactic recursion allows nominals to occur in unlimited structurally remote locations that would neither be immediately relevant to the predication of the anaphor nor as limited with regard to uncertainty of reference.

We word this principle as we do because in the domain of human linguistic action it is variable for each language how much uncertainty it aspires to manage beyond some minimum that may hold. Although tense is not required to handle the previous cases, sentences such as the following require further discussion.

(16) Al believes himself to be safe.
(17) *Al believes that himself is safe.

While the second example is ruled out in SBT because *himself* is in a tensed complement but lacks a DP C-commanding it, the first is only permissible because *himself* is deemed the subject of the complement This is only tenable in SBT by virtue of the Exceptional Case Marking hypothesis whereby *himself* is understood to look like a direct object, to position itself like a direct object, and to act like a direct object but is nevertheless ana-

lyzed as subject of the complement despite contrary object marking Note that passivization stands to contradict this formulation:

(18)   Al believes Joe to be safe.
(19)   Joe is believed to be safe by Al.

Here we have a hypothesis that has had some plausibility from a configurational perspective but is complex and exceptional in multiple ways compared to a more straightforward TG analysis We take it to be simply the case that these DPs originating as logical subjects have simply been promoted also to be grammatical objects of the matrix verb.

As a consequence of this re-characterization, the anaphors become direct consequences of our simpler account of reflexivization The pronoun is the co-referential direct object of *believes* with *Al* as subject so the –self anaphor is inserted per regularity of co-referent pronouns within clause predications.

Next, following SBT logic to cases where the anaphor is the subject of an embedded tensed finite clause we encounter examples such as:

(20)   *John$_i$ believes that himself$_i$ is smart.

The SBT without modification gets the wrong result here. The anaphor *himself* is inside an embedded TP, but it doesn't contain a DP that c-commands the anaphor so the embedded TP isn't identified as the binding domain. The predicted binding domain is the higher sentence so the example should be well formed.

SBT handles this case by adding a second special purpose condition as an ad hoc adjustment:

   Binding domain (adjusted for finite clause)
   The binding domain of an anaphor α is:

       if α is the subject of a tensed TP, the smallest TP containing α

       otherwise, the smallest TP containing α and a DP which c-commands α.

This provides an account with two idiosyncratic conditions for particular situations which, in its descriptive effectiveness, does not have the optimal simplicity of a fundamental generalization. [26]

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[26] Before proceeding, note that the situation is arguably similar in Chinese but structures superficially analgous to the last example are well formed.

(1) Zhangsan$_i$ piping   ta-ziji$_i$
    Zhangsan criticize himself
    'Zhangsan criticized himself'

We are similarly faced with explaining this pattern in TG but find it already addressed by the previous principle Reflexivization in the sentence is excluded because it would cross the barrier between predications.

To further examine the configurational framework, consider the following sentence in the context of agreement rather than tense alone:

(21)   * John$_i$ said that himself$_i$ is clever.

It is useful to briefly summarize the protracted literature on how to exclude such a configuration, as can be tracked back from (Woolford, 1999) through (Rizzi, 1990) etc. At first glance

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(2) *Zhangsan$_i$ -de mama   piping   ta-ziji$_i$
```
    Zhangsan  's  mother criticize himself
    'Zhangsan's mother criticized himself'
```

(3) *Zhangsan$_i$ renwei wo hen xihuan ta-ziji$_i$
```
    Zhangsan    think  I  very like    himself
    'Zhangsan thinks I like himself'
```

Here is the example that differs from English. Note that in contrast it is well-formed as expected prior to any modification of the binding specification:

(4) Zhangsan$_i$ renwei ta-ziji$_i$ hen congming
```
    Zhangsan  think  himself  very smart
    'Zhangsan thinks that himself is smart'
```

This exhibits an element of linguistic variation, but note also that the analysis is incomplete without demonstration, lacking a complementizer per *that*, and discussion of the contributing role of tense. One would want to demonstrate that this last sentence was not equivalent to the following, which is also well-formed in English:

(5) Zhangsan thinks himself (to be) smart.

In any event the variability can be accounted for in SBT by introducing a language-dependent non-universal component of specification.

Binding domain (with variation)
The binding domain of an anaphor α is:

- if α is the subject of a tensed TP, the smallest TP containing α [*in English, but not Chinese*]
- otherwise, the smallest TP containing α and a DP which c-commands α.

it might seem that tensed clause subjects can't be reflexives, but these do occur in other languages. Factors that have been proposed include the Empty Category Principle, and, subsequently, agreement leading eventually to Rizzi's Anaphoric Agreement Effect, whereby anaphors cannot occur in agreeing positions. This enjoys considerable empirical support from the examination of a good number of languages differing in an operative way in their agreement processes: positions lacking agreement are permissive. It's not that there are no nominative reflexives as it superficially appears, but that they are tripped up when there is agreement The proposed mechanisms vary widely in detail, indicating the difficulty of weaving a true generalization from a surfeit of bespoke devices. We take from this that another level of analysis might hold promise.

Despite the lack of functional perspective, this work penetrates dramatically toward a basic understanding, The remaining operative question is: why does agreement repel reflexivization? In the TG approach, an obvious answer emerges. Agreement itself is evidently a strategy to reduce uncertainty in communication via redundancy: by definition, the same agreement information is present in more than one place in the sentence. This leads us to a principle to explain the Anaphoric Agreement Effect:

<center>Multiple Implementation Principle</center>

When two grammatical strategies are available to reduce uncertainty, there can be constraints on their simultaneous application in a structure, not just because there is less impetus beyond a primary reduction, but because the implementational specifics of two strategies may introduce complexities, uncertainties, and demands on computation that work against the functional motivation to reduce them.

We observe that the careful analysis of possible configurational treatments of reflexivity has led directly into a more basic understanding in terms of function and management of complexity.

We have amplified generative theoretical coverage by considering function beyond the structural requirement that a reflexive pronoun takes its antecedent in the TP domain of the closest subject. An implication of this captures the essence of the definition of Binding Domain in SBT while adding a functional explanation:

<center>Informal Reflexivization Definition/Rule (Non-Exempt)</center>

(Non-exempt) Reflexivization is insertion to reduce uncertainty of a morpheme marking co-reference to displace a default assumption of no reference, local to the clause and sensitive to the logical subject. It is in competition with agreement as a strategy for reduction of uncertainty.

Note: we postpone consideration of the well-known cases of reflexives which are exempt from SBT.

This approach discounts the absolute configurational position of the co-referent nominal and highlights both requirements of close proximity and the functional motivating context.

The constraints preclude object binding across a subject to a higher TP on the rationale that the local subject would otherwise intervene as an alternate candidate increasing uncertainty From the perspective of functional uncertainty management this leaves eligibility in subject position a special case of reference without uncertainty It captures an essential notion of reflexives: finding an antecedent at the locus of the local clause (e.g. nearest subject) while adding a functional perspective. It is also adverts to the higher logic of the SBT since there is no coherent concept of co-reference without a domain.

We hasten to add that these primary conformant examples of reflexive structure do not present the full picture, and it will be necessary to account for the so-called "exempt" anaphors in a later section.

We have not yet addressed the cases where in the context of some representation such as a picture, TV, book, etc. reflexives may not to reach to the local subject but have a referee located in some other. In the following an indirect object co-refers with the direct object. These cases will be discussed below.

(22)   Looking at the picture together, Al pointed out (showed) Tom$_i$ to himself$_i$.

It is worth noting that there is independent support for our approach in a completely different line of investigation.. In considering frequency data (Haspelmath, 2008), Haspelmath correlates frequency of occurrence with patterns of reflexivization in a variety of languages. We restrict ourselves to discussion of one of the phenomena discussed Here are the data and stated effects from the paper:

Russian contrasts so-called introverted (usually self-directed) and extroverted (usually other-directed) verbs in a way not seen in languages such as German. This is seen in (1)-(2).

(23)   Russian

      a. Vanja moet-sja.   (#moet sebja)

      'Vanja washes himself.'   ('washes himself')

      b. Vanja nenavidit sebja (*nenavidit-sja)

      'Vanja hates himself.'

(24)   German

      a. Gertrud wäscht sich

         'Gertrud washes (herself).'

      b. Gertrud hasst sich.

'Gertrud hates herself.'

Russian, reflexive -*sja* is used with introverted verbs like 'wash' while extroverted verbs like 'hate' use the reflexive pronoun *sebja*

We do not pursue this difference to the full conclusions of Haspelmath but can glean an important observation in the following excerpt from the paper:

> Universal 1
>
> In all languages, the reflexive-marking forms employed with extroverted verbs are at least as long (or "heavy") as the reflexive-marking forms employed with introverted verbs.

Haspelmath documents this distinction in English, Russian, Hungarian, Greek, Turkish, Dutch, Frisian and Jamul Tiipay. Here is Haspelmath's functional account:

> "The functional explanation has been stated clearly by Haiman (1983): It is the principle of economical coding of predictable information ("What is predictable receives less coding than what is not," Haiman 1983:807). But why exactly is the reflexive interpretation of introverted verbs predictable? I claim that it is the relative frequency of reflexive use of a given verb. If a verb is rarely used reflexively, marking it as reflexive is more important than if a verb is often used reflexively."

First, we note that this conforms with our thesis that lack of any (reflexive) marking corresponds to the more likely case and a default assumption. Second, the subsidiary point drawn by Haspelmath from previous work is important:

 Introverted verbs are:

> "verbs expressing *commonly* reflexive actions such as washing oneself" (Faltz 1985:8), as expressing "*normally* reflexive activities" (Faltz 1985:19), "actions which one *generally* performs upon one's self" (Haiman 1983:803), "*stereotypically* reflexive actions" (Levinson 2000:329), or actions "*typically* or *conventionally*" directed at oneself (König & Siemund 2000a:60; emphasis added in all cases).

The gross important conclusion is that introverted verbs are more predictable and therefor require less coding for functional purposes. If we bring this back to English analogs, i.e. verbs such as *shave, wash, dress*, we find that the reflexive is unexpressed and implicit. This indicates that reflexivization is about management of uncertainty and depends on expectation of co-reference or lack thereof.

This completes the reworking into TG terms of the basic SBT traditional analysis. We have observed the advantages of a system whereby a speaker (metaphorically) descends a decision tree to activate action tools to manage uncertainty, involving at each level a choice which precludes options further on We contrast this approach with generative over-generation whereby numerous unacceptable utterances are created later to be eliminated by configurational constraints.

Next we will consider a set of related and exceptional issues outside the SBT.

20.2.2 Indications from SBT Counter-Examples

In this section we consider range of data not directly explainable by the SBT.

In our project to show that the basis of reflexivization is intended structural action rather than configurational shape it is illuminating to consider the effect of marginal constructs beyond the aspirations of the SBT The following data is from (Parker, 1990)

20.2.2.1   Default Assumption of No (Co-)Reference

SBT is intended to handle triggered pronouns in the sense that a "triggering" syntactic antecedent is present in syntax, yet reflexive forms do occur without an overt anaphoric precedent.
In the following, untriggered pronouns that are unacceptable as single nominals become acceptable when conjoined, or in prepositional modifiers of generic NPs. These data draw away from pure syntax as fully the proper level of analysis for reflexives since there is no overt antecedent Untriggered reflexives involve not quite surprise but an implicit comparison with either a default or a neutral expectation There is a default assumption of no reference to the first and second persons in the following sentences.
Untriggered pronouns that are unacceptable as subjects or direct objects become acceptable when conjoined:

(25)   *Myself wrote to the Chairman.
(26)   Myself and others wrote to the Chairman.

The latter conjunction creates by means of simple algebra implicit contrast with "just others" as the neutral expectation.

Similarly, the untriggered reflexive is less acceptable in simple prepositional phrases than when modifying a generic nominal for comparative effect.

(27)   ?There are groups for yourself.
(28)   There are groups for people like yourself.

The latter introduces a "delta" difference carrying a contrast with "people not necessarily like you" as the neutral expectation.

These phenomena indicate that reflexivization is not exclusively syntactic but instead involved in the linguistic action of comparison with a default expectation The reflexive is acceptable when there is an implied contrast emanating from a comparison framework The examples illustrate the role of a default assumption of no reference, which we posit as a fundamental element for a reflexive system.

20.2.2.2   Passive and Dative Evidence for the Contrast Factor

Consider next the following sequence of examples which challenge the SBT framework,

involving again implicit contrast We have seen that the first sentence is properly excluded by an adjustment in the binding domain.

(29)   *Al believed that himself saw Sue. (and not another)

This sentence has himself in a subject configuration Consider the following, which is perceived as relatively acceptable even without particular contrastive stress.

(30)   Al believed that Sue was seen by himself (and not another)

We need an explanation for this difference. There is apparent relevance in that it exhibits unspecified agentive perspective (Sue was seen) achieved by passivization, advancement of the patient to subject position and placement of the agent in a separate oblique phrase. Given the removal of agentive perspective and optional and separate reintroduction in the passive construction this provides prima facie evidence that two operations are involved It is natural to postulate by himself as a supplementary separate action/predication.

One can use a structure such as:

(31)   The car was given him by Sue.

But embedded with the anaphor, a to phrase is required:

(32)   Al believed that the car was given (*/to) himself by Sue.
(33)   Al believed that Sue gave (*himself) the car (to himself).

We posit the by and to phrase as added refining sub-predications resulting from separate intentional structural actions. Similar observations are possible with other prepositional constructs such as lend … through. Without these adpositions, the structure corresponds to a primary verbal argument in the basic predication.

What is interesting and helpful to our thesis is that the acceptable cases with by and to involve a contrastive meaning, and the contrast again is with some presupposed other expectation These cases have in common with the standard within-clause uses of –self, the notion of $overrideReferenceExpectation, the notion of overriding a default expectation or lack thereof. We can posit this as the core basic feature of reflexive forms The cases with by and to differ in that the expectation to be overridden depends on a situational expectation, rather than a syntactic within-clause expectation of no co-reference created to manage uncertainty at the syntactic level This enables us to hypothesize a general principle of reflexivity:

General Principle of Reflexivity
A reflexive –self form is introduced to indicate that a default assumption of no-co-reference is to be over-ridden.

20.3   More Evidence for Divergence from Default

In the following we further develop the general idea that reflexives not adhering to the SBT can reflect in general the presence of an assertion that carries a contrast with a conventional implied default group (which may be empty).

20.3.1 Archaic Examples

There are clear indications that the fundamentals of –self usage include the idea of differentiating from some separate group or entity for which membership might be presumed as a default There is the clear implication of "as opposed to".

(34)   "He cannot by all the arts and methods he useth, heighten mens sinfull corruption to the same degree of malice and madness against God, that himself is guilty of." Ford, Thomas, 1598-1674. The Sinner Condemned of Himself.

(35)   King James Bible (Deuteronomy 18:9-14)
But there was a certain man, called Simon, which before time in the same city used sorcery, and bewitched the people of Samaria, giving out that himself was some great one

20.3.2 Hiberno-English

Well-known Hiberno-English uses of –self were likely influenced by the Gaelic substrate, e.g. "Is himself home?" These connote an idea of either objective or self- importance and are subsumed under the set of reflexives that can be attributed to contrast with a default group The idea here appears to be one who sets himself apart from others in self-regard, i.e. again "as opposed to".

20.3.3 Real World Prescriptivist Examples

(36)   Latter day prescripivists reveal the fundamentals of reflexives by collecting the usages they disapprove of; (Dictionary)
(37)   The MDA and ourselves have taken the scale of the festival to a higher level. (As opposed to the MDA alone.)
(38)
Whether yourself or the NYT like it or not it is the owner of the computer who states what is run on their own system. (As opposed to the one who should.)
(39)
He came over to greet Linda and myself. (As opposed to Linda alone.)
(40)
If any readers would like to join our band of volunteers could they contact myself as detailed below. (As opposed to anyone else.)
(41)
He came over to greet myself. (As opposed to anyone else.)

All of these have the flavor of "as opposed to (the others)". Given all these separate dimensions of independent configuration it is natural to observe that there are a variety of configurations and factors that allow a nominal to be tethered by reference to a binding DP external to it, implicit or explicit.

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20.3.4 Optionality and Non-complementary Patterns

Multiple analysts have noted that –self forms can be optional and therefore not in complementary distribution with non-reflexive ones as implied by the standard cases of the SBT analysis. This creates some tension against the foundation of the SBT, which depends essentially on mutual exclusivity In the following we note and comment on some typical examples:

Here are example alternations (Newson) reflecting the override of default expectation of other than self.

(42)   Bill saw a picture of himself/him in the newspaper
(43)   No one knew, except for Bill and me/myself
(44)   Mary found the diamond near her/herself

In each case there is an optional implication that a contrast is drawn with a default individual/group.

Here is another set of examples from (Reuland, 2014), attributed partially to Ross (1970) and Chomsky (1981), also countering a theory of complete complementarity.

(45)   Max expected the queen to invite [Lucie and him(self)] for a drink.
(46)   It angered him that she … tried to attract a man like him(self). (Zribi-Hertz 1989)
(47)   John saw a snake behind him /?himself

Reuland rejects any analysis wherein e.g. *himself* is alternatively an emphatic form of *him* This would leave a conundrum explaining how the emphatic form is prevented in positions where local binding is demonstrably operative. He concludes that in one way or another reflexives must be somewhere marked as reflexives in a configurational analysis, raising an alert whether explanation or just descriptive accounting has been achieved Recourse to simply marking reflexives in a predicate or elsewhere frames a greater opportunity for functional analysis in probing more deeply.

These issues are resolved when reflexives are seen as actions to override a default assumption of "(no particular) co-reference" The solution falls out as a specification that –self forms are conceptually triggered in two cases:

- An action to override the assumption of no/unspecified co-reference imposed on the syntactic clause as a convention for reduction of uncertainty
- An action to override an assumption of no/unspecified co-reference for a particular situation.

Examples are cited also in (Bhatt, 2001)

(48) $John_i$ saw a snake near him_i/$himself_i$.

(49)   John$_i$ thinks that pictures of him$_i$/himself$_i$ will sell well.

These examples also show the common feature of all reflexives, to override a nonidentity assumption. This commonality does not fall out as a single generalization in SBT, which accounts for its patterning by relying on complex disjunctions of features.

Bhatt, considering earlier literature (Chomsky, Lectures on Government and Binding, 1981) (Reinhart T. a., 1993), cites further examples of non-complementarity:

(50)   Bruce thinks that [[a beautiful picture of himself/him] is hanging on the outside wall of the gym].
(51)   They heard stories about them/themselves .

These again do not add new quandaries beyond those already discussed but reflect the prevalence of examples in the literature raising questions about whether any fully generalized configurational solution is feasible.

20.4   Detailing the TG Approach for Extensive Data

In this section we aim to further detail the mechanics of the Tool Grammar analysis of reflexivization based on a standard data set of phenomena to be covered.

We screen an extensive set of example types drawn from a variety of sources through our proposed approach in order to broaden a comparison with the SBT. At the same time we lay out the TG approach to reflexives in more detail.

20.4.1 Overview

In the Minimalist Approach, per Government and Binding tradition, reflexive patterning historically depends on the concept C-Command, which is the configurational relation wherein the co-referential item must be the sister or be within the sister of the referee Here is representative motivating data: (Adger, 2002) 118-20

(52)   I shaved myself.
(53)   *Myself shaved me.
(54)   *The man I saw shaved myself.
(55)   *My mother hated myself.

As noted previously, three factors are useful in configurational treatments of the reflexive. They are as follows: (Haegeman, 1994) p.207 ff.

- CM Clause-Mate: Reflexive is conditioned by co-reference inside the minimal clause.
- CC C-Command: Reflexive is conditioned by a co-referent in a C-command position
- SA Subject Argument: Reflexive is conditioned by the nature of the abstract local subject argument

Our treatment diverges from this strictly configurational analysis but dovetails well with the use of C-Command in generative analyses C-Command arises in generalizations for the particular underlying functional reason that it is associated with the local scope of a predication. Similarly, the orientation to subject role in syntax, associated with the Extended Projection Principle, affirming that sentences must have a subject, derives its explanatory capacity from a necessary functional perspective: sentences are fundamentally representations, which must be representatives of something. This requires that there would of necessity be subject matter The principles of generative grammar can coalesce with concepts of purpose and intent within the purposeful functioning of linguistic constructs in human language systems.

We present an array of standard data and effects associated with well-known discussions of the reflexive in English, adapted from (Haegeman, 1994), Adger (Adger, 2002), (Carnie, Syntax A Generative Introduction, 2007), and others As noted, this material illustrates three contextual controlling factors: a locality clause-mate constraint (CM), a hierarchical C-command constraint (CC), and a subject argument constraint (SA)

Following is the data set of acceptable and unacceptable sentence types which are the empirical basis of analysis. We recite relevant observations for each example:

(56) I shaved myself. Al invited himself.
(57) *Myself shaved me *Himself invited Al (He himself left *Himself he left.)
       a. Order or structure is relevant

       b. No anaphor in subject position
       c. Not c-commanded by referent so precedence not necessary in configurational treatment
(58) *Al invited herself.
       d. Co-reference required with feature agreement.
(59) *The man I saw shaved myself.
       e. Co-reference is lateral or lower in embedding, not up..
(60) *My mother hated myself
       f. Embedded modifiers of heads are out of co-reference scope.
(61) Al believes Sue to like herself.
       g. Reflexive occurs when co-referents associated inside same simple clause.
(62) *Al believes Sue to like himself
       h. Higher subject co-reference is blocked across object control
       i. Reflexive doesn't occur when co-referent in higher clause across object control.
(63) Al's mother invited herself.
       j. Reflexive can refer to larger subject NP
       k. Covered by CC
(64) *Al's mother invited himself.
       l. Not just CM but CC required since reflexive can't refer to NP inside subject NP
(65) *Al said that himself left.
       m. Shows CC not sufficient, need CM too
(66) Al said that he left.
       n. Shows CC not sufficient, need CM too

(67) Al thinks that Sue hurt herself.
- o. CC insufficient
- p. Need locality constraint CM

(68) *Al thinks that Sue hurt himself
- q. CC insufficient
- r. Need locality constraint CM

(69) *I expect himself to invite Al
- s. Locality (e.g. CM) insufficient
- t. CC required but phrase structure tree is debatable

(70) I expect Al to invite himself.
- u. Locality (e.g. CM) insufficient.

(71) Al believes himself to be the best
- v. CC but not CM, so predicts ill-formed wrongly, but depends on phrase structure analysis

(72) *Al believes that himself is the best.
- w. CC but not CM so predicts ill-formed correctly
- x. Also presents hypothesis that tensed S is controlling

(73) * Al believes Sue's description of himself
- y. CC but CM so predicts well-formed wrongly, showing the need for an additional constraint.

(74) Al believes any description of himself.
- z. CC CM predict this but shows can't just limit previous case inside NP

(75) Sue believes Al's description of himself.
- aa. Shows potential role of the logical subject.

(76) The picture of himself upset Al
- bb. Reflexive in matrix subject position shows special nature of picture/description constructions.
- cc. Shows potential 3rd factor, role of logical subject

(77) *Al believes that Sue's description of himself is wrong.
- dd. Correct prediction CC but not CM

(78) Al believes that any description of himself is wrong.
- ee. Wrong prediction since CC but not CM

(79) (Sue believes that) Al's description of himself is wrong.
- ff. Correct prediction: CC and CM.

(80) Al believes that a picture of himself will be on show
- gg. Shows that neither a tensed clause constraint nor a noun phrase constraint will suffice
- hh. It's possible to call on an abstract concept of subject dependent on case marking features being present..

(81) Al expected Tom to invite himself. Tom was expected by Al to invite himself
- ii. Object control is a trigger

(82) Ed allowed himself to invite Al Ed allowed Al to invite himself.
- jj. Co-reference to and from the higher object

(83) Al believed Ed to have hurt himself. Al believed himself to have hurt Ed.
- kk. Co-reference to and from the higher object
- ll. Object control triggers lower reflexive.

(84) Al has to want to try to begin to save himself
- mm.   Subject control triggers reflexive through multiple embeddings.

The configurational approach extends to the three structural conditions mentioned C-

command and Clause-mate restrictions account for the majority of patterns but *picture/description* constructions as in (73)(74)(75)(76)(77)(78)(79)(80) require the invocation of an abstract subject concept, which is indirectly motivated under a number of contingent assumptions.

20.4.2 The General Case

For the above data there is evidently a default, baseline (overridable) assumption, for purposes of likelihood, management of uncertainty, and practicality, that the nominals under a C-commanded predication will not (predictably in most cases) co-refer, and would therefore be liable to cause ambiguity confusion when they do, were it not for an override clarification mechanism When they occur alternatively as contrastive indicators, reflexive co-referential indicators deviate from the unmarked syntactic norm. From this fundamental perspective it is evident why it can be functionally useful to mark co-references overtly

Simple predications do not most frequently involve some attribute in a relation to itself When a nominal does in fact co-refer, against a more general expectation, it evokes a reflexive form to show that the default unmarked expectation has been over-ridden as a measure to preclude ambiguity in the particular clause.

There is much less such co-reference expectation across clause boundaries, where the multiplication of arguments and verbs means that expectations of reference cannot be so effectively managed. Reflexives in their basic form generally adhere to simpler clausal environments, because, when more than one clause is introduced, resulting in more than one predication, the possibilities of co-reference exceed the lower likelihood associated with a reflexive relation of single predication In this way, reflexives are seen to have a purpose reflecting user intent. Their function is to reduce ambiguity by adding lexical material in a context where the differentiation is most useful Their essence is management of uncertainty.

It is this specification of an intent for each form of construction or (trans)formation that distinguishes cognitactic tool grammar from other generative systems.
In TG, the pseudo-code elements to specify the function, purpose, and user intent underlying constructions such as the reflexive are represented as *actionemes*.
An element introducing material into a linguistic structure for some reason of user intent is an 'actioneme', symbolized by a string with an initial dollar sign '$'. These are pseudo-code shorthand for distinctive feature clusters in a more mature formalization.

As a first approximation (to be refined) we can account for the of '-self forms in most of the above data directly The simplest and broadest generalization from the data is that –self forms co-refer with clause-mate preceding NPs, leaving narrow special cases to consider As a first approximation, we specify actioneme intent for introduction of –self anaphoric forms:

Reflexive Behavior (actioneme $assertCo-reference)

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Insert a reflexive –self form for an NP under the following conditions:
      There is a co-referring referee NP in the same clause.
      The referee precedes the NP

    Conditioning: This action is triggered as an override to an obligatory automatic general assumption ($assumeNoClauseCorefernce) that there is no/unspecified co-reference within clauses.

Note that a precedence relation, which may be implemented as structural rather than linear, appears prima facie to be required in general cases since co-reference is one directional.

(85) *Himself invited Al
(86) Al pointed out Tom i to himself i.
(87) *Al pointed out himself i to Tom i.

Reflexives referring outside the local clause into a separate tensed clause are ruled out because reflexives are restricted to clause mates in the local clause.

(88) *Al thinks that Sue hurt himself
(89) *Al believes that himself is the best.

We propose a cognitactic procedure to filter this case.

  Cognitactic Screening Procedure

1. Register specified domains for which co-reference is less expected and more prone to ambiguity, e.g. $ assumeNoClauseCoreference.
2. Register cases where NP co-reference occurs in these domains against this expectation.
3. Replace a co-referring NP in these domains with an agreeing reflexive –self form where it follows its referee

The pseudocode summarizes linguistic actions We propose for Step 1 an automatic default unmarked actioneme in each simplex clause predication: $registerCoRefAmbiguityRiskForClauseDomain alias $ assumeNoClauseCoreference. This cybernetic default reflects the most likely and frequently expected situation It captures the background condition, that for simple clauses, it is deemed less likely that nominals will be co-referential

A second actioneme for Step 2 $registerCoRefOverride, is activated when a nominal co-refers inside a clause against the expectation of Step 1. Finally $insertReflexive , corresponding to Step 3, inserts a reflexive –self form agreeing with the context. It indicates an NP co-referring with another preceding NP within its domain of expectation.

Actionemes represent structural intentions in line with the other processes of linguistic

production competence.

A variety of surface forms is covered:

(90) I showed Ann herself
(91) *I showed herself Ann
(92) The book was given by Ed to himself.
(93) The book was given to Ed by himself

To recap, the domain restriction is understandable in a functional perspective Beyond simple clauses, when an embedded clause is present, there arises an additional predication and as a result the possibility of one or more additional nominal elements The embedded clause admits at least its own subject. A proliferation of nominal candidates increases the likelihood that elements may co-refer and reduces the feasibility of clarification by a simple mechanism The global possibility of nominals, particularly animate ones, beyond those involved in the main simplex predication is fundamental in determining the reflexive mechanism.

Next, we discuss special cases beyond the primary generalization.

20.4.3 Special Cases

[NB: This updated section is available on request in the extended document.]

20.5   The Chinese Perspective

The aim of this section is to expand the coverage of discussion to Chinese and relevant issues concerning the general properties of reflexivization. In the foregoing we have found that reflexivization adheres to certain basic properties:

A general intent to manage uncertainty
Definition of a context where uncertainty can be managed
Adoption of a default assumption of no co-reference in that context
A process to insert over reflexive marking for the intention to override that assumption

In Chinese we will observe particular limitations and conditions on reflexivization Our purpose here is to show that these restrictions are neither random nor amenable to ready explanation in purely configurational terms, but reflect natural and transparently understandable tool refinements when considered from the perspective of linguistic intent to manage uncertainty.

The introduction of strikingly divergent Mandarin Chinese data into the theoretical discussion of reflexives contributed important new insights which clearly demonstrated that a comprehensive account must extend well beyond the foundation of Principle A analyses The following examples and discussion is based on the foundational analysis of Chinese in (Huang, 2001).

For each of the generalizations observed we find an explanation in general TG principles to understand how variation among languages might be explained by linguistic action intent.

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For the mono-morphemic ('bare') reflexive ziji 'self'(p.2), the antecedent must be a subject. Exceptional long-distance binding is blocked by interfering erstwhile local candidate antecedents with person/number features differing from the remote antecedent Also, Tang (1989) notably demonstrated that a "sub-commanding" subject can be the antecedent in certain circumstances. These properties—mono-morphemicity, subject-orientation, sub-commanding, and blocking-as illustrated below in (a-d) respectively, constitute the basic properties of the Chinese reflexive which have been the subject of much study in recent years.

(94)　　　Here is the cited data:

a. Monomorphemicity:

Zhangsan$_i$ renwei [Lisi$_j$ hen **ziji**$_{i/j}$/**taziji**$_{*i/j}$].
Zhangsan think Lisi hate self / himself
'Zhangsan$_i$ thinks that Lisi$_j$ hates himself$_j$/him$_i$.'

b. Subject Requirement:

Zhangsan$_i$ song (gei) Lisi$_j$ yi-zhang **ziji**$_{i/*j}$-de xiangpian.
Zhangsan give to Lisi one-CL self's picture 'Zhangsan$_i$ gives Lisi$_j$ a picture of himself$_{i/*j}$.'

c. Sub-Commanding Antecedent:

Zhangsan$_i$-de jiaoao hai-le **ziji**$_i$.
Zhangsan's arrogance hurt-ASP self
'Zhangsan$_i$'s arrogance harmed him$_i$.'

d. Blocking:

Zhangsan$_i$ renwei [ni$_j$ hen **ziji**$_{*i/j}$]
Zhangsan think you hate self
'Zhangsan thinks that you hate yourself.' (compare (3a))

First, the notion of interfering local candidates conforms with the TG analysis that reflexivity is about reduction of uncertainty in the context of factors which can introduce uncertainty. The authors conclude that neither a purely syntactic nor purely pragmatic solution is adequate to explain the phenomena. This supports the TG assertion that configuration is not sufficient to explain observed patternings.

Instead, they find that the divergent anaphoric and logophoric reflexives must be accounted for separately Anaphoric forms are subject to syntactic conditions while logophoric ones are controlled by pragmatic conditions of logophoricity Exploiting the validity of the concept of governing category, as proposed in SBT theory, they segregate the two types proposed with a clear dividing line.

The concept of logophoricity introduces a distinctly non-configurational dimension into the analysis of reflexives We circumscribe this concept in terms of Pearson's general characterization: (Pearson, 2018)

"A logophoric pronoun is a pronoun that can only occur in the scope of

an attitude predicate and must refer to the bearer of the attitude"

Attitude appears via a logophoric predicate, but there is no rigorous formal definition or natural placement for this in a configurational theory of language The concept takes discussion of reflexives in an important direction but does not provide firm theoretical grounding as a useful but not fully defined concept.

Following is the illustrative data motivating the conclusion that a second logophoric type of reflexive must be posited in addition to the primary formal syntactic one This presents impediments to a purely syntactic analysis .

[NB: This updated section is available on request in the extended document.]

20.5.2 Summary

We have seen that the particular limitations and conditions on reflexivization in Chinese fit well into a functionalist TG account of reflexivization In each case the restriction is neither random nor easily understood in configurational terms but reflects situational factors which affect uncertainty demonstrating their connection to the underlying purpose that TG attributes to reflexivization in natural languages.

The various observations of Huang and Liu point to a domain of linguistic generation which reflects a systematic reality for the role of intent in linguistic formative actions. This has not been traditionally recognized in generative models of linguistic competence The phenomena they delineate cannot be properly elucidated in configurational terms and are naturally understood as projections of linguistic intent based on concerns of uncertainty management In that way they provide motivation for development of a theory of Tool Grammar.

20.6   Logophoricity in French

This section extends the discussion to the topics of reflexivization and logophoricity in French based on a comprehensive work that builds on the accumulation of previous literature (Charnavel I. , 2018)

The context of discussion is the TG approach to reflexivization, which adheres to certain basic properties:

> A general intent to manage uncertainty as a basis
> Definition of a context where uncertainty can be managed
> Adoption of a default assumption of no co-reference in context
> A process to insert overt reflexive marking for the intention to override that assumption

In French we will observe particular limitations and conditions on reflexivization oriented to the concept of logophoricity We aim to show that these are neither random nor fully explained in configurational or logophoric-internal framework, but reflect natural and transparently

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understandable tool patternings when considered from the perspective of linguistic intent to manage uncertainty.

20.6.1 Overview

We pursue logophoricity in reflexives based on recent penetrating work on French (Charnavel I. , 2018) This tradition of work is useful for understanding how logophoricity, first understood as an informal syntactic category, can be recast in a system to capture the role of purpose and intent in linguistic generation Historically, ground-breaking, solutions for interesting and exceptional cases have yielded pioneering concepts that initially are not fully defined, leaving elements of unclarity and a residue of unexplained phenomena Reflexives have tended to be reduced to non-natural disjoint sets of categories rather than unifying the source of understanding in deeper overarching generalizations. Based on the ongoing and general inquiry about the SBT, this situation is evolving; Charnavel and co-authors have advanced the investigation (Charnavel I. a., 2015) (Sportiche, 2016) (Charnavel I. , 2018) and it is possible to leverage this work as a backdrop for our thesis.

As with other work on logophoricity, Charnavel navigates constructively away from purely configurational analysis. We observe that this points ultimately toward a tool grammar account built on evident speaker intents and structural actions Throughout the work we find the hallmarks of TG analysis: an implied contrast in co-reference, together with default background assumption of no specific co-reference; there is always an implied context involving contrast, by whom and with what, layered on top of an initial contrary assumption. This fundamental element of potential contrast explains the presence of logophoricity since it is attitude and perspective that bring in the potential for contrast: attitude & perspective differences imply potential contrast It appears that reflexivity can reduce uncertainty by marking situations where the speaker intends some transient change in perspective, which is the essence of logophoricity.

As we have seen, Condition A (non-logophoric) examplars show that the default context of local anaphors is an implied speaker assertion/assumption of local nonidentity which is overridden per a system designed to minimize uncertainty in a controlled syntactic context. Extendingthis to logophoricity and reflexives to non-local supra-syntactic contexts, reflexivization clarifies intention in contrast with a default assumption of nonidentity.

In this way, the concept of logophor, which a priori might seem unconnected to reflexives and not systematized with regard to its relation to formal syntax or semantics, is concretized as the presence of intentional functional contrast This approach benefits from a more evidentiary grounding since any an otherwise required apparatus of abstract operators and antecedents is not independently motivated, while linguistic actions (actionemes) are themselves empirically evident and verifiable Further, TG facilitates a view that observed variation is due to systematic instrumental creativity.
In the following precis we highlight key elements Charnavel's work probing data that is used to justify the introduction of covert logophoric operators. (Charnavel I. , 2018)

The primary problem posed to theories of anaphor is the distinction between the basic "plain" SBT anaphors under the locality constraints of C-command binding per Chomsky's original

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Condition A (Chomsky 1986) and the set of exceptional "exempt" ones which point to the need for solutions beyond the basic framework. Both these types are documented in numerous languages. (Pollard & Sag 1992), (Maling 1984), (Huang & Liu 2001), (Kuroda 1973), etc.

Charnavel formulates a unified theory of anaphors in a single theoretical regime without recourse to a diversity of explanations as lexical differences. All anaphors are ordinary, held to be subject to Condition A, based on the proposal that exempt anaphors are bound by a proposed covert abstract logophoric operator introduced to permit the unification of exempt and non-exempt cases. Residual differences are then related to characteristics of the antecedent.

This work extends and revises the seminal introduction of the logophoricity concept in (Sells, Peter, 1987: Aspects of Logophoricity. Linguistic Inquiry 18: 445–79) Avoiding an epiphenomenal view, Sells does not view logophoricity as a primary conditioning feature but a derivative one which emerges from the discourse roles of source, self, and pivot which are evident beyond the patterns of logophoricity.

A logophoric analysis finds support empirically in direct observation of evident features of perspective, including where meaning emerges from the point of view of a perspectival center The covert operator includes that center in its scope In support, a logophoric pronoun is proposed by Charnavel as a second silent abstract element This second theoretical construct, which is taken to bind all exempt anaphors, addresses the important observation that exempt anaphors invariably co-refer exhaustively, and not partially, in the local domain These constructs enable the view that exempt as well as plain anaphors are constrained in their binding by Condition A.

For our purposes, we extract from this that matters of perspective are characteristically vulnerable to uncertainty related to the shifts in perspective and divergent mindsets This generality enables the treatment of logophoricity in terms of uncertainty management.

We propose that reflexive structures and processes result not from syntactic or pragmatic structural relationships but from speaker actions to create an anaphoric reference, that is, implementing a contrast by means of structural linguistic action The intent is to reduce uncertainty relative to some potential operative contrast.

In the wake of Sells (1987), logophoricity is not a fully unified concept. It collects together multiple kinds of logophoric center identified via the attitude holder and the locus of empathy, at the same time excluding Sells' pointing/deictic point of view from the inventory of logophoric mental perspectival attitudes.

The evolving theory integrates the logophoric phenomena at the level of structure/syntax but divides it at the level of perspective Without recourse to uncertainty management there is no clear indication why logophoricity should play a role in anaphoric patterning in the first place. The breakdown is useful but calls for functional explanation and an integrative taxonomy..

There persist through the discussion of logophoricity ongoing fundamental questions pertaining to a role in a formal system, characteristic of reflexivity generally. In what follows we work from

the hypothesis that every syntactic formation is engendered by intent and for a definable purpose This begins from the most basic impetus to create a representational model in each predication ($createModel: {predicate, nominal}), and reaching pervasively toward the detailed corners of a syntactic construction Beyond configurational syntax and the environmental climate of logophoricity TG pursues the why of intent and incorporates a statement of purpose in each derivational step

In the following precis we reference the data framework provided by Charnavel.

[NB: This updated section is available on request in the extended document.]

20.6.2 Conclusions from the Patterns of French

Charnavel draws a number of basic conclusions based primarily on French with a view to opening a window to new more general analysis Foremost, her system addresses the fact that a single surface morphological manifestation can reflect the syntactic and semantic differences observed between plain and exempt anaphors It does so by introducing abstract logophoric pronouns and operators which are silent but summative insofar as their hypothetical presence allows both classes to be combined under a single binding regime For TG, the unification comes about by shifting the level of analysis to that of functional purpose.

For TG, our basic and necessary conclusion is that the logophoric analysis is correct but amenable to further penetration Charnavel finds that logophoricity involves two things that can license exempt anaphora, attitude and empathy, but from the point of view of what the speaker is doing, the linguistic action, these are trivially seen both to be aspects of one intention, to project into a divergent mindset The exemption is conditioned by the action $projectMindset This feature of sentence generation combines with the evident intent of reflexive anaphora to contrast with a default identification, which we assign the pseudocode $contrastDefaultIdentification We have seen that the default can involve no or unspecified co-reference. These two features working together unite the phenomena of anaphora without the introduction of artefactual hidden abstract operators.

The general tenor of Charnavel's solution is to support the general thrust of the original Chomskyan approach implementing Condition A based on bounded antecedence, and to reject theories oriented to differential predicates which depending on patterns of putative co-argument relations. This is notable because, as Charnavel asserts,: "the nature of binding involved in Condition A remains to be specified" Proposed foundations include both Agree (Hicks 2009, Reuland 2011, Rooryck & Vanden Wyngaerd 2011 and Movement (Charnavel & Sportiche 2016). We are left then with a system focused on unification of related phenomena based on fundamentals which are not fully understood.

This leaves reflexivity inconclusively addressed despite significant progress From a Tool Grammar perspective, the elusive nature of the processes underlying a large set of carefully analyzed cases in multiple languages leaves the conclusion that the problem has been addressed at the wrong level of analysis This inclines the practice of linguistic theory back in the generative pipeline toward an understanding of the linguistic intents behind various linguistic structures, their patterns of compatibility, and their role in management of uncertainty in linguistic

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expression.

20.7   Some Conclusions Regarding Reflexives

Configurational analyses of reflexives continue to stimulate further investigation They uncover and probe syntactic and other effects of linguistic structures and processes, but do not explore reasons why any particular linguistic mechanism exists or how it functions in a utilitarian context Configurational generative analyses do not seek the founding purpose behind the reflexive construction In our analysis we juxtapose against this evolved structuralist approach a cognitactic analysis using functional explanations of intent which adhere to principles of cognitive strategy rather than screening effects for particular architectural configurations.

A simplified cognitax solution was proposed to handle the basic non-exempt anaphor data involving four aspects of descriptive patterning: precedence, clause mate locality, C-command, and abstract subject relationship. It was extended to re-analyze the complexities of exempt anaphors.

We question a priori the functional barrenness of a purely configurational approach since communication is intentional, so we therefore seek a functional actioneme tool analysis that is well supported by the accumulated observations of generative analysis We build from the configurational approach as a necessary step in the deepening progress of understanding

Since our goal has been to approach the problems of reflexivization from an architectural perspective arguing for a different level of analysis, we have presented conclusions in terms of pseudocode abbreviations rather than attempting a more formal treatment prematurely.

We inquire why C-Command should have the explanatory power that has been attributed to it and conclude that a true generalization has been indirectly represented, since the sisterhood referred to in C-Command is, a from another perspective, a relation to a clause predication The configurational branching reflects the application of predicative tools We propose that C-Command holds to the extent it does because it corresponds to discrete actions of clause predication with their corresponding intents

With this overlay and congruence, the actioneme approach is an advance, because it explains why C-Command should hold where it does, namely, that there are tools, such as reflexive constructions, that can be constrained to act principally in direct predications We posit that non-exempt reflexives outwardly/explicitly revise a probability expectation of difference of reference The scope of that expectation is within a clause predication As such, we believe cognitax provides an explanation why the C-Command configuration, fencing off the more remote predicates as it does, should be relevant. In this way, TG can be viewed as a more ambitious generalization to cover the non-exempt data Beyond the devices of traditional generative grammar there is evidence for a more inclusive superseding functional apparatus.

TG illuminates questions about the architecture of competence Whereas generative studies have

traditionally separated syntax from motivational cognitive inputs, TG would delineate a strictly restricted controlled vocabulary of linguistic intents and present these as interconnected with a set of syntactic processes The empirical basis of actionemes supports the hypothesis that there is an additional component in the architecture of linguistic competence which is the source of certain of the structures that have traditionally been the subject matter only of configurational syntax

These observations and issues highlight the importance of some questions raised by reflexive structures and point to the need for ongoing future research.

[NB: This updated section is available on request in the extended document.]

21 Poetics as an Argument for Psychological Reality

Consider Blake's poem "Tyger" which John Ross (Ross J. R., 2000) has examined carefully for poetic structure A hallmark of the work is the discovery of what Ross calls the 'corridor', a sort of column which is a repetition of structure in successive lines, so that a vertical pattern of recurrence sets in relief stacked corresponding items and offsetting horizontal patterns We observe the column of alliterations in the poem per Ross's insightful and deeply considered work, but also stacked actionemes, as illustrated below. The actioneme effectors are reflected on the surface only as wh-words but the cold configurations of labeled hierarchies cannot do major duty to bring out the structure of inexorably mounting uncertainty, which is the heart of the poem. If one considers Blake's poem as a reflection of superficial wh-word alliteration alone the result is surface structural analysis unconnected to a core meaning whose emotional potential stands as an essence of the poem By circumventing what the poet seeks to do to the reader, one misses a core linguistic element If language is hypothesized to involve a set of active tools, it is a good test of the proposal to see if it can partially explain the manner or enablement of art We think a poem cannot easily be made just from phonology and configurational syntax A poem is typically a series of impactful actions.

If we posit a linguistic action, an intention effectuator ('actioneme') $declareUnknown (alias $positVariableToResolve) underlying each wh structure, the actioneme alliteration can be seen in harmony and counterpoint with phonological alliteration We have annotated the poem itself.

      The Tyger

Tyger Tyger, burning bright,
In the forests of the night:
[What] immortal hand or eye, $declareUnknown
Could frame thy fearful symmetry?

In [what] distant deeps or skies, $declareUnknown
Burnt the fire of thine eyes?
On [what] wings dare he aspire? $declareUnknown
[What] the hand, dare seize the fire? $declareUnknown

And [what] shoulder, & [what] art, $declareUnknown,$declareUnknown
Could twist the sinews of thy heart?

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And [when] thy heart began to beat, $declareUnknown
[What] dread hand? & [what] dread feet? $declareUnknown,$declareUnknown

[What] the hammer? [what] the chain? $declareUnknown,$declareUnknown
In [what] furnace was thy brain? $declareUnknown
[What] the anvil? [what] dread grasp, $declareUnknown,$declareUnknown
Dare its deadly terrors clasp!

[When] the stars threw down their spears $declareUnknown
And water'd heaven with their tears:
[Did he] smile his work to see? $declareUnknown
[Did he] [who] made the Lamb make thee $declareUnknown,$declareUnknown

Tyger Tyger burning bright,
In the forests of the night:
[What] immortal hand or eye, $declareUnknown
Dare frame thy fearful symmetry?

There is an actioneme underlying the insertion of the wh words which corresponds to the action of asserting that something is unknown The $declareUnknown (alias $positVariableToResolve) actioneme represents a Rossian corridor that most exactly overlays the wh word syntactic column It's perhaps anathema to think of a poem as constructed by a process devoid of artistic meaning intent The repetition of the action of affirming the presence of the unknown is near the heart of this poetic creation.

There is a resonant rhetorical effect here from the presence of repeated questions around an integrated theme $accumulateRelatedQuestions is a second order self-referential actioneme which builds the literary tension Note that Blake's use of wh-words reflects exactly such a column/corridor, and that the syntactic pattern interplays with the phonological To attribute the poem's power only to the colder insertion of wh items, however, is to abstract it in a way that for poetry lacks the essential emotional dimension.

For present purposes there is an overarching point to be made, as subtle as it is potentially powerful, namely, that there is an experience in reading the poem, verifiable simply by surveying good readers of poetry, that not only is not reflected but cannot be reflected by syntactic wh insertion or by any theory of syntax that lacks something like the actioneme Is there evidence for the reality of this $declareUnknown (alias $positVariableToResolve) actioneme? Certainly, the answer is yes because any sentient able reader of the poem must recognize that the essence of the artistic experience is the repetitive and accumulative pounding of the mysterious unknowns If we are sensitive we cannot escape Blake's intent This is not a matter of theories of linguistics or poetics but simply a fact of the data which can be independently verified It is perhaps unprecedented to cite an artistic experience as evidence for a syntactic approach but, still, it is offered here as focused and verifiable evidence.

Without the actioneme there can be no truly comprehensive analysis of the rhetorical method or the poetic process. The subtle action-based re-framing of the wh-word occurrences enables us to represent the fact that Blake sends artistically crafted thunderbolts from the utilitarian cognitive

instruments

To summarize, as a provocation to emphasize the nature of the material we are dealing with, our analysis holds that the actioneme $declareUnknown (alias $positVariableToResolve) can be observed at work in some circumstances completely apart from everyday utilitarian syntactic considerations It is evident in art Once a linguistic action dimension is recognized in linguistics, its power, to the extent it is real, might be expected to become pervasively evident To deny it would be as to tell a viewer using a new high power telescope that they are not in fact seeing what they see since the viewed objects do not appear in existing maps of the skies

Our premise is perhaps confirmed by one of the world's pre-eminent poem who has affirmed that s/he has always thought of the units of poems as actions.[27]

22 The Role of Intention in Verbal Control

Introduction and Summary

The scientific goals of the Minimalist Generative Program (MGP) (Chomsky, A minimalist program for linguistic theory, 1993) have been advanced via a traditional architectural assumption that a grammar connects meaning to sound (sign, etc). The most general purpose of the present work is to ask and evaluate the question whether scientific goals can be better supported rather by an alternative architecture wherein grammar is viewed as connecting linguistic structural intention to sound (sign, etc.), oriented more to speaker generation than listener interpretation In this view, linguistic structure is connected to intentional sentence formation by means of speaker-oriented actions to effect desired structural representations as a process separate from semantic interpretation The generative process of the sentence producer is separated from the interpretational or anticipatory process of implicit semantic rendition.

One of the most far reaching architectural revisions in the generative program since its inception has been the re-orientation, as part of the minimalist formulations, from top-down generation, building syntactic structures (outward from an initial S symbol toward elaborated hierarchical configurational structures), inversely, to the reverse bottom-up process whereby complex hierarchical syntactic trees are built as elements are injected and merged as constituent elements This shift to expansive grafting engenders new possibilities and advantages for the architecture of competence insofar as elements are adjoined by means of the (putatively) maximally simple rule of Merge as proposed by Chomsky. The analysis we present explores the hypothesis that sentence generation is further best modeled as a process wherein lexical items are selected and merged into structures, along with directives for particular forms of structural realization, and both of these decision types are controlled by a formative specification of structural intent. This is linguistic intentional action on the part of the speaker. We thus argue for a revised architecture wherein linguistic rules, be they lexical insertions or structural formations, are conditioned by factors of linguistic structural intention For convenience we refer to this approach as Tool Grammar (TG) as explained below.

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[27] Personal communication.

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Rather than seeking to undermine or displace the minimalist program the proposed revision would amplify its importance to the extent that additional explanatory power becomes available Chomsky's massively influential foundings of generative grammar originates from profound observations on the creativity of human language To the extent that a revised architecture can uncover for exploration a new level of linguistic creativity it validates the Chomskyan proposal by judiciously extending its initial programmatic formulation Further, any modifications which increase the simplicity of linguistic theory enhance the viability of the Minimalist approach.

One of the attributes of the Generative Program has been to motivate the discovery of a large number of syntactic patternings associated with structural attributes   These constitute a database of scientific effects which provide an opportunity for ongoing research Presently we will focus on a pervasively fundamental and central syntactic effect to provide a laboratory for the study of linguistic action intent To develop supporting arguments and have them carry significant weight the approach that follows will be to consider the phenomenon of verbal control, one of the most difficult, long-studied and least resolved of problems in generative syntax In his formidable comprehensive analytical summary (Landau, Control in Generative Grammar, 2013) both lays out the considerable complexities of this problem and concludes that it has not been resolved: (Landau, Control in Generative Grammar, 2013, p. 258)

> Difficult questions remain open; some of them are as old as the earliest studies
> of control. Perhaps more than in other areas of linguistic research, problems in
> control are challenging in that they bear no obvious mark as to *which* part of the
> grammar they belong to; lexicon, syntax, semantics or pragmatics – the proper
> analysis is always up for grabs. If history is any clue, the future of control holds
> many more surprises.

The subject of verbal syntactic control represents a watershed challenging area of research in the history of generative syntax and is particularly ripe for analysis based on Landau's comprehensive and penetrating research summary of the phenomena observed and recorded over several decades Furthermore, his follow-on analysis (Landau, A Two-Tiered Theory of Control, 2015), advancing toward a comprehensive theoretical treatment, highlights key issues and presents new opportunities for understanding. The difficulty of the problem presents an opportunity as a gateway challenge for new theories of syntax To the extent that competitive explanations become available in the domain of verbal control, enabling theories engage the theory of syntax in a non-superficial way.

The numerous linguistic effects observed in the MGP are essential scientific waypoints, but also further afford a means of stimulating and testing new theoretical hypotheses To the extent that the specification of linguistic intent can strengthen the constraints on linguistic form and therefore the range of possible human languages, it also addresses Chomsky's over-riding concern with understanding how children learn language so expeditiously in the face of its complexity and their exposure to limited data, known widely as the poverty of stimulus problem A potential advantage of linguistic rules which are intention-aware is an opportunity to provide unified solutions to difficult problems where previously difficult syntactic challenges have partitioned out to semantics, pragmatics, discourse analysis, and so forth, in a dispersed and often less than fully integrated way. If TG can simplify the generative apparatus and constraint ecology

it has the potential to advance the primary goals of the generative program A principal aim of Minimalist theory is simplicity so TG is supportive of its general tenets to the extent that the conception of Universal Grammar can be rendered less complex.

The general purpose here, then, is to examine control data (partially) outside the historical context of syntactic configurational analysis, placing it rather within a revisionist framework referred to as Tool Grammar (TG) TG is circumscribed by the claim that syntactic theories can be improved if linguistic rules are enhanced by the addition of formal specifications of linguistic structural intent as part of their input conditions. By requiring a formal statement of user structural intent for each linguistic rule or process, a significantly different kind of analysis oriented to structural and functional purpose is enabled.

The methodology of our analysis will be to work through key data and syntactic effects that Landau has collected, endeavoring to present for consideration the advantages of a TG perspective Since TG diverges significantly from previous approaches it is fairly discontinuous from the argumentation of configurational syntax so the analysis proceeds without investigating previous analyses point by point, as Landau has done so thoroughly in any case.

Throughout we will bring Landau's data forward to provide commentary and analysis from the perspective of structural intent For convenience of reference, examples will be numbered sequentially but the page reference and a brief topic tag will be given when examples are drawn from (Landau, Control in Generative Grammar, 2013) In view of the seminal nature, comprehensiveness, and clear explication of Landau's work we will assume the reader is familiar with it.

The MGP creates new frontiers in the science of language, which themselves beg inquiry into where further explorations might lead. The examination of verbal control based on Landau's compendium of observations is an important frontier area central to the theory of syntax.

Overview of Verbal Control as a Test Environment

In the history of the MGP, Idan Landau's work on verbal control stands out for its assiduity, scientific comprehensiveness and relentless theoretical advancement on a single cluster of related syntactic phenomena The choice of verbal control for long term persistent scientific analysis is particularly penetrating because it is at the very center of complex sentence formation, involves manifold resistant complexities, and, beyond its own mysteries, interlaces with both semantic and pragmatic processes.

To recap, Landau has both rigorously surveyed the large field of verbal control studies and also insightfully penetrated the accumulated data effects to propose ever more comprehensive theoretical solutions, making it possible to leverage this work in a particular strategic way We use (Landau, Control in Generative Grammar, 2013) as a summary of observational effects which must be accounted for, and reference (Landau, A Two-Tiered Theory of Control, 2015) as the most advanced theoretical milestone for any ongoing research.

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We investigate where these facts might lead as we seek to apply the principles of TG to verbal control Here are the specific empirical and theoretical questions that arise from Landau's consolidation:

Questions Implied by Verbal Control for Linguistic Theory:

A. Why, precisely, do certain groups of verbs cluster together in the observational effects that emerge from examining verbal control as a phenomenon?
B. What are the implications of accepting classes of verbal control verbs as basic observational data to be accounted for in theory?
C. Why does verbal control exist in natural languages?
D. How can entropy in the theory of control be reduced and simplicity increased?
E. Verbal control, viewed as a type of interlocking between verbs as they are merged into syntactic structures, raises empirical and theoretical questions about generative sentence building. What are the theoretical advantages of coordinated lexical selection by speaker intention in sentence building versus noisy random disjoint selection and over-generation subject to massive semantic filtering? Which model best approximates human competence?

These are questions we will return to after the following sections which undertake to strategically leverage the results of Landau's work.

A Fundamental Starting Point

It is essential to our purpose that we begin by looking at classes of predicates that emerge from syntactic patterning as primary data In the literature of configurational syntax, classes of verbs that surface from the observation of shared syntactic behaviors are often considered derivatively incidental rather than fundamental to theoretical motivation.

Here are a set of crucially important classic raising/control distinctions presented by (Landau, Control in Generative Grammar, 2013, p. 10) [28]

Raising to Subject
(1) *seem, appear, turn out, happen, begin, continue, stop, likely, certain, sure.*
Raising to Object
(95)   believe, consider, prove, show, take, expect, allow, prevent, depend on.
Subject control
(96)   try, condescend, promise, decide, plan, agree, hope, prefer, wonder, refrain.

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[28] Landau: "Both raising and control predicates come in two versions. In one version, the matrix dependent is a subject (as in (22)), and in the other one it is an object. We provide below a sample from each category (drawn from the English vocabulary)."

Object control
(97)   persuade, encourage, recommend, appeal, force, plead, order, urge, dissuade

Considering these classes as primary data raises important questions Why do such classes exist? At what level are these classes defined? What are their definitions? Can one predict whether there could be verbs falling into more than one definition? What do these classes tell us about human language capability and its organization? What are the implications for human language ability with and without such classes The emergence of these data prompt many such questions.

By merely examining the usages implied by these classes in a spirit of wishing to provide descriptive linguistic transcriptions, it is possible to infer a working approximation of structural action intention underlying these classes We simply inquire what the speaker is doing: What is the action? Following is a reasonable approximation (in what might be a line of successive approximations as TG evolves). As noted below, we express these sets of intention features informally as *actionemes* marked with initial dollar signs, complex collections abbreviated for purposes of architectural discussion in a form of pseudocode, as is common in developing an architecture for symbolic systems In a more formalized representation they would appear as sets of binary features and/or functional specifications.

A. Raising to Subject
    $addVerbXSpeakersExternalObservationDirectedToSubjectOfV
B. Raising to Object
    $addVerbXExternalMentalConditionDirectedToSubjectOfV
C. Subject control
$addVerbCommitmentToAgencyEnactmentDirectedToActionOfV
D. Object control
    $addVerbAdvocacyForAgencyEnactmentDirectedToSubjectOfV

E. Raising, Generally: $addVerbConditionExternalToAgencyEnactment vs.
F. Control, Generally: $addVerbConditionInternalToAgencyEnactment

In these last two we encounter one example of a fundamental hypothesis in the domain of cognitive syntax, namely that human language appears characteristically to be concerned in an operational way with the causality of events and situations We frame this context as $AgencyEnactment and further hypothesize here that there is a potential to differentiate those conditions internal to a causality chain, i.e. those controlling the eventual occurrence or non-occurrence of an event, from external ones involving conditions less impactful on direct causality, describing, rather, factors of the surrounding and framing context Syntactic constructions routinely involve additive predications on more central verbal assertions, and these can be of these internal and external types impacting the processes of syntactic formation We therefore operate on the working hypothesis that internal/external distinctions on $AgencyEnactment are transcribable and psychologically real This claim is summarized in the following:

The Bounded Causality Hypothesis

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The cognitive distinctions observable in linguistic patterning distinguish predications internal and external to the causality chain of events and situations ($AgencyEnactment).

We present hypotheses about linguistic actions using dollar sign symbols and refer to them as 'actionemes' Actionemes are clusters of properties that represent linguistic action intent. They represent preliminary hypotheses aiming toward a standard controlled vocabulary of linguistic action intents They are utilized as a form of pseudo-code for methodological convenience with an understanding that the process of formalizing TG should call eventually for a range of mathematically explicit, rigorously defined elements and forms The purpose of pseudo-code is to engage higher level questions of structure, process and organization without falling into distracting questions at a lower level of more detailed specification. Actionemes are shorthand in discursive presentations for a feature and function formalism which is conceptualized for a machine implementation as a generative system A useful and conciliatory default assumption is that actioneme features inhabit and extend the feature space often referenced in syntactic and semantic theory, but are given a revised and radically more enlarged role than has been countenanced previously.

Even as initial renderings, subject to revision, these characterizations enable a new perspective on the processes of verbal control. We have here, for example, as one feature (Single actionemes are mnemonics for multiple features and functions.), a signifier of "direction to", according with the occurrence of 'to' as the external sign of complementation. This offers an explanation why 'to' is selected to mark control and not some other lexeme The claim is that the speaker is directing one predication to another for a purpose of modification, so it is no accident that directional 'to' has been chosen for this purpose in English Structural directionality is part of what is intended

Variant specifications of the linguistic intention are possible in the short term, highlighting a longer term need to evolve and conventionalize a control vocabulary for actioneme formation The variants below, for example, reflect alternative approaches refined at a different level of abstraction to characterize putative concurrent underlying factors, which in more formal terms would be represented as complexes of binary features or function relationships.

G. A,B, i.e. raising classes together reflect
    $addVerbExternalMentalReactionReSituation or
H. C,D. i.e. control classes together reflect:
    $addVerbInternalAgencyEnactmentRoleInSituation

These actionemes as summary transcriptions of linguistic actions are postulated to provide a basic empirical platform for further theoretical formulations To the extent they correspond to a psychological reality they afford some explanation for why the verb classes occur Such transcriptions, short for complexes of particular features, represent underlying data for syntactic

analysis but also serve as directives for syntactic formation of the sentence They are also subject to validation by psycholinguists using experimental techniques.

The mental constructs implied by these pseudo-code transcriptions provide necessary but not sufficient conditions for the explanations we pursue as to why control verbs and the verbs they control should co-occur as they do The higher control verb provides characterization of the lower, controlled proposition In this way it is necessarily the case that the controlled verb is selected first since it is natural first to conceive a predication then subsequently consider what framing it should take in sentence construction, while the inverse, to choose a framing then ask what to frame, is not operationally plausible We observe from this that linguistic framings are imposed on propositional material which precedes it as conceptual background Given an accessed proposition, one decides how to frame it in formulating an expression, not infrequently based on reference to mental processes, as we see in the case of control structures.

We observe from these structures a necessary refinement on the functioning of any linguistic merge operation which in the process of sentence generation builds syntactic structures bottom-up as e.g. lexical items are selected by the speaker to implement intentions for expression Specifically, it is not logical in a computational system that linguistic intentions would be selected randomly for after-the-fact reduction by any means, while compatibility of intents among selected elements is most natural to the production of a structure conformant to what is intended.

A propos of the present classes, we observe, from an intentional perspective, that controller and controllee verbs in verbal control constructions exhibit an interlocking relationship: they are selected as a coordinated sub-unit and in reference to each other This evidently would not be the result of random coincidence or filtering from random juxtapositions since this contravenes the integrated function which is evident in their purpose For this reason we posit the necessity of a species of merge wherein a characterization verb is selected in connection with a particular proposition, effecting certain interlocking connections This substructure, first constructed independently, becomes available for merge into a the larger syntactic structure This contrasts with the over-generation and filtering philosophy of the Minimalist Program The interlocking features include co-reference of subjects, insertion e.g. of 'to' and other possible elements such as tense and aspect.

This process, as we have just described it, introduces the concept of packaging, which reappears often when looking at syntactic problems from the perspective of intention There is a plausible view even, that pervasive features of syntax such as complementation and syntactic embedding/hierarchy itself are resultant from the mechanisms of intentional packaging This topic is too broad to consider here but should be kept in mind as a potential benefit of intention analysis.

Note: Sections here are omitted in this version The remainder of the body of this section is currently being refined.

[NB: This updated section is available on request in the extended document.]

Wager Class Verbs as a Proof of Concept Challenge

We proceed next to some directly persuasive confirmatory evidence for the reality of TG processes In the context of heretofore perplexing observations about the patterns associated with so-called wager class verbs we pursue the potential to develop a quasi mathematical proof that a specification of linguistic intention is necessary for the proper scientific account of syntactic phenomena.

The structure of the argument is to observe a classic problematic syntactic pattern which has been inherently and persistently resistant to configurational analysis or resolution, but which is directly and simply explained by simple reference to transparent actionemic features which are independently required By recording evident action in its verbal usage, the previously confounding pattern yields easily to a simple, straightforward, and transparent solution Thus, to the extent that a competitive configurational analysis with at least comparable explanatory features is not forthcoming a convincing tool grammar treatment of these phenomena emerges as a strong theoretical test of its theoretical necessity.

To frame the argument, recall that previously we adduced evidence for a structural intention involved in the formation of object raising verbs:

      $declareMentalProcess

With this in mind we adduce one important class of verbs that persists as a major unsolved problem in the generative program commnly referred to as the so-called Wager Class of Verbs. These are discussed extensively in (Pesetsky 1992) and are documented there as due to Paul Postal They are ECM agentive verbs referring to cognition:

      Wager Class Verbs

          Examples: wager, assure, say, insist, allege

These are significant by viartue of the behavior by which they do not normally allow a raised or ECM subject as in

    (98)   *They say Sue to be enjoying the summer.

while, significantly and surprisingly, permitting such when used in apposition:

    (99)   Sue, who they say to be enjoying the summer, has left.

With this in mind, we turn to a primary question of what is intended in the structure of the apposition We observe immediately that the function or purpose or intent of an apposition construction is to help identify the nominal which it supports, or to identify the feature of the nominal that makes it currently relevant This is a linguistic intention that can be transcribed directly: $specifyIdentity Significantly, identification, the specification of identity, beyond the generality of cognition, is itself a mental process Once we recognize this, we can see that in the apposition actioneme, $specifyIdentity, we have a clear instance where the intent is per the

general, previously motivated actioneme for object raising verbs:

$declareMentalProcess

This is explanatory: apposition emerges as a raising context by consistent, regular means in a tool grammar actionemic context. [29]

This not only explains the acceptability alternation but then also provides us with strong independent evidence that the analysis of linguistic structural intent has verifiable validity The presence of mental process was established a priori by observing a class of verbs, then subsequently in the present case found to be syntactically functional in a context which has been resistant to a configurational analysis lacking specification of linguistic intent The case of wager class verbs is appropriately specific because it depends on apposition which is a syntactic configuration with particular and evident functional purpose, bringing linguistic intent more to the surface than it is in many constructions It is significant that the apposition cases do not involve added lexical material, but only a syntactic formation.

Further, we see the actionemic role confirmed when a wager class verb is used in question formation, also a mental process of identification involving syntactic formation:

(100)   *We wagered some guy to have won.
(101)   Which guy did we wager to have won?

In summary, the wager class verb phenomenon is susceptible to a straightforward explanation based on transcription of linguistic action intent It provides direct supporting evidence both for the explanatory usefulness and psychological reality of actionemic features in syntactic analysis To any degree that configurational analyses remain unable to provide a convincing explanation for wager verb phenomena, the tool grammar approach receives direct support which may be difficult to circumvent, thus providing a proof of concept challenge.

Implications and Conclusions

In summary, we have proposed that actionemic transcriptions of linguistic intent explain the generalizations associated with the verb classes that are operative in control/raising verbs, exhaustive/partial control distinctions, lexical tense licensing, and wager verb phenomena.

This analysis also provides an explanation for the selection of the infinitivizer 'to' from among other possibilities. 'To' is a reflection, as a directional particle, of the additional predication 'to' an element in the actioneme complex This exploits the generality within uses of 'to' as a

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[29] From the TG perspective, merely characterizing the class of verbs that exhibit raising only generally, as ones of cognition, does not draw an empirically fine distinction of linguistic intent, leaving observable information untranscribed. In fact the broad 'cognition' feature, as in alternate analyses, does not suggest an explanation for the apposition use. It is factual and useful to embed any characterization in a functional perspective and specify more specifically that they declare a mental process.

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preposition and so forth, e.g. 'add to', 'attach to', etc..

Based on the foregoing analysis we can consider progress toward analytical goals for a TG treatment of verbal control

A. Why precisely do certain groups of verbs cluster together in the observational effects that emerge from examining verbal control as a phenomenon?

We have observed that two prominent classes of verbs emerge from examination of tense and partial control patterning in the phenomena of verbal control Each of these classes consists itself in five distinct, diverse and empirically separate but consistent classes of verbs. Important questions arise from Landau's landmark primary work in this area. Why these classes should cohere? Why do they exist? How are they to be treated linguistically so that they emerge as natural objects? For TG, by introduction of linguistic structural intention into the theoretical framework, we have seen that each is characterized by a clear and separate intent

B. What are the implications of accepting classes of verbal control verbs as basic observational data to be accounted for in theory?

The fact of providing a solution to the problem of explaining the coherence of these verb classes is itself an argument in favor of the TG perspective. These classes are direct evidence that structural intent is operative in natural language sentence generation. By allowing linguistic rules to be conditioned by linguistic intent we enable a simpler, more highly constrained, and more easily learned conception of human language.

We also gain from this approach insight into the nature of a set of hidden internal cognitive categories We have seen, for example, evidence that linguistic processing is structured to preserve internal agency integrity.

C. Why does verbal control exist in natural languages?

Once we advert to the intentional provenance of verbal control, the regularities uncovered by Landau, namely the inflexibility of tense shifting and the requirement of exhaustive control emerge as strong explanatory factors for why verbal control should exist in languages By intentionally restricting feature shifting between the matrix and embedded clauses it becomes possible to reduce a situational structure with very high functional load and statistical frequency to a reduced, non-repetitive, very efficient and somewhat flattened structure By precluding any process from allowing inter-clausal shifting, and allowing a redundant subject not to be expressed, the mechanics and efficiency of expression are facilitated for very common verbal relationships Furthermore, as we have seen, verbal control packages elements of causality and agency so as to make them impervious to confounding interference, thereby enabling linguistic expressions better to assert logical relationships and causality without causing undue complexities of semantic interpretation.

D. How can entropy in the theory of control be reduced and simplicity increased?

From many examples of systems of symbolic computation it is well-known that attempts to express a process with a view to generating the desired outputs can lead to extraordinary complexity if the process is expressed at an infelicitous level of generalization Processes in the Generative Program are generally expressed either at the level of syntactic structure formation or semantic/pragmatic interpretation and filtering There is a very fundamental question whether the reformulation of some rules at the level of linguistic structural intent can simplify a model of linguistic competence, thereby increasing our understanding how it is that children might learn an extraordinarily complex system from exposure to a relative paucity of data.

In the history of the Generative Program there have been theoretical modifications intended to simplify the operation of core processes, but the complexities outside the core and toward the periphery have become highly specified of configurational detail in ways that can seem suited to particular problems rather than general function Alternatives to what can appear to be over-specification can help to determine whether current theories have burdensome uncertainties in the global computational construct relative to available confirmatory data.

We have seen in the case of verbal control that by introducing a properly motivated level of linguistic structural intent, complex configurational solutions that appear unrelated to important generalizations can be replaced by simple factors with natural justifications We have contrasted previous work where verbal control should be conditioned by Tense, Agreement and Attitude semantics with TG solutions that employ elements that appear to emerge naturally from the expressive function of the classes of verbs.

We therefore propose for consideration and re-validation in the generative paradigm that a theory modification whereby linguistic rules can be conditioned by linguistic structural intent can lead to a simpler, more empowered theory of linguistic structure, reducing the uncertainty associated with particular solutions and improving the entropy of a generative model as a whole.

E. Verbal control, viewed as a type of interlocking between verbs as they are merged into syntactic structures, raises an empirical and theoretical question about generative sentence building. What are the theoretical advantages of coordinated lexical selection by speaker intention in sentence building versus noisy random disjoint selection, subject to massive semantic and pragmatic filtering? Which model best approximates human competence?

When the Minimalist Generative Program inverted the original logic of generative grammar by introducing a Merge operation to build sentences lexically from bottom up rather than compositionally by expanding on an initial #S# symbol, a framework resulted which is highly amenable to a putative cognitive reality of how humans themselves must

generate sentences The idea that words are somehow assembled into larger structures, while automatically developing a hierarchical structure in the process, is one that is compatible not only with a variety of traditions in linguistics but one that also models linguistic generation in a manner less abstracted from actual utterance performance Syntactic Merge, in one form or another, is a likely watershed convergence point for linguistic theories going forward It's importance is buttressed and supported by the Tool Grammar view of linguistic generation.

It is evident that a control verb and the one it controls need not be viewed as either statistically or cognitively independent events Nor is it necessary to export the considerable puzzles of linguistic structure to semantic and pragmatic interpretation in cases where they might be addressed at the point of intentional lexical selection.. Lexical merge is readily adaptable to mechanisms that would provide for the interlocked selection of lexical items and structures This seems a theoretical necessity from the co-occurrent patterns of interlocking that are present in the data of verbal control

In previous analyses of verbal control it has been left to semantic interpretation and pragmatic filtering to remove incompatible formations In TG, where there is a formative specification of structural intent, it is natural to provide for the generation of compatible forms at the point where they are introduced and where it is expected to be simplest and most efficient With intent in mind, a speaker would naturally choose items compatible with a set of communicative strategies In this way we arrive at the conclusion that TG has the potential to model and approximate human competence more effectively than a syntax-centric configurational approach relying on a plethora of syntactic structures that must always be filtered only by semantic and pragmatic components.

While the formal notion of a sentence has been central to the formalist characterization of what a human language is in the generative program, there has perhaps never been a satisfactory definition of what a sentence is From the inception of rules of linguistic intention we conceive within the TG perspective the beginnings of an outline of a satisfactory definition, namely as a unit of structure based on a set of individual but coordinated decisions to project the representation of a coherent set of linguistic intentions into an external medium so that they may be interpreted by others This manner of definition has not been available as long as linguistic intention has been excluded from linguistic description

Finally, we observe that while other studies have found verbal control not to be a unified linguistic process, the method of TG brings forward a level of linguistic representation where more can be unified than might otherwise have been expected Verbal control is not so diverse as it might initially seem

Having here analyzed the high level issues of verbal control, we envisage companion research which undertakes to seek explanations for many detailed observations that Landau has summarized These would seem to promise to be readily forthcoming in the TG framework Landau's penetrating landmark work has enabled a new generation of linguistic insights.
23 Certainty Verb Subcategorization

Next we consider a challenging case of complement subcategorization for verbs We illustrate that both verbs and complements can activate their own possible actions and these must be compatible if the selected tools are to be used in tandem.

Verbs are subcategorized for propositions, exclamatives and questions, but licensing a complement versus noun phrase is separate. (Johnson, 2004)

(1) a. John asked me what the time is/the time (Question)
(102)   b. I'll assume that he's intelligent/his intelligence (Proposition)
(103)   c. Bill couldn't believe how hot it is/the heat (Question)

(104)   a. John wondered what the time was/*the time (Question)
(105)   b. I'll pretend that he's intelligent/*his intelligence (Proposition)
(106)   c. Bill complained how hot it was/*the heat (Exclamative)

Thus it might be supposed that categorial selection could not be derived in a straightforward manner from semantic selection classes.

In our framework verbs are tools designed for purposes, so it is elemental that they could be for asking, asserting, doubting, questioning, exclaiming and so forth These classes follow from the basic data of observation of use The licensing of simple noun phrases falls out from the action analysis While 'ask', 'assume', and 'believe' involve elements with certainty assumed to be resolved, 'wonder', 'pretend', and 'complain' report inherent continued uncertainty We propose that where the latter set is used a linguistic actioneme $certaintyNotResolved is observed We similarly observe the opposite actioneme $certaintyResolved for the nominals: "the time", "his intelligence", and "the heat" It is perhaps not surprising in view of the fact that a noun is a lexical packaging strategy that there would be a tendency to allow situations of resolvable certainty to be packaged and summarily presented in nominal form, while uncertainty benefits from the increased flexibility of the fuller descriptions in a clause We posit the cognitax actions: $implyResolvedCertainty for the nominals and $leaveCertaintyUnresolved for the clauses, and propose that these condition the constructions under consideration.

This is further illustrated by the following data (p.88-9) In the first set below we observe verbs of certainty.

(107)   Mary promised me that she would sing.
(108)   Mary promised me the ring
(109)   Jerry told me that he can't stand Mary's singing.
(110)   Jerry told me the story.
(111)   Sheila showed me that she cares.
(112)   Sheila showed me her concern.

Contrast those with the following verb of unresolved certainty:

(113)   a. Mary persuaded Bill that he should go.

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(114)   b. * Mary persuaded Bill the fact

The proposed patterning is that a tool of unresolved certainty (verb) does not pair naturally with a tool of resolved certainty (nominal): operational classes are not co-selected when they work in opposite directions, as in this case where a certainty conflict constraint is observed We observe that any attempt to account for such data by means only of syntactic configuration must necessarily bury and hide transparent intentional processes

24 Placement Alternations

Another problem that presents a challenge to configurational analysis is a documented set of placement alternations.

The phrase "at noon" seems often to follow the verb object. (data from (Johnson, 2004) p. 46)

(1) a. Jill ate it at noon.
(115)   b. * Jill ate at noon it.
(116)   a. Jill ate spätzle at noon.
(117)   b. * Jill ate at noon spätzle.

But there are multiple conditions affecting acceptability that need to be considered:

(118)   a. Jill ate the rotting kumquats.
(119)   b. Jill ate at noon the rotting kumquats.
(120)   Jill ate the rotting kumquats at noon

(121)   *Jill ate at noon the soup
(122)   Jill ate at noon a bowl of rancid wonton soup

These illustrate well known heavy NP structures whereby "at noon" can be located closer to the verb in the aftermath of the creation of a heavy object, i.e. one that we might characterize, also in the spirit of heaviness,as $describeUnusualObjectWithLongDescription Once this cognitax action is selected, with its sizeable resource allocation and implied processing, it could be considered a natural consequence that sentence planning might trigger a compensatory (trans)formation tool in a strategy to keep the attributes of the verbal modification unit contiguous and easily associable We might refer to this as $reassociateVerbalModifier, a (trans)formation which moves the verbal modifier back close to the verb where it is most naturally associated The unacceptability of [*Jill ate at noon the soup.] is due in this analysis to the useless application of $reassociateVerbalModifier when there is no triggering circumstance of intervening complexity.

In summary, we posit here the movement of the time phrase to allow easier association with the verb These cases are analyzed in a way not significantly different in mechanics from the traditional rule of syntax-configurational Heavy NP Shift, with the difference that we see it as a tool to extricate a complex characterization away from the verb so that the association between the time phrase and the verb is not weakened, obfuscated or rendered ambiguous.

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Note the similarity of this process to the alternations of dative shift:

(123)   She gave the book to the man.
(124)   She gave the man the book.
(125)   ?She gave to the man the book.
(126)   ?She gave the old-fashioned book I brought back from France that didn't have the pages cut to the man.
(127)   She gave the man the old-fashioned book I brought back from France that didn't have the pages cut which earlier in the year had been mailed.
(128)   *She gave the old-fashioned book I brought back from France that didn't have the pages cut which earlier in the year had been mailed to the man.
(129)   She gave the man the old-fashioned book I brought back from France that didn't have the pages cut which earlier in the year had been mailed.

Dative shift is similar in its information restructuring capability but differs because it is optional when the utility of restructuring is not present, i.e. when the object NP is not heavy This seems to be evidence that the $reassociateVerbalModifier family of similar operations can serve multiple functions In the case of dative shift the trigger can be not only a reorganization to avoid a difficult to interpret dispersal of verbal information, but, alternatively, to implement a possible re-ranking of affiliations of direct and indirect objects with the verb In this case the hypothesis is that the speaker action is $createPrimaryAssociation that effectively bonds or blocks bonding of constituents as a measure for speaker intent.

Note also a similar phenomenon cited by (McCawley, 1998) p. 66 as a "constraint against subordinate clauses in the middle of a surface constituent"

(130)   Bill told that lie to Alice
(131)   *Bill told that Fred had quit school to Alice.
(132)   Bill told Alice that Fred had quit school.

The actioneme approach would seem to resolve difficulties with this and other analyses. Here is the characterization from (Johnson, 2004) p. 83 that summarizes the theoretical importance of the data: "the conditions governing these preferences come from something other than syntax proper.[1] "

Obligatory Heavy NP Shift: finite CPs:

(133)   *Max [said that pigs fly] yesterday.
(134)   Max said yesterday that pigs fly.

Optional Heavy NP Shift: "full" NPs:

(135)   Max visited the students yesterday.
(136)   ? Max visited yesterday the students.

PPs:

(137)   Max talked to the students yesterday.
(138)   Max talked yesterday to the students

Blocked Heavy NP Shift:

Pronouns:
(139)   Max visited him yesterday.
(140)   * Max visited yesterday him.

"Short" NPs:
(141)   Max visited children yesterday.
(142)   ?*Max visited yesterday children.

We quote Johnson on the value of a solution: "This is a deeply mysterious affair. Why should movement transformations exist? A goal of much current research in syntax is to find an answer to this mystery. "

The answer we provide is that (trans)formations are tools that exist to implement specific effects and various tools are not functionally compatible with other tools Our approach has been to loosen the syntactic formalism as a necessary step in tightening the constraints on universal grammar and providing an alternative cognitactic approach to simply and directly account for the phenomena.

25 Complement versus Adjunct in Noun Phrases

We next proceed to consider the contrast between complements vs. adjuncts as presented in (Carnie, Syntax: A generative introduction, 2007).

As a preliminary, consider what makes a thing a book It has to have something like potential reading material on pages; this is essential Yet there are many variants of books whose differences don't involve the essentials.

(1) The book of poems with a red cover
(143)   *The book with a red cover of poems.[30]

The complement 'of poems' modifies an essential part of the definition, i.e. a book contains reading/viewing material by definition

(144)   It's the same book with a different color cover.
(145)   *It's the same book by a different author with different content on a different subject.

A book contains reading/viewing material such as poems as an essential but color is not so

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[30] Situations where this might be acceptable, such as in a court of law where a book with a red cover is in evidence effectively bolster the analysis, especially since special intonation is required.

involved.

The actioneme $instantiateAnEssential ('of X') is proposed to only be applied to an essential or its part, not an expanded derivative such as "book with a red cover" A book can still be a book without a (red) cover So if we attempt to instantiate or elaborate a definition on a decorated base that no longer has just definitional material ($addDescriptionBeyondEssential) the result is artificial The constraint is:

> Constraint on Elaboration Beyond Essential
>
> Do not to apply a tool elaborating a definition after the definition has been elaborated with non-definitional material.

The practical nature of the constraint is perhaps evoked in a crude metaphor: one might not apply a primer coat after the application of a finish coat of house paint This illustrates how direct solutions via cognitax can become available where difficulties about in a framework with centralized configurational syntax.

26 Auxiliary Movement and WH in Questions

A representative syntactic analysis per (Carnie, Syntax: A generative introduction, 2007) (chapters 7,11) accounts for subject verb inversion in questions

(1)   Al can go.
(146)   Can Al go?

by positing a null unpronounced complementizer in the superordinate structure In place of this syntactic element we propose an actioneme $askAboutPredication[31] in the tool structure of interrogative sentences Rather than specify abstract configurational rules we propose functional explanations for many aspects of word and phrase order This (trans)formation tool[32] puts the predication in focus by fronting its superordinate verbal element as a way of signaling an interrogative rather than declarative intention We similarly posit the lexical tool $declareUnknown (alias $positVariableToResolve) for WH questions associated with inserting the WH word and triggering movement to focus position at the front of the sentence In both cases fronting is correlated with doubt.

(147)   Al can see WH.
(148)   What can Al see?

It would seem not to be accidental that an element for which information is unknown and

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[31] This is an umbrella representation summarizing more than one $unknown type:{$declareUnknown (alias $positVariableToResolve),$askForWhomAssertionTrue}) etc.
[32] Many structures alternations can be analyzed either as transformations or choices of related constructions. We leave these questions open but advert to both possibilities.

requested should be fronted to focus position Both of these tools serve to cue the listener by excluding declarative garden path interpretations involving structures that would otherwise begin as non-question constructions, only to spring question status on the listener late in processing.

Here are some actioneme analyses of common interrogative types involving $ askAboutPredication (the intent of questioning) and $declareUnknown (holds the place of a nominal about which information is requested).

(149)   Are you meeting? $askAboutPredication triggers auxiliary fronting
(150)   Who(m) are you meeting? $declareUnknown, $askAboutPredication triggers aux fronting
(151)   Who will meet you? $declareUnknown plus $askAboutPredication where both are already in front focus position.
(152)   *Whom you are meeting? $declareUnknown plus $askAboutPredication requires fronting of both.
(153)   You are meeting who(m)? $declareUnknown on an element in the context of previously established (echo) basic predication does not ask about predication so does not trigger subject auxiliary inversion.

Focus movement can involve fronting somewhat generally The composite cognitactic act involving both actionemes pairs inquiry about which individual or class might be involved ($declareUnknown (alias $positVariableToResolve)), with inquiry about the truth of the resulting implied assertion ($askAboutPredication) A generalization might be roughly formulated:[33]

Interrogative Focus Fronting Transformation

Front question items

$askAboutPredication associates with the superordinate predicate element, which it fronts locally over the subject
$declareUnknown adheres to a specific focus of interrogation and moves it to the front of the sentence.

Given this framework consider

(154)   Who do you think Al will invite?
(155)   *Who do you think that Al will invite?

By positing $declareUnknown for 'who' fronting it follows that it should not be compatible with 'that' complements since the latter involve a packaging strategy per the 'factive' actioneme $assertSpecificFact Declaring an unknown for specific established circumstances is using tools at cross purposes.

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[33] Generally, wh questions front the interrogative in which some nominal constituent is associated with uncertainty: $declareUnknown (alias $positVariableToResolve). Both elements, the wh object and the auxiliary, are fronted: they are both targets of questioning. $askAboutPredication is involved in auxiliary movement, and wh-movement is a reflection of $declareUnknown (alias $positVariableToResolve) on the nominal.

Consider indirect question verbs such as 'wonder':

(156)   I wonder are you meeting?
(157)   *I wonder you are meeting?
(158)   I wonder whether you are meeting
(159)   *I wonder whether are you meeting?
(160)   I wonder who will meet you.
(161)   I wonder what he has done. (Tends not to presuppose something was done.)
            $declareUnknown (alias $positVariableToResolve),
(162)   I wonder what has he done. (Tends to presuppose something was done.)
            $declareUnknown (alias $positVariableToResolve), $askAboutPredication

These inherently reflect asking and can involve either an $askAboutPredication (trans)formation or, alternatively, a 'whether' lexical actioneme $presentBinaryOption in lieu of subject auxiliary inversion These do not co-occur because asking generally about a predication and asking about a specific binary option are different and mutually exclusive linguistic acts

The actioneme analyses offer simple and direct transparent solutions that enable less of a requirement for complexity and contrivance in a syntax-central system.
27 Islands and Embedded Wh Constructions

Wh words are used in relative clause constructions in addition to questions What these contexts share is a role for holding a place where information is to be filled in   In this section we consider a set of classical syntactic constraints on Wh structures with a view to examining whether they can be aided, illuminated, or replaced by actioneme analysis.

   Carnie's discussion (Carnie, Syntax: A generative introduction, 2007) (p 334) of Ross's classic movement-constrained islands includes complex phrases containing relative clauses:

(1) What did he claim that he read t in the syntax book?
                    (movement out of simple C)
(163)   *What did Bill make the claim that he read t in the syntax book?
            (Out of C to head N)
(164)   *Which cake did you see the man who baked t?
            (out of Adjunct to head N)

A purely syntactic approach holds that there can't be movement out of a clause if it's in a configuration dominated by a Determiner Phrase, as in a complement or adjunct to a head noun The configurational solution is incomplete from the cognitax perspective insofar as an operational intent is not specified.

We note a parallel between

(165)   the claim that he read in the syntax book
(166)   the man who baked the cake

In both cases the embedded sentence serves to clarify information about the head, using 'that' and 'who' respectively We propose that both structures involve $declareUnknown(alias $positVariableToResolve) (which claim; which man). Corresponding to 'that' and 'who' the sentence embedding tool functions to fill out the restricting or unknown information for the head nouns We express the Wh actioneme with an alias to elaborate the functional role: $declareUnknown (alias $positVariableToResolve).The function of the embedded sentence can be characterized as $embedSentenceToSpecifyObject.

There is no such head noun or associated structure in

(167)   He claimed that he read something in the syntax book

Evidently a reason is needed to explain why movement of the wh-word $declareUnknown (alias $positVariableToResolve) can't break out of a nominal construct such as 'make a claim that' or 'see the man who', as in the unacceptable sentences above The $declareUnknown (alias $positVariableToResolve) of the wh words declares incomplete, unknown knowledge so it is natural to expect that one wouldn't ask for information via $askAboutPredication and $declareUnknown (alias $positVariableToResolve) about an element that is simultaneously being used to specify an element used to lay out the very question.

The interrogation tools are not compatible with packaging a construction designed to identify or clarify the same information. The function of the that-clause and relative clause is $embedSentenceToSpecifyObject, for both 'the claim', and 'the man' In this TG interpretation it is clear that the actions $embedSentenceToSpecifyObject and $askAboutPredication or $declareUnknown (alias $positVariableToResolve) are incompatible.

These data suggest a preliminary constraint on clause specification constructs:

Unknown Specification Constraint (Corollary of Cross Purpose Constraint)

In the context of $embedSentenceToSpecifyObject , use of a $declareUnknown element is inappropriate in an embedded S functionally specifying a head, because the introduction of an unknown is at cross-purposes with the process of specification.

Finally, to illustrate further, consider the sentence below The clause 'who baked __ cake' specifies which man is spoken of. There is an inherent contradiction in using an element such as the object of 'bake' both in a process to specify a head noun and to declare an unknown in an interrogative context.

(168)   *Did you see the man who baked which cake?

Even though there is no overt embedded sentence, a similar form of analysis can elucidate the unacceptability of

(169)   *Whose did she buy book?

since the possessor both specifies the book and also has that role undermined by a structure which declares it unknown.

We leave detailed analysis for future work, but note there are even minimal pairs that contrast the act of specification with addition of ancillary detail These involve 'about', which has a built-in looseness of specification:

(170)   He read a/the book about computer science.
(171)   He dropped a/the book about computer science.
(172)   What did he read a book about?
(173)   *What did he read the book about?
(174)   *What did he drop a/the book about?

Carnie also considers wh-islands involving more than one wh item in a sentence He presents relevant data:

(175)   I wonder what John bought t with the money.
(176)   How do you think John bought the sweater t?
(177)   *How do you wonder what John bought t1 t2?

And we add a question with two wh words:

(178)   *What do you wonder who bought?

Some other examples:

(179)   You wonder what Al photographed.
(180)   You wonder who photographed the ape.
(181)   *?Who do you wonder photographed the ape?
(182)   *Who do you wonder what photographed?

And also:

(183)   You wonder who photographed what? (Echo context only)
(184)   ?Who do you wonder photographed what?
(185)   *You wonder what who photographed.
(186)   Who saw what?
(187)   *Who what saw?

There are infelicities in these sentences when there are two wh-phrases, especially when both of them are fronted. The wh-island constraint has often been presented as a pure syntax configurational solution, e.g. Don't move a wh phrase skipping over another wh phrase that has been moved.

Actionemes let us approach the question by examining the compatibility of multiple unknowns.[34] We propose $declareUnknown (alias $positVariableToResolve) for positions where wh-words occur In case the wh-word is fronted to produce a question form (embedded or matrix) we propose the interrogative actioneme $askAboutPredication The $declareUnknown element may involve manner, agent role, patient role, etc

We propose that multiple $declareUnknown actionemes are incompatible in a single scope involving $askAboutPredication, since introduction of a second unknown confounds and thwarts the processing and resolution of the first unknown in the context of interrogation. There occur two $declareUnknown (alias $positVariableToResolve) elements in each of the unacceptable sentences above Use of one unknown variable requires the other elements in the local scope to be known in order to establish the possibility of reasonable questioning The exception is an echo context where the question reflects a just previous utterance which anchors some items in the verbal exchange

This suggests a constraint:

> Unknown Interrogation Constraint (Corollary of Cross Purpose Constraint) V. 1
>
> > In the context of $askAboutPredication, use of multiple $declareUnknown elements is inappropriate, because the introduction of a gratuitous unknown is at cross-purposes with the process of questioning another one.[35] Doubt confounds resolution of doubt.

The questionable acceptability of

(188)   ?Who do you wonder kissed the ape?

seems also to argue that the presence of two unknowns, even if one is embedded in an indirect question lacking a wh-word, can be the source of a difficulty.

In a similar way, a reprise of the traditional Subject Condition is possible:

(189)   That the police would arrest several rioters was a certainty/doubtful.
(190)   *Who was that the police would arrest a certainty/doubtful?

'That the police would arrest several rioters' is in a subject role. Frequently in syntactic analysis it is construed that wh elements can't be moved out of subjects.

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[34]The following may be echo questions, and reflect different phenomena:

> ?How do you think Al bought what?
> ?I wonder what Al bought how.

Insofar as these latter two are considered good sentences they could be reduced from compounds with equal constituent reduction but without two movements, but it seems closer to a natural consequence if use of multiple wh-words depends on the compatibility of the elements being questioned.

[35] This constraint may well be generalized with the foregoing one.

Here we observe that 'was a certainty/doubtful' is used to $assesssLikelihood, while the unacceptable sentence at the same time includes $declareUnknown (alias $positVariableToResolve), which is the endpoint of uncertainty A prerequisite of establishing likelihood would seem to be having firm premises rather than introducing one that is itself uncertain We propose a tentative constraint subject to ongoing refinement.

Likelihood Uncertainty Constraint

In the context of $assesssLikelihood, use of a $declareUnknown element is inappropriate in a determining role for the proposition under assessment, because the introduction of an unknown is at cross-purposes with the process of establishing a foundation for determining likelihood Likelihood assessment cannot be based on definitional uncertainty Definitional uncertainty is $declareUnknown (alias $positVariableToResolve) associated with an argument implied within the definition of a verb.

Finally, consider the traditional Coordinate Structure Constraint

(191)   I like Mary and John.
(192)   *Who did you like Mary and t?
(193)   *Who did you like t and John.
(194)   I ate some popcorn and drank some soda.
(195)   *What did you eat t and drink some soda?
(196)   *What did you eat some popcorn and drink?

Looking at the higher intent of these coordinate sentences, each reflects an actioneme $expressSimilarityOrParallelismByConjoiningAssertions.

Now the act of $declareUnknown (alias $positVariableToResolve) is incompatible with the explicit establishment of similarity or parallelism among assertions..

Conjunction Constraint on Unknowns in Assertions

Assertions Conjoined for Similarity or Parallelism should not include an unknown since its lack of clarity works directly against effective comparison.

In summary, the actioneme approach recurrently presents itself as an alternative to purely syntactic traditions such as those of the structural technical solution proposed in the Minimal Link Condition (all movement is local i.e. to the closest non-filled landing position across complexes of structural tree derivations).[36] The attractiveness and viability of actioneme analysis here shows its promise to favorably rework numerous well-studied syntactic phenomena whose solutions have not seemed always to readily stabilize over successive generations of research The observations of this section suggest the need for further work in wide reaches of observed

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[36]We forego consideration of echo questions.

syntactic complexity. If they are correct it would be expected that new priciples at the level of cognitax would emerge and be validated

28 More on Island Constraints

In this section, we further examine various configurational syntax constraints that have been proposed to consider whether they might be enhanced or replaced by cognitactic constraints We consider data that emerged from consideration of the A-over-A principle (a rule applying to category A must apply to the higher A) (Chomsky, Current issues in linguistic theory, 1964), the Empty Category Principle (Chomsky, Lectures on Government and Binding, 1981), and later generalizations as they were further strengthened.

Consider the following:

(1)   I treasured my trip to Africa.
(197)   *Africa, I treasured my trip to.
(198)   My trip to Africa, I treasured.

'my trip to Africa' involves the actioneme $describeExperience', 'to Africa' is an action $clarifyTrip as part of describing experience, while 'Africa' is $assertPlace as part of clarifying the trip Fronting implements $bringToFocus so the problem with the sentence above can be characterized as focus being put on a disproportionately minor embedded detail This suggests a constraint:

> Subordinate Focus Constraint
>
> Don't bring subordinate embedded details into focus without strong contrastive stress to mark awareness of the special emphasis on a minor subordinate predication.

This phenomenon doesn't have only to do with depth of predication as the following show, but degree of details, associated with categories such as manner, place, and other predications less central to the event.

(199)   What-i did he say that he was reading i?
(200)   What-i does she believe that he said that he was reading i?
(201)   What-i are they claiming that she believes that he said that he was reading i?
(202)   What do you think that they are claiming that she believes that he said that he was reading i?
(203)   *Howi have they forgotten which problem they should solve i?

(Santorini, 2007) p. 12

In the following we observe that wh fronting applies to the verb object when manner is declared unknown, but not vice versa This shows a hierarchy of detail preventing a wh action on an interconnected detail ('how' is intimately related to the notion of a solution) when a more basic element is to be resolved is $declareUnknown Similarly, the data shows that for the verb subject

to be declared unknown and fronted confuses the purpose when the essence of the unknown, i.e. selection of a particular one ('which'), is intimately connected with the manner of solution ('how').

(204)   ?Which problem have they forgotten how they should solve?
(205)   *How have they forgotten which problem they should solve?
(206)   *Which problem have they forgotten how should be solved?

(Santorini, 2007) p.12

In the following examples associated with the Empty Category Principle we see similar processes at work:

(207)   *How did John ask whether Bill fixed the car?

The indirect question associated with 'whether' is inappropriate to frame an assertion in which manner is unknown Similarly, 'that', which points to a fact ($assertSpecificFact) is not compatible with a predication in which the subject is unknown:

(208)   *Who does John believe that will fix the car?
(209)   Who does John believe will fix the car?

(Santorini, 2007) p. 12

Nor is it functional to interrogate an adjoined predication for which a major argument is unknown:

(210)   *Which bike did you ride before Al fixed?
(211)   *How i do you wonder when Al baked the cake i?

(Chomsky, Barriers, 1986)

These too show the general theme of not interrogating embedded refinement details This points to the validity of constraints at the level of linguistic structural intention.

The above observations accumulate to a general conclusion that many constraints on configurational syntactic processes can be simplified, improved, replaced, and/or be made more general by use of cognitactic analysis.

29 Stevens Poetry

A well-known poem by Wallace Stevens' shows artistic use of actionemes We illustrate this as a process already evident in the first verse:

Thirteen Ways of Looking at a Blackbird by Wallace Stevens
(first poem/stanza of 13)

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(1)   Among twenty snowy mountains,
(212)   The only moving thing
(213)   Was the eye of the blackbird

The larger poem, not considered here, as it moves from and beyond the beginning, has in the course of the poem to do with many levels of structure, e.g. on one level, for example, with numbers (thirteen, one, three, twenty). Putting the various levels of complexity aside and excerpting this one small piece we can observe there are dyadic pairs of dramatic semantic contrasts at the core of the reader experience This is evident from mapping the principal actionemes in the first stanza.

Among twenty snowy mountains, $widenHorizonToVastPerspective
The only moving thing $isolateFocus
Was the eye of the blackbird $narrowFocusToMinutePoint

Among twenty snowy mountains, $backgroundOfVastStillness
The only moving thing $foregroundFocusSingleMovement
Was the eye of the blackbird $foregroundMinuteSingleDot

Among twenty snowy mountains, $presentStillWhiteVastExpanse
The only moving thing $contrastFocusSingleMovement
Was the eye of the blackbird $presentMinuteBlackDot

By isolating and characterizing the actionemes, we see multiple overlaid patterns that constitute structure in the poem. Each pair is an instance of the strategic poetic actioneme: $makeStarkContrast The instances reverberate, one against the other To the extent these intended actions by a poet are evident from experiencing the poem there can be less doubt about the reality of cognitactic linguistic actions as elements of language competence How might the stylistic actions of poets ever be properly analyzed if linguistic theory does not advert to a most basic intentional aspect of linguistic generation?

30 Postal Puzzles

Paul Postal has noted the significant challenge of the following profoundly puzzling data on his web page. (Postal, 2014) In citing his data we break the example sentences out by actioneme to seek a solution We propose two types of intended action for the verb 'reach',

$assessAgentActionSuccessOnPatient
$assessProcessGoalSuccess:

(1)   The director never reached Adam
          $ assessAgentActionSuccessOnPatient
          $reportOnAgentActionTowardGoalSuccess

(214)   That book never reached Adam.

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$assessProcessGoalSuccess
$reportOnPatientProcessTowardGoalSuccess
(Lacks agency)

(215)   Adam was never reached by the director.
         Passive=$promoteAgencyParticipantToFocus
(216)   *Adam was never reached by that book.
         No agent complement, i.e. patient in a process without agency.

There is a challenge to explain why the last example is not acceptable The sentences above are annotated with actionemes including the passive (trans)formation tool,whichis a tool to promote a participant in an agency action to the fronted focus position

($bringPatientIntoAgencyEventFocus)

If a structure does not involve causal agency the passive tool cannot apply If this is not present ,as in the last example, there is no role for the application of the (trans)formation.

Agent Front Focus Tool (Passive) ($bringPatientIntoAgencyEventFocus)

> Promote the agency participant to front focus As a mechanism to allow focus on the various participants in a causal agentive event, this tool cannot operate without causal agency.

The data set below allows for a similar explanation. The examples have been annotated with actionemes reflecting how agency and the Agent Participant Raising (trans)formation tool can account for the alternations Here we observe that goal raising cannot apply if there is no agency.

(217)   Adam was difficult for the director to reach
         AgentParticipantRaising requires an agent
              (director reached Adam: an agent)
(218)   *Adam was difficult for that book to reach.
         No AgentParticipantRaising operation if no agent
              (book reached Adam: no agent)
(219)   Texas was difficult for him to reach
         Goal raises if there is an agent.
              (he reached Texas: an agent)
(220)   *Texas was difficult for the book to reach
         Goal cannot raise without agency.
              (book reached Texas)

Similarly, the 'reaching of x by y' and 'unreachable by' constructs require an agency participant.

(221) the reaching of Adam by the director
(222) *the reaching of Adam by that book

(223) Adam was unreachable by the director.
(224) *Adam was unreachable by that book.[37]

We can again account for the data by positing that 'reach x by' requires an agency participant

It is useful to ask why in each of the foregoing cases we observe constructions requiring agency For all the constructions considered a non-agent element is presented in a focus position while the agent itself retires to a less prominent position The verb 'reach' carries an implied notion of possible success for the result the agent seeks to achieve These facts suggest that the tools presenting a non-agent in relative focus likely exist as a means to communicate a central role for the non-agent element in the agent's pursuit of an intention Under this interpretation, it is plausible to assume there exists a class of tools (constructs and (trans)formations) underlying these examples which puts into focus a non-agent element seen as important to the agentive action: $focusElementImportantToAgentiveIntent In this way cognitactic analysis can open new avenues of analysis and understanding.

31 Polarity Items

It is a challenge syntactically to exclude the positive form for negative polarity items in analogous constructs.[38] (Carnie, Syntax: A generative introduction, 2007) (p 133)

(1) I didn't have a red cent.
(225) I hadn't seen her in a blue moon.

The acceptability of the above calls for an explanation of the unacceptable positive analogs:

(226) *I had a red cent.
(227) * I. didn't have 5 red cents
(228) * I had seen her in a blue moon.
(229) * I hadn't seen her in 2 blue moons.

Consider some plausible actioneme pseudocode to represent linguistic intention for the negative cases 'red cent' reflects a tool that utilizes a rhetorical symbol for an amount rather than inserting

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[37] This related data is unclear so is not considered.

 a. The director didn't reach Adam although she did Louisa.

 b. *That book didn't reach Adam although it did Louisa.

[38] Note 'even' can be added. Note also: *I didn't have 5 red cents.

an actual monetary amount.: $addHyperbolicRhetoricalSymbolForVerySmallestAmount.

The article 'a' instantiates $assertSingleItem Combining these we get salient focus on there being only one, a minimal amount These combine with $denyHaving ('not have') to yield the derived pseudocode $denyEvenMinimumViaSymbolForVerySmallestAmount $denyHaving makes use of the rhetorical device This is a plausible account of the acceptable negative polarity sentences above But what about the ill formed ones?

We are brought to the question: Why would one use $ addHyperbolicRhetoricalSymbolForVerySmallestAmount and $assertSingleItem without further purpose such as negating it rhetorically? If one wanted to assert the holding of a small amount, its literal value could be evoked, or alternatively a generality such as e.g. 'almost nothing'. But here there is not an amount but only a rhetorical symbol for a radically small amount. An amount could not even be implied because there is no such value attached to what is rather only a rhetorical device There is evidence here for a constraint on actionemes: "Don't add purposeful rhetorical elements and then not use them"

To elaborate in more detail, 'a red cent' is rhetorically useful as a worthless mythical absolute minimal symbolic denomination. For stylistic effect, some tools used together implement a useful construct There is no role for $ addHyperbolicRhetoricalSymbolForVerySmallestAmount ('red cent') if it is not put to some use.

Here is similar construction illustrating the same relationships:

(230)   He doesn't have a penny to his name
(231)   * He has a penny to his name

This analysis suggests that negative polarity is not a phenomenon of configurational syntax but one of sentence construction actions A similar analysis applies to 'blue moon'.

Lawler offers a collected overview of negative polarity with key examples which we consider below. (Lawler)

(232)   He didn't ever see it.
(233)   * He ever saw it.
     Also: 'ever the fool' means without end, over endless time

     'ever' = $assertOverTimeEndNotReached
     Negation is present $assertNotSee

For stylistic effect, these tools together implement $assertFailToSeeOverTimeEndNotReached There is no role for $ assertOverTimeEndNotReached ('ever') if it is not put to some use since the same circumstance is effected by use of $assertFailToSee in its bare form This is an example of the

     Superfluous/Null Construct Constraint

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Do not introduce an actioneme if the result would be the same as if it were not introduced.

Now consider:

(234)   He hasn't called in weeks/hours/days/years/eons.
(235)   *He called in weeks.

"in weeks" = $assertUnexpectedlyLongTime
Negation is present in $assertFailToCall

For stylistic effect, these tools together implement $assertFailToCallOverLongTime There is no role for $assertUnexpectedlyLongTime ('in weeks) if it is not put to some use Without negation the actions sum to an effect whereby the event happened at any point during a time longer than would be expected, which leaves open the possibility that it happened within the expected time frame This also is ruled out by the Superfluous/Null Construct Constraint.

Consider also that positive polarity items are unacceptable when negated:

(236)   I would rather have pie.
(237)   * I wouldn't rather have pie. (Except as echo.)

'rather' = $assertPreferredAlternative

This actioneme is incompatible with a negative insofar as it convoluted to propose an alternative in order not to use it, i.e. it avoids wasted effort to set up a circular disuse of an alternative.

(238)   I sorta like cake.
(239)   * I don't sorta like cake.

'sorta' = $assertIndefinitePartialDegree

This is ruled out because one must avoid building extra detailed structure for a partial degree of predication, when the predication is vacated by negation This illustrates a constraint to rule out building gratuitous structure for no purpose When structure is created it must be utilized.

These positive and negative polarity phenomena indicate a need for a constraint on the combination of actionemes in building sentences:

Wasteful Structure Constraint

Don't build complex actioneme structures then not use them, or contradict them, or circumvent them.

In reality the operative factor in polarity patterning is not negation, as the name negative polarity

might suggest, but useless elaboration Negation rather can be a valid form of use for rhetorical elaboration.

Now consider examples from (Giannakidou), used to argue that some current explanations of negative polarity, i.e. downward entailment and nonveridical conditioning, can't explain the full range of data.

Analysis of logical implication in polarity constructs has led to a hypothesis that negative polarity items are sanctioned by downward entailment, but Giannakidou cites counter examples lacking negation that are not downward entailing: (Giannakidou)

    (240)   He doesn't have any sense.
    (241)   * He has any sense

    'any' = $anticipateAtLeastSomething
    Negation is present in $assertFailToHave

For stylistic effect, these tools together implement $assertFailToHaveAbsoluteMinimum There is no role for $anticipateAtLeastSomething ('any) if it is not put to some use, since without negation it asserts vacuously that what might occur in bland circumstances is what would in any case be expected This amounts to insinuating an attitude into the situation that has no purpose since circumstances are such that the attitude is not appropriate.

Consider also:

    (242)   Most children with any sense steal candy.
    (243)   Children with any sense steal candy.

Here we have a similar situation, susceptible to the foregoing actioneme analysis, except that negation is not overt but implied by the partitive formation which countenances children of different types A varied collection can involve individuals of varying degrees sub-selected by having or not having the anticipated sense so there is a useful role for the actionemes.

Now consider an idiom showing actioneme structure similar to 'any' above.

    (244)   He wouldn't lift a finger.
    (245)   * He would lift a finger.

'lift a finger' = $positSymbolOfNegligibleEffort
Negation is present in $assertFailTo

For stylistic effect, these tools together implement $assertFailToMakeNegligibleEffort There is no role for $positSymbolOfNegligibleEffort ('lift a finger) if it is not put to some use.

These constructs are in the family of actionemes used for disparagement, referred to as 'minimizers' Note that there also exist disparagement contexts that do not involve explicit negation,

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but do so implicitly by dividing groups of people into classes with and without the property, thereby introducing the implied negation:

(246)   Most people who would lift a finger have their own reasons.
(247)   People who would lift a finger have their own reasons.

Also from Giannakidou, consider that polarity items can be licensed in interrogative and conditional environments Here is the context:

(248)   Ruth didn't lift a finger to help.
(249)   *Ruth lifted a finger to help.

    Anticlimax: This is ruled out as an unused minimizer for dramatic effect.

(250)   Ruth doesn't give a damn what I think.
(251)   *Ruth gives a damn what I think.

    Anticlimax: This is ruled out as a superfluous, unused minimizer introduced for dramatic effect.

These negative polarity items are sanctioned in questions and conditionals:

(252)   Did Ruth lift a finger to help?

In the question, 'lift a finger' arises in the context of interrogative possibility that a dramatic minimizer could be appropriate.

(253)   If you give a damn, you'll listen.

Here too the possibility is raised by the question that dramatic minimization could be appropriate since every question raises the possibility of a positive and a negative.

Giannakidou further cites data that are a problem for both the nonveridical and descending entailment conditioning of polarity items Consider 'only' and emotive factive verbal contexts:

(254)   I am glad he said a word!
(255)   'I'm glad we got any tickets.
(256)   Mary regrets that she lifted a finger.
(257)   Only Mary {gives a damn/said anything}

Both 'glad' and 'regret' are $assertPossibilityofAlternative so the dramatizing minimizer is licensed by implication of the negative possibility Similarly, 'only' asserts the possibility of others with different properties so can contrastively utilize the dramatizing minimizer.39

In summary, we have observed that cases of negative and positive polarity can be quite generally

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[39] We do not consider scalarity, which Giannakakos rejects

understood by means of analysis of the linguistic actions involved in utterances, and that a configurational syntax account, which has been uncertain and problematic, is challenged by the empirical potential of the cognitactic perspective.

32 Syntax Emerging from Action Semantics: Lexical Selections & Categorizations

As we posit cognitax rules and their related constraints, we observe that such representations have not emerged historically as a well defined level in the extra-syntactic domain of semantics This appears to be true because their manifestation can be more directly associated with syntactic than interpretational phenomena What seems superficially to be syntactic can often be profitably reanalyzed as inferentially rooted in structural action semantics.[40]

This question as to what is syntactic and what is cognitactic is illutrated in data such as the following which illustrate $indicateSpecific 'the' and $indicatePossessor possessive 's':
(Johnson, 2004)

    (1) * the Mary's book
    (258)   * the the man's toy
    (259)   * a the man on the moon's nose

Just as a verb cannot receive multiple subjects, indirect objects, etc. so a noun cannot have multiple determiners selected from the set: definite, indefinite, possessive There is only one slot in the lexical tool's compatibility matrix. This is generalized as a syntactic phenomenon insofar as the definitional, lexical nature of a noun specifies that it is subcategorized and checked for no more than a single determiner.

These facts have been viewed as particularly syntactic as evidenced e.g. by phrase structure rules and other implementations of theory, but there is a connection to structural action semantics worthy of consideration The relationship between syntax and semantics is usefully viewed as functionally intimate given user intentions and cognitactic constraints are evident It seems inefficient and infelicitous, for example, that a noun would be subject to $identifyPossessor and $indicateSpecific since specifying a possessor tends itself to make the possessed element specific Adding two specifiers is similarly redundant and of no purpose, or cognitactically contradictory if one is definite and the other indefinite The action evident in adding a determiner may be subject to a constraint proscribing a duplicate or contradictory application of a specifying tool

Notwithstanding the foregoing, syntactic structure is not immediately and radically diminished by addition of a level of linguistic structural intent. Basic, pared down syntactic information remains necessary to formally define the notion of 'duplicate': various elements must be assigned to the specifying class in order to formulate a constraint that repeated elements should not be specified. One could try to move toward formalizing this by positing an actioneme $ascribeSpecificity to cover definite and indefinite determiners, possessives, numerals, etc A portmanteau could of course be created in cognitax to implement a syntactic slot category but

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[40] We need not immediately resort, however, to any view that all traditional syntactic processes should be recast as basically semantic, and must leave issues in this area open for future research. We advert to various possibilities that a syntactic component and syntactic processing can be independently required as intermediations.

this would still need to be aligned with some lexical categorization This approach may be challenged as partially begging the question as to the nature and relations of syntax. If syntactic phenomena are coded in lexical entries there remains a syntactic presence whose extent is indeterminate without extensive investigation of the cognitactic level. Under all theoretical models intimate connections between syntax and cognitax appear to persist and require formal recognition.

Ongoing research is nevertheless required because actions involved in lexical selection may interact with other cognitax actions in ways that suggest that a variety of selection restrictions could often be recast as cognitax action constraints. In the following cases cognitax interactions appear to be at least partially at work

(260)   * Many happy the puppies barked. (Johnson, 2004)
(261)   * He ate should apples.

In the first, we observe that 'many happy' and 'the' both assert manners of specificity, but do so in conflict by juxtaposing a set with a singleton In the second, obligation modality is applied to a passive object rather than a willful action, violating an actioneme constraint: "Create obligations only for will-enabled actions."

Co-occurrence constraints and substitution classes are extensively discussed in (Johnson, 2004) leading to the same sorts of questions.

Note, for example, there are adverbs where it is not transparently and immediately evident how a syntactic solution would be displaced by cognitactic constraints.

(262)   A very happy child
(263)   The extremely large boat

(264)   I have deliberately misled.
(265)   I have noticeably erred.

(266)   A deliberately angry child
(267)   The noticeably large boat

(268)   * I have very misled.
(269)   * I have extremely erred.
    (Johnson, 2004)

But note:

(270)   I have very much misled.
(271)   I have erred to an extreme degree.

To keep some questions open, in cases like these it is nevertheless interesting to consider a cognitax solution It is possible to analyze 'very' and 'extreme' as asserting degree on some

dimension: $assertExtremeDegreeOnDimension On this account the unacceptability of verbal modification for these adverbs could be ascribed to the absence of an explicit dimension for the verbs 'misled' and 'erred' in contrast with 'happy' and 'large'.

It would appear some verbs could be binary with regard to inherent understanding of degree or extent, e.g. $assertInherentDegreeDimension For others, degree or extent is expressed in an ancillary element of extent, degree or amount So it would be infelicitous to have $assertExtremeDegree unless degree or extent had been specified via 'much' or 'degree'.

These examples illustrate what may currently appear to be a fungible boundary between syntax and semantics and point to a need for further research We leave these questions open and believe they raise useful problems, but ones that can only be fully understood if the role of linguistic action is considered.

33 Limitations of Cognitax Constraints to Displace Mechanisms of Syntax

The intent of TG is to argue the advantages of including structural action semantics in linguistic rules as a means to better formulate constraints on language generation processes As noted, questions of the boundaries circumscribed around syntax per se remain Whether cognitax mechanisms are limited to enabling a circumscribed set of better syntactic descriptions or go a distance further toward more fully eliminating the burden placed on syntactic mechanisms is left open as a principal research question In this section we briefly consider a number of cases in order to highlight these questions rather than to resolve them Some of the data is drawn from (McCawley, 1998)

The word order of auxiliary verbs can be used to illustrate fundamental syntax, as for example in McCawley's recitation that "passive 'be' cannot precede any other verb": (McCawley, 1998) p.1

(1) John has been arrested.
(272)   *John is had arrested.

We leave the most fundamental questions to one side, allowing that syntactic mechanisms can be at work here, but note that a cognitax solution may be possible insofar as the 'had arrested' tool complex indicating past action calls for an agent, while the 'is' tool to establish some state itself calls for a patientive subject A possible view of the ill-formedness is that it reflects trying to do two things at once using tools which, even if they were compatible, independently need resources which are not supplied.

In another case, simple stipulative word order specification seems at work and the existence of syntactic functionality cannot reasonably be denied given current insights: (McCawley, 1998) p. 2:

(273)   I admire her.
(274)   *I her admire.

(275)   Je l'admire. 'I admire her.' Fr.

Nevertheless, each case of required word order must be analyzed separately to understand if

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there might be a cognitax intention underlying some observed alternation Contrast the following data, for which a case can be made that the word order constraints are cognitactic rather than syntactic: (McCawley, 1998) p. 2

(276)   I will go to Boston soon/tomorrow.
(277)   I will soon/*tomorrow go to Boston.

(278)   I *tomorrow/soon will go to Boston.
(279)   Tomorrow/soon I will go to Boston.

We hypothesize that rather than a simple predication of syntactic order on 'soon' and 'tomorrow' cognitactic rules may be involved For 'tomorrow' we countenance the actioneme $assertSpecificTimeOfFutureEvent as a specific expectation of time, while 'soon' is more an assertion of general expectation $assertGeneralExpectationOfEarlyFutureEvent In this analysis '*will tomorrow go to Boston' is less felicitous because a specific expectation is requires the essential specifics of an entire proposition, including the subject, action and goal At an interior location it breaks apart the wholeness of the integral material it would seek to modify; the adverb of time is inserted between the time modal and the rest of the predicate, misleadingly, as if the whole were subdivided for a reason The specificity involves increased certainty requiring the target object to be packaged without countervailing internal complexity.

On the other hand 'will soon go to Boston' has the more general time adverb placed in position immediately between phrasal constituents it can modify since a general expectation of time can apply monotonously to an internal constituent, i.e. the modal or 'go to Boston'

Similarly, for '*tomorrow/soon will go', 'soon' placed here is more acceptable because there is a reason for pre-posing it to modify 'will', namely that the special expectation of time 'soon' is connected to the intention or expectation of 'will' Placing the specific 'tomorrow' before 'will' displaces it away from a default position modifying a packaged proposition to a placement for exploiting a relationship to the modal verb, where the uncertainty of internal factors goes against the certainty of the time adverb

We present this analysis as a plausible approach for relegating a superficially syntactic phenomenon to cognitactic processes The analysis can benefit from further investigation and validation, but is particularly interesting because the constraint it implies is a hypothesis that the faculty of language has special mechanisms for managing uncertainty in the structures it generates We observe these principles of cognitive organization elsewhere in our reprise of configurational analyses to an extent that indicates the possibility of an important operation in the faculty of language.

Despite the evident intrusion of cognitax hypotheses into traditional syntactic domains it appears clear that a set of processes seem to persist as more purely configurational syntactic mechanisms These include well known patterns of syntactic agreement, for example, as well as the necessity that lexical insertions, most conspicuously verbs, bring in subcategorization possibilities and constraints that impose requirements on the syntactic output The following data illustrate this

point: (McCawley, 1998) p. 2, p 17 [41]

    (280)   I put it there.
    (281)   *I put there.
    (282)   *John put in the vase. [42]
    (283)   *John put the flowers.
    (284)   *I wish Jerry would stop looking at.
    (285)   *They spent the whole evening thinking about.
    (286)   *This drug has only been used in the treatment of.

The comments of this section illustrate that while the scope of the present work does not extend to the boundary between cognitax processes and those of a more purely syntactic character, it does raise unanswered and important questions that can only be addressed by careful investigation of linguistic intent and action.

34 Even/Only Phenomena

In this section we consider some aspects of the phenomena surrounding the use of 'even/only'. Erlewine references a basic principle in reference to 'only' that depends on the configurational notion of c-command: (Erlewine, 2011)

    The associate of *only* must be in its scope:
(1) * [Which boy]^ does John only like __ ?

    Principle of Lexical Association (PLA) An operator like *only* must be associated with a lexical constituent in its c-command domain [at S-structure].

As an alternative analysis, we posit that 'only' reflects an actioneme $specificMeasureLessThanPreconceived, implying a preconceived amount or degree, so it is infelicitous also to attach $declareUnknown (alias $positVariableToResolve), as in wh phrases, with an element that has been specifically determined.

This violates a constraint:

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[41] At the same time it is attractive but speculative to consider that any lexical piece might have an actioneme functional specification that could explain syntactic patterns. To illustrate with one example among an exceedingly large number of candidates, if 'see' involves $assertVisualPerception, it would be natural to expect the perception to be encoded without an overt targeting preposition. Similarly, if 'look' implies $assertVisualTarget the occurrence of the target preposition 'at' might also be anticipated.

    (6) I saw (*at) John.
    (7) I looked at/*0 John.

[42] Some sentences in this set would be acceptable in discourse environments supplying the missing elements. This raises another set of questions and leaves open the question of additional ways that cognitax might explain the patterning of utterances.

Specific Expectation Compatibility Constraint

Don't declare an unknown on an element when the uncertainty conflicts with a specific expectation.

Next, Erlewine considers quantification with 'every':

(287)   Someone wants to meet [every boy in the room].
(288)   *Someone wants to **only** meet [every [boy] $_F$ in the room] .

Because we associate 'every' with $assertTotality there is an inherent and natural contradiction when $specificMeasureLessThanPreconceived is also present This can be characterized:

Incompatible Estimation Constraint

In the same structure don't at once characterize something as less than preconceived and also the total possible.

We can similarly treat the expectation of PLA effects with other operators:

(289)   Someone wants to **even** meet [every [boy]$_F$in the room]
(290)   John *[p* wanted to **even** *[p]* read [every book that [Mary]$_F$ did __(want to read).

We posit $beyondEventPreConceptionOrExpectation for 'even' and $specificMeasureLessThanPreconceived for 'only' so no parallelism or compatibility would be anticipated between these. In contrast, as in these examples, 'even' is compatible with 'every' since it is natural that $beyondEventPreConceptionOrExpectation would fit with $assertTotality since a maximum is compatible with exceeding some threshold.

Additionally, Erlewine shows the incompatibility of $declareUnknown (alias $positVariableToResolve) with $specificMeasureLessThanPreconceived on a deictically specific nominal.

(291)   *Which boy is such that John only likes [that (contextually specific) boy].

This too manifests as a violation of the Specific Expectation Compatibility Constraint

These examples show the potential for cognitactic solutions to widen understanding of linguistic phenomena and illuminate the underlying essence of fundamentally configurational solutions involving c-command by pointing to processes at a level of representation beneath the configurational one.

35 Ergativity is Cognitax

[NB: This updated section is available on request in the extended document.]
This section consists primarily in a presentation of data to support the conclusion that ergativity cannot be explained at the traditional levels of morphology, syntax, semantics, pragmatics, etc., but requires a separate level of linguistic intent analysis As preliminary data it is a prelude to a later section on ergativity in Inuktitut where the narrative and linear argumentation is presented.

PLEASE NOTE:

This is preliminary section under development

A narrative tracing the discussion of ergativity leads to the necessity for inclusion of a new domain of investigation in the discipline of linguistics Beyond Phonetics, Sign, Phonology, Morphology, Syntax, Semantics, Pragmatics, Discourse, we present evidence that an additionalcomponent, Cognitax, which accounts for the actions transducing thoughts into syntactic structures, is needed in order to account for a wide range of phenomena and theoretical perplexities in the ergative structures of the world's languages.

For methodology we adopt a practice of using the results of previous studies as the primary data for our own analyses In order to minimize mischaracterization we present data from underlying studies with summaries of their observations so that this work may be more easily subject to critical examination and replication with new data.

A main theme is that Ergative structures reflect instrumental creativity as a manifestation of the human ability for symbolic invention in a diverse variety of means to express internal intentions.

The primary argument is that without a theory of instrumental creativity there can be no explanation why ergativity should exist at all, let alone in at least quarter of the world's languages as documented.

The essence of the secondary argument is two-fold, arising within the purview of irregularity and regularity First, we show that the realization of ergativity among the world's languages is erratic, irregular, and unpredictable This conforms to the occasional conclusion that ergativity is epiphenomenal or an accidental surface feature Second, in tension with observed pervasive irregularity,   there are features of ergativity that strikingly reappear among unrelated languages and demand explanation Recurrent features of ergative languages call out for a theoretical underpinning, including: passive, perfect, participials, person, possessives, definiteness, etc These features cannot recur independently in unrelated languages without causal explanation. There have been important theoretical difficulties inherent in understanding ergative phenomena. We undertake a survey of recurrent features of ergative systems across unrelated languages and consider a sample of particularities and irregularities among ergative systems to draw the following conclusion
Ergativity

- is universally but not entirely morphological
- mixes morphology and syntax
- is partially but not entirely semantic
- is not a simple A/O/S mapping from categories of clausal roles or functions
- is not a reflex of underlying universal morpho-syntactic or semantic categories

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- mixes morpho-syntax with discourse function
- shows recurrent features across unrelated languages reflecting an underlying rea
- does not fit within the traditional components of linguistic analysis
- supports a hypothesis that it has hitherto been addressed at the wrong modular level of modular generality
- A new modular level of generalization can resolve the paradox that ergativity has been difficult to define at any level of analysis yet shows strong recurrent features

It is useful to reflect on the conclusion among some ergativity researchers that the observed patterns are epiphenomena (e.g. Johns) This perspective is forthrightly advocated in the work of Delancey where he argues that they are surface phenomena without necessarily a deep explanatory source Thus, they have been viewed much as the blue color of blue birds which has not found to be biologically integrated.

Another entree to the problem is via well-documented correlations Thus, when a language exhibits ergativity, there is an inordinate probability it will also show features or limitations based on perfectivity, person, definiteness, etc What explains these correlations? Over many years of analysis there has been found no explanation at the levels of morphology, syntax, semantics, pragmatics, discourse, etc The regularities must originate somewhere in the systems of linguistic expression, but where?

35.1 Ergative presents a fundamental paradox

The variability in ergativity leads to questions as to what it really is, while the recurrences show that there are fundamental forces at work In the following sections we investigate this paradox and resolve it by proposing an intentional module and level of representation for linguistic theory.

35.2 Show the recurrences, similarities

In this section we demonstrate that despite inconsistency, irregularity, variance, etc. there are recurrent aspects of ergativity that demonstrate it is a reality at some level

35.2.1 General Characteristics

Amidst an array of variable patternings, there are recurrent observations, per the definitional classification of (Dixon, 1994), whereby the intransitive subject (S) and transitive object (O) bear a similarity of patterning distinguished from that of the transitive subject (A). Variations on this general characteristic form the basis for inquiry about the fundamental basis of ergativity.

35.2.2 Ergativity is common.

35.2.2.1   About one quarter of the world's languages are ergative. (Dixon, 1994) p. 224

35.2.3 Ergativity isn't consistent and doesn't fully replace accusativity.

35.2.3.1   No attested language is fully ergative. (Dixon, 1994) p. 224

35.2.3.2   Ergativity split potential is ubiquitous across ergative languages.

35.2.4 An ergativity split can be semantically conditioned by any clause constituent or category. (Dixon, 1994) p. 224

35.2.5 Ergativity splits: semantic to grammatical

35.2.5.1   Ergativity splits are originally semantically motivated but exceptions arise as the split is grammaticalized. (Dixon, 1994) p. 224

35.2.6 Tendency Relationship to Controllers

35.2.6.1   Among NP that split ergativity, those most likely to be controllers (pronouns, human nouns) are more likely to reflect ergative patterning Conversely, those less likely to be controllers (non-human, inanimate) tend to an ergative grammatical pattern. (Dixon, 1994) p. 224

35.2.6.2   Ergative splits orient to control vs. Completion or past events

35.2.7 In tense, aspect and mood ergative split, potential control is associated with accusative patterning (action predicted, ordered or in progress, purposefulness, imperative), while ergative is associated with completed or past events, or relative clauses specifying past events. (Dixon, 1994) p. 224

35.2.8 Ergativity can have classic syntactic traits.

35.2.8.1   There can be ergative coreferentiality between main and coordinate or subordinate sentences   (Dixon, 1994)p.1

35.2.8.2   Ergative case reflects syntactic prototypes not direct semantics

35.2.8.3   Ergative case labels are only applicable to languages with prototypical syntactic based marking and not ones with direct semantic based marking Therefore, it's not a pervasively semantic marker (Dixon, 1994)p. 2

35.2.9 Morphological Presence

35.2.9.1   Always a morphological component

35.2.9.1.1   Ergative case is never unmarked morphologically. (Deal, 2015) p. 663

35.2.9.2   Morphological ergativity exceeds syntactic ergativity.

35.2.9.3   There is more morphological ergativity than syntactic. (Dixon, 1994)

35.2.10   Similarities & recurrences

35.2.11   Indefiniteness is recurrent in ergative languages

35.2.12   Indo-Iranian Sindhi and Lahnda split ergative occurs only in context of pronominal (Bubenik, An Interpretation of Split Ergativity in Indo-Iranian Languages, 1989) pp. 181–212

35.2.13   Perfect/Past is recurrent in ergative languages

35.2.13.1   Indo-Iranian split ergative occurs a) in all contexts but ergative agreement with the transitive subject is different from non-ergative or b) ergatives occur only in context of perfect or past tense.**Invalid source specified.**

35.2.13.2   Association with passive is recurrent

35.2.13.3   Ergative is frequently associated with perfect morphology as in Urdu/Hindi, which is interpreted to indicate an origin in passive constructions. **Invalid source specified.**

35.2.14   Person restriction is recurrent

35.2.14.1   Punjabi third person pronouns are marked for ergative whereas first and second person pronouns are not. **Invalid source specified.**

35.2.14.2   In the Australian language forms are generally ergative except when first or second person is involved and those pronouns are marked nominative/accusative. **Invalid source specified.**

35.2.14.3   In Nez Perce ergative marking occurs only in the third person pronouns (Rude 1988)

35.3   Show the dissimilarities

In this section we document from the literature evidence that dissimilarities and irregularities in ergative manifestation are pervasive.
35.3.1 It can disappear in subordinate clauses

35.3.1.1   Anderson (1977), There may be ergative patterning in main clauses but more accusative patterning in subordinate clauses e.g. inEastern Mayan Mam(contexts: when- clauses, purpose/result ,focused or special adverbials, generic quantifiers, stative verbs). **Invalid source specified.** p. 32

35.3.2 Agreement patterns that don't align with case assignment

35.3.3 Some split ergative languages (e.g. Austronesian) have ergative–absolutive case marking, but a nominative–accusative agreement. (Deal, 2015)

35.3.4 Agentivity split across active vs. inactive verbs

35.3.4.1   There can be split ergativity according to agentivity of the intransitive subject. In Dakota, intransitive subjects of active verbs e.g. to run have marking of transitive agents, per accusative languages, while for inactive verbs e.g. to stand they are marked like transitive objects, per ergative languages.

35.3.5 Pragmatic/discourse split per emphasis, contrast, etc.

35.3.5.1   There can be ergative split according to pragmatic factors (emphasis, contrast, etc/). In some Tibeto-Burmese languages with consistent regular split-ergative by aspect, or active-stative split, there can be a restriction in natural discourse for the ergative marking to a minority of clauses with pragmatic emphasis or contrast (DeLancey, 2011). (Deal, 2015)

35.3.6 Split by pronouns/person

35.3.7 There is a hierarchic split Pashto and Pamir languages showing familiar features: nouns pattern as ergative but pronouns are double oblique for interlocutors (first and second persons). (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic.

Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.3.8 Variability

35.3.8.1   Split ergativity in clauses is multifaceted per semantics in various sentence components

> Split ergativity in simple clauses can be split erg/acc in multiple ways: by semantic classes within a variety of obligatory sentence components: verb, noun phrase, aspect/tense/mood or of main vs. subordinate clauses (Dixon, 1994)p 2

35.4   The impermanence, idiosyncracy and delicacyfragility of ergative systems

In this section we extract evidence from the literature that ergative systems exhibit characteristic idiosyncracy and changeability with regard to conditioning, appearance, disappearance, and modifiability.

35.4.1 Diachronically unstable

> Here we present samples demonstrating the often observed instability of ergative systems through time.

35.4.1.1   Typically variable and unstable systems, as well as familiar features, appear in ergative structures in the history of Aramaic Instability and cross-linguistic tendencies are also well documented in Indo Aryan and Iranian. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.2   Eastern dialects of Aramaic show tense-dependent ergative in the perfect, later to be reanalyzed as past perfective (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.3   From a broad perspective, in Iranian and Indo-Aryan languages over long periods ergative patterns are unstable and frequently change over time bidirectionally both from accusative to ergative and from ergative to accusative (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.4   In the development of Middle Persian accusative alignment changed to ergative for the past perfective and perfect. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.5   In the development of Middle Persian accusative alignment changed to ergative for the past perfective and perfect. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.6   Ergative remains in Northern Kurdish while Farsi returned to accusativity. Old Indo-Aryan showed accusative yet late Middle Indo-Aryan developed ergative; Some new Indo-Aryan languages remain ergative, while became accusative. (Bubenik,

Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.7   Aramaic used a reanalyzed passive participle with a dative experiencer for development into an ergative construction. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.1.8   Aramaic dialects are accusative in non-past tenses, with some dialects showing ergative in past perfective tenses. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.2 Restriction, Gradation, Transition, Fine degrees of difference

In this section we demonstrate the range of finer grade effects that must be accounted for in a theory of ergativity.

35.4.2.1   Dynamic/Active Verbs

In some Eastern Neo-Aramaic dialects degrees of ergative alignment persist In others semantic patterning (beyond both agent/patient and ergative/accusative configurations) arises for stative ('child grew') versus dynamic/active ('dog barked') verbs along with markers for patient Some dialects have lost ergative alignment completely. (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.2.2   Idiosyncrasy

There can be a marked striking inversion of function extending beyond the theme conflation of ergative systems For example in Jewish Amadiya Kurdistan suffixes are able to express the subject in present forms and the object in the past, but also vice versa, inverted: the object in present and the subject in the past Hoberman 1989:35 ff: (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.2.3   Increased Volition

In some Indo-Aryan languages experiential constructions alternate with an ergative construction associated with sense of more volition. (Butt 2006): (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.2.4   Passive/Ergative Ambiguity

In Standard Russian sentences can be ambiguous for ergative vs. passive interpretation (Seržant 2012:373): (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill. Oxford: Oxford University Press. 2017, 2017)

35.4.2.5   Passive & Possessive Transitions

There are three basic theories on the genesis of ergative structures: Coghill's Passive+Experiencer Dative Theory' The earlier Possessive Theory of Benveniste (1952) and versions of a Passive Theory (Harris and Campbell 1995). (Bubenik, Review of The Rise and Fall of Ergativity in Aramaic. Cycles of Alignment Change by Eleanor Coghill.

Oxford: Oxford University Press. 2017, 2017)

En mass starts

35.4.2.6   Grammatically Dispersed

Ergative properties are found distributed among various systems of language, including morphology (e.gl case, verbal agreemen, and syntax (e.g. A- movement and control (rarely)), although there is room for debate and interpretation among the supporting data. (Deal, 2015)

35.4.2.7   Invariably Restricted and Grammatically Limited

Within the range of possible scientific interpretations, all languages with ergative properties have them to a restricted degree within the grammatical systems (Moravcsik 1978) Therefore, ergative languages are always split between ergative and non-ergative structures. (Deal, 2015)

35.4.2.8   Conditioned by Nominals/Person Limitations

Further, split ergativity frequently occurs within classes of nominals. Frequently first and second class pronouns are often distinguished by lack ergative case and/or agreement, as in Nez Perce but one does not see ergativity in pronouns but not common nouns. (Deal, 2015)

35.4.2.9   Susceptibility Hierarchy

When ergativity in nominals is split there appears to be an implicational hierarchy is correlated with a dimension of quasi susceptibility such as (lacking ergativity <- pronouns, proper names, animate nouns, inanimate nouns -> having ergativity) (Silverstein 1976).: ergative pronouns imply ergative common nouns; pronouns can alone lack ergativity as a class; animate ergatives imply inanimate ergatives; inanimates alone can show ergativity as a class. (Deal, 2015)

35.4.2.10   Perfect Contrasted with Progressive

Ergative split limitations may also be determined by verbal properties of the clause, such as, not uncharacteristically, the occurrence of ergative patterning associated with perfective but not progressive aspect in Chol Mayan (Coon 2010). (Deal, 2015)

35.4.3 Universals and tendencies: limitations and resistances

In this section we show the resistance in ergativity to universal consistency

35.4.3.1   Always Morphological Sometimes Syntactical

Sytactic ergativity does not occur without morphological ergativity. (Deal, 2015)

35.4.3.2   Invariant Feature of Syntactic Ergativity

Syntactic ergativity, involving a difference in transitive/intransitive subject marking, always involves also the absolute identity of transitive object and intransitive subject. (Deal, 2015)

35.4.3.3   Ergative Case Marking is Obligatory/Ergative Verbal Agreement can be Variable

While verbal agreement can be with transitive subject or intransitive subject/transitive object, ergative case itself is never unmarked. (Deal, 2015)

35.4.3.4   Free Word Order or Verb at Periphery

Ergative languages tend to have either free word order or have the verb at the periphery

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(e.g. VSO, SOV) but exceptions are documented. (Deal, 2015)

35.4.3.5 Derived Transitive Subjects Unlike Underived Transitive Subjects

When subjects are derived as part of a syntactic process in a context of ergativity they do not behave like underived transitive subjects. (Marantz 1991) (Deal, 2015)

35.4.3.6 For Ergative Verbal Agreement Case is Either Ergative or Unmarked

When verbal agreement shows ergative traits then there is either no case marking, or if there is, it too shows ergative properties. (Deal, 2015)

35.4.3.7 Intransitive Subjects are Incontrovertably Real

In all languages the single noun phrase argument of an intransitive verb, no matter the semantic relationship, is always treated as an intransitive subject according to the grammatical patterning of the latter This is independent of semantic role. (Dixon, 1994) p. 7

35.4.3.8 Transitive Subject Tendencies

Across languages the transitive subject is regularly associated with particular semantic roles depending on the verb class: Agent in affect verbs (hit, cut, burn), Donor in giving verbs (give, lend, pay), Speaker in speaking verbs (talk, tell, order) , Perceiver in attention verbs (see, hear, watch), and each of these corresponds to the primary determinant agent in the activity of the verb These are dependent on semantic role. (Dixon, 1994) p. 8

35.4.3.9 Both accusative nominative and ergative absolute normally unmarked and leftmost.

In both accusative and ergative systems the subject term as respectively nominative or absolutive is most often unmarked and is most often the left-most noun phrase in the clause. (Dixon, 1994) p. 11

35.4.4 Cross-classifying Variability

In this section we show the complexity of cross-classification in ergative phenomena.

35.4.4.1 Shared subject deletion can extend to transitive objects in ergative languages.

Languages with accusative syntax allow deletion of shared subjects, whether intransitive or transitive, while those with ergative subject can allow deletion of shared NPs which are either intransitive subject or transitive object. (Dixon, 1994) p. 12

35.4.4.2 Ergative morphology does not imply ergative syntax.

Languages with ergative morphology may or may not have ergative syntactic patterning. (Dixon, 1994) p. 13

35.4.5 Fundamental Conditioning Variance

Role assignment may be general or conditioned per verbs and per context, based either on specific or prototypical semantics..

Languages may either assign subject and object roles to noun phrases based prototypical semantic relations characteristic across the full range of verbs, or based on the actual semantic relations in the particular instance of the use of a particular verb. (Dixon, 1994) p. 28

35.4.5.1   Ergative splits conditioned by many factors

Frequently, languages combine both nominative/accusative patterning with absolute/ergative patterning and the split can be determined by a variety of factors, including the semantics of the verb, the semantic characteristics of the argument NPs, tense, aspect or mood of the main clause, or the matrix vs. embedded status of the clause. (Dixon, 1994) p. 70

35.4.6 Difficulties of Theoretical Accounts

In this section we document fundamental difficulties for theories of ergativity, even for the underlying concepts which have been appealed to.

35.4.6.1   Accounts of ergativity based on the concept of subject difficult at least to the extent that definitions of subject are difficult.

Universal preponderant definitions for subject and object are provided, although reference is made to languages where a different definition is required. Intransitive subject is defined as the only obligatory role specified by the verb. Transitive subject is defined as the NP most relevant to the success of the verbal activity, if human that could initiate or control the verbal activity The transitive object is the remaining role if the verb specifies two, or the NP most saliently affected by the verbal activity if there are more than two. (Dixon, 1994) p. 124

35.4.6.2   Definition of the concept of subject is difficult even apart from ergativity.

Keenan (1976) is unable to give a deterministic definition of subject and falls back on a statistical identification procedure which involve looking at dozens of syntactic properties as tests to establish determination based on a sufficiency of evidence Some of the tests are based on semantic properties such as agency but conceptual tests are not seen as definitional. (Dixon, 1994) p. 127

35.4.6.3   Subject does not have a purely grammatical definition.

Blake(1976) documents a variety of problems associated with attempts to define subject in purely grammatical terms. (Dixon, 1994) p. 130
Common constructions(such as reflexives, imperatives, etc.) demonstrate and require the subject category to encompass both intransitive and transitive subjects in linguistic descriptions The subject category is important for many syntactic operations. Other (e.g. lexical) patterns and noun incorporation data force the conclusion that intransitive subjects and transitive objects must likewise be subsumed as a single category At the same time there is not support in linguistic data for so linking intransitive subject and transitive object. (Dixon, 1994) p. 141

35.4.7 Relationship to Passive

In this section we observe the dilemma presented by the often noticed relationship of ergative constructions to passive ones without an ability to firmly establish a broad universal relationship

35.4.7.1   Passive and anti-passive cohere as phenomena and bear some systemic relationship to the subject and ergative categories

As with subject and ergative, passive and antipassive patterns are characterized in terms of a formal definition The passive and anti-passive are viewed as fairly congruent Beyond attendant details, the passive involves re-configuring the transitive object as an

intransitive subject, while in the anti-passive the transitive subject becomes an intransitive subject. (Dixon, 1994) p. 146

35.4.7.2   Passive is associated with aspect/completion/result and anti-passive foregrounds transitive subject backgrounds the object.

The passive and anti-passive frequently carry aspectual meaning Passive may involve, for example, a completive sense or focus on the resultant state of the source object as a result of the verb's action An anti-passive can foreground the action of an underlying transitive subject by posing it as an intransitive subject while backgrounding the transitive object in an oblique case. (Dixon, 1994) p. 148

A language can exhibit more than one kind of passive, and more than one kind of anti-passive, ore even both at once Inuktitut (Bittner 1987) has passive but also multiple anti-passive suffixes which carry separate semantic aspects such as imperfective, inceptive, etc In Mam there is an anti-passive plus four types of passive: +/-losing control, directional motion or process, etc Even a single derivational affix can systematically signal either passive or anti-passive construction, depending on context. (Dixon, 1994) p. 149

35.4.8 Historical instability and diversity

In this section we document the complexities of understanding ergativity from a historical or variationist perspective.

35.4.8.1   Historical instability goes both to and from ergative systems.

For the range of documented patterns of language change any typological dimension is susceptible to evolution in both directions: "a language may move from one profile to another , and then back to the first". (Dixon, 1994) p. 185

Without universal directionality or tendency toward any notion of evolutionary goal a language with accusative properties may transform to an ergative or partially ergative type, and vice versa in the opposite direction Either pattern can be replaced by the other. (Dixon, 1994) p. 185

35.4.8.2   Mechanisms of creation and dissolution of ergative systems are diverse and distributed throughout a wide range of dissimilar grammatical possibilities.

The means of evolution involving accusative to or from ergative patternings are very diverse: (Dixon, 1994) p. 186

- Reinterpretation of passive or antipassive as a basic transitive type
- Advent of new tense/aspect marking systems based on participial forms
- Creation or extension of a case category
- Generalization of syntactic relation marking
- Generalization of NP constituent types
- Generalization of a tense/aspect type
- Shift in constituent order
- Topicalization constructions

35.4.8.3   Ergativity in split systems gravitates toward less active/agentive features: non-controlled verbs, inanimate NPs, perfect aspect, past tense, non-agentive relative clauses.

In split ergativity, ergative is more likely for verbs of non-controlled activity, for inanimate NPs (non controlling), perfect aspect, past tense, and in relative clauses not focused on an agent. (Dixon, 1994) pp. 203-6

35.4.9 Historical Tendencies

In this section we demonstrate historical similarities in diachronic ergativity, demonstrating that there is a real phenomenon requiring explanation despite variable manifestation.

35.4.9.1 Development of passive to ergative systems is associated with perfect aspect or past tense and effect on the object rather than the agent.

Passive to ergative change is associated with perfective aspect or past tense focusing on the effect on the object rather than the action of the agent. (Dixon, 1994) pp. 203-6

35.4.9.2 Imperatives tend to be left accusative in ergative splits due to inherent agent control.

Ergative split in the context of mood tends to leave imperative with an accusative pattern due to inherent focus on agent control (Dixon, 1994) pp. 203-6

35.4.9.3 Change to and from ergativity generally begins in indicative main clauses with imperatives and subordinate clauses unchanged.

Ergative/accusative change generally begins in indicative main clauses leaving imperatives and subordinate clauses in an earlier pattern. (Dixon, 1994) pp. 203-6

35.4.10 Ergativity and Discourse/Information Structure

In this section we review evidence that some universal basis can be approached by examination of what users are doing in ergative usage, that is, what are the actions of intent.

35.4.10.1 Ergativity can be connected to discourse function.

Ergativity can be attributed to discourse functions involving the introduction and subsequent use of information as sentences are linked in the back and forth of language flow The initial theme or topic of a discourse segment tends to be an NP which is a subject, intransitive or transitive. (Du Bois 1987) The anti-passive with intransitive subject can play into this need Further, this discourse subject is not unlikely to be a transitive object in a following sentence Importantly, Du Bois also observes that a new participant in the discourse tends somewhat to be introduced as in intransitive subject or transitive object, thereby instituting an absolutive connection In some contexts less than 10% of new participants enter the discourse as transitive subjects. (Dixon, 1994) p. 207

35.4.10.2 Ergativity can be associated with information newness.

Ergativity is further associated with markers of new information including demonstratives, constituent order, changes of state/location/etc, and so forth. (Dixon, 1994) p. 207

35.4.10.3 Ergativity splits can reflect aspects of discourse.

Ergativity splits can often be explained in discourse terms: first and second person pronouns, controlled activities, definite reference to introduced information, incidental relevance of relative clauses, focus (Dixon, 1994) p. 207

35.5 Theoretical Challenges per DeLancey

In this section we review in additional detail the analysis of a scholar who focuses on the irregularity and fundamental variability of ergative systems.

35.5.1 Is ergativity a coherent concept or category?

Delancey "pose(s) the question of whether there is actually a coherent, typologically and theoretically interesting phenomenon of "ergativity" which merits all of the attention given to it (for example in numerous conferences and workshops, such as this one, devoted to "ergativity in X"), and, if there might be, whether it can possibly subsume all of the different linguistic phenomena which are routinely adduced as examples of it." (DeLancey, 2005) p. 1

35.5.2 Is ergativity a useful scientific explanatory concept?

He further poses "a question whether a workshop on "ergativity" is analogous to an effort to … birds that are blue, which will turn out to be pretty much a useless criterion for any biological purpose. "

35.5.3 Delancey challenges Dixon's definition of ergativity

Here is Dixon's definition of ergativity: "a grammatical pattern in which the subject of an intransitive clause is treated in the same way as the object of a transitive clause, and differently from transitive subject. (Dixon 1994:1)"or S = O ≠ A. He cites Tibetan:

(1) kho-s   blo=bzang-la gzhus-song
    he-ERG Lobsang-LOC   hit-PERF
    He hit Lobsang.'

(292)   kho-s   blo=bzang bsad-song
    he-ERG Lobsang   killed-PERF
    He killed Lobsang.'

where O arguments of certain transitive verbs must be marked with the locative/dative -la, but others disallow it to the effect that only some O's bear the same case marking as the unmarked S's

In other places (Himalayan, South AsiaTibeto-Burman and Indic areas), ergative languages can have differentially contingent marking of objects (Comrie 1979, Bossong 1985) i.e. O arguments have dative marking under special conditions e.g human, or animate, etc.. He cites Hindi:

(293)   us-ne   ek laD.kaa   dekhaa
    he-ERG a   boy(NOM) see.sg/msc/perf
    'He saw a boy.'

(294)   us-ne   ek laD.ke-ko dekhaa
    he-ERG a   boy-DAT see.sg/msc/perf
    'He saw the boy.'

Confoundingly, disqualifying a simple characterization, one see this detail sometimes even in nominative languages (e.g. Spanish and Klamath) and non-ergative nonperfective constructions e.g. in Hindi:

(295)   wo   ek laD.kaa   dekhtaa hae
          he(NOM) a   boy(NOM) see.sg/msc/hab be.3sg.msc.pres
           'He sees a boy.'

(296)   wo   ek laD.ke-ko dekhtaa hae
          he(NOM) a   boy-DAT see.sg/msc/hab be.3sg.msc.pres
           'He sees the boy.'

Since some but not all S's are unmarked like O's in non-ergative environments the definition of ergativity must be appropriately generalized to afford the necessary shifting and variability.

35.5.4 DeLancey's definition of ergativity

For Delancey,it must be the unmarked O that the S looks like Sidestepping subtleties in the various dimensions of marking DeLancey settles on the schema "special marking on the A argument, which distinguishes it from S, which (almost always) has no overt marking"

35.5.5 DeLancey's operative question

DeLancey asks whether the set of ergative languages so defined is " an interesting or typologically/theoretically useful one? In other words, do they have anything in common besides this superficial feature?
Delancey notes that what has been observed

> " was not a phenomenon, but a cluster of phenomena which needed to be defined. However, this task of defining the object of study was never seriously undertaken -- …Notice how much is assumed by the locution "split ergativity" … assuming that "split ergativity" is a single coherent … That is, the unity of several quite disparate and distinct linguistic patterns was simply assumed from the outset, and continues to be: … there are typically only three al [alignments]…: nominative-accusative, ergative-absolutive, and active-stative. "

Here we see an early observation that ergativity appears as an epiphenomenon, a surface manifestation which does not reflect a directly corresponding deeper reality If ergativity itself does not raise a profound question, it begs one insofar as an explanation is required for why the same phenomena appear in structures related to ergativity in diverse unrelated languages.

35.5.6 Relation of Ergativity to the notion of subject

Delancey adverts to possible difficulties in relation to primitive categories He notes that the notion of ergativity may be conditioned by a prior notion of Subject which historically and prejudicially has been associated with nominativity, but modern

investigations have uncovered flavors of nominativity dependent on alternative fundamentals such as "topic prominence" (li and Thompson 1976) in Chinese, and discourse pragmatics in Burmese (Soe 1999. A further type of fundamental non- or quasi-nominativity involves
"active/stative" or "split-S clause types that have been subject to inclusion in or separation from ergative classification, e.g. when Hindi and Kiranti can be considered a "split" type of ergative sometimes raising the question whether "split nominative" vs. "split ergative" might be an equivocation even if such cases are frequently spoken about as split ergative.

35.5.7 Nominativity is a more coherent concept while ergativity is evasive in both syntactic and traditional functional terms.

For DeLancey "nominativity is an actual phenomenon, … a unified phenomenon. " while ergativity "just bits and pieces of what is left over . Our tradition inclines us to think of 'ergativity' as some special deviation from the norm; in fact it is a non-category, it is simply the absence of nominativity. "

Delancey views the S, A and O primitives for alignment classification as overly simple considering dative subject constructions, the varieties of "split accusativity", important roles for "indirect objects" in clause structure, and the lack of a concept of "primary object" (Dryer 1986).

Importantly, the phenomenon of "split-S" (Mithun and Chafe (1999)) (including 3-way e.g. Choctaw) furthermore undermines the very concept of S as a "primitive" From another angle A, S, and O are not even semantic primitives, deriving as they do from features of control and activity).

Delancey notes that cross currents from nominativity emerge even when ergativity seems quite regular He cites Tibeto-Burman Mizo (Chhangte 1993) for the suffix in dedicated to marking all A arguments, without noted exceptions, in a canonically ergative manner:

(297)   ka-nââw â-tap
    1sg-baby 3sg-cry
    'My baby is crying.'

(298)   kâ-nùù-in   â-kow-cê
    1sg-mother-ERG 3sg-call-2obj
    'My mother is calling you.'

(299)   úy   â - zuang
    dog 3sg - jump
    'A dog is jumping.'

(300)   úy-in   mìì â-se?
     dog ERG man 3sg-bite
    'A dog bit a man.'

This shows consistent case marking across all tenses and aspects while S and, usually, O arguments are unmarked so represents a basic unperturbed form of ergativity. Still, even here, cutting back against this regularity, the data shows that the agreement clitics preceding the verb are rather in a fairly uncompromised nominative pattern: cf. the 3rd person marker â-, in agreement with the subject with just one irregularity in a special form for first person

    (301)   ui in   mi = se?
          dog ERG 1stOBJ = bite
          'A dog bit me.'

Thus case and agreement morphology reflect grammatical relations without bringing in extraneous cognitive dimensions per Givon's functional view of ergativity
The ergative-absolutive system ... is, first and foremost, a system where case-marking does the syntactic distinction between transitive and intransitive clauses. (Givón 2001:208)

 We see from this the fundamental difficulty in understanding ergativity in either syntactic or functional terms.

35.5.8 Ergativity tends not to cohere as fundamental but reflects some other process, neither uniformly syntactic nor discourse-pragmatic.

Tibetan too has a case suffix for A arguments qualifying as "ergative" but it functions in a very different way Per Delancey (1984, 1985a, 1990) the generalization is that "ergative marking is obligatory on the A argument of a perfective transitive clause, but optional in non-perfective tense/aspects":

    (302)   nga-s   stag bsad-pa yin
          I-ERG tiger killed-PERF/CONJ
          'I killed a tiger.'

    (303)   nga(-s) stag gsod-kyi yod
          'I am killing a tiger.'

    (304)   nga(-s) stag gsod-kyi yin
          'I will kill a tiger.'

Further, DeLancey observes "It also occurs optionally on S arguments in perfective intransitive clauses which refer to intentional action, but never in non-perfective one-argument clauses or in non-control clauses:":

    (305)   nga(-s) bod-la   phyin-ba yin
          I(-ERG) Tibet-LOC went-PERF/CONJ
          'I went to Tibet.'

(306)   nga(*-s) bod-la >gro-gyi yod
        'I am going to Tibet.'

(307)   nga(*-s) bod-la >gro-gyi yin
        'I will go to Tibet.'

This represents an active/stative system split by aspect with ergative morphology required for

> " A arguments of perfective transitive clauses, optional on A arguments of non-perfective and S arguments of active intransitive imperfective clauses, and impossible on S arguments of non-perfective clauses".

An alternative view is that there is an optimum transitivity prototype including two arguments, perfective vs. non-perfective aspect, and active or volitional vs. stative or non-volitional such that degree of closeness to this creates a tendency to ergativity marking (DeLancey 1984). A transitive clause can be marked ergative even lacking perfective or active features:

(308)   nga(-s) de   shes-kyi med
        I-(ERG) DEM know-NEG/IMPF/CONJ
        'I don't know that.'

Yet an intransitive clause requires both active and perfective features for ergative marking. Additional evidence comes from dative subject marking with certain experiencer predicates, as well as transitive light verbs exhibiting ergative morphology when the verb is volitional:

(309)   nga-s zhabs=bro brgyab-pa yin
        I-ERG dance   throw-PERF/CONJUNCT
        'I danced.'

(310)   nga(*-s) hab=brid brgyab-byung
        I(*-ERG) sneeze   throw-BYUNG
        'I sneezed.'

Delancey continues, pointing out that all of this falls short of revealing a fundamental unifying factor since ergatives characterized as optional really are predictable from discourse-pragmatic context establishing the marked argument in focus (Tournadre 1991, 1996).

Ergativity is not simply related to transitive/intransitive distinctions, since in this regard it is not a reliable indicator. Its primary function here emanates from discourse-pragmatic, not semantic or syntactic, dimensions. Thus Tibetan instructively contrasts with Mizo, where syntactic category is more directly reflected.

DeLancey concludes that the

> " ergative in the two languages have virtually nothing to do with one another --
> one serves to indicate grammatical relations, the other to mark a particular
> discourse-pragmatic category. There is no point in considering them to be
> examples of the same linguistic type."

This analysis leave ergativity without a permanent home. It's primary residence is neither
in syntax nor discourse-pragmatics, reflecting a phenomenon dispersed among the
modules of linguistic analysis.

35.5.9 Ergative split by restriction to 3rd person reflects recurrent reference to a 'deictic center'

Delancey adverts to well-known patterns of split ergativity such as the Hindi type
confined by tense/aspect, and also the addressee anchoring type whereby only 3rd person
A arguments exhibit ergativity to the exclusion of 1st and 2nd person. Hefinds special
interest in the Sahaptin type(Zúñiga 2003).
Sahaptin has a suffix, -in, marking transitive A but notably not intransitive S:

(311)   iwinsh i-winá-na
           'The man went'
           man   3sg-go-PST

(312)   pá-q'inu-sha   iwínsh-in tílaaki-n
           3:3-see-PROG man-ERG1 woman-ACC
           'The man sees the woman.'

Despite object case marking on the O this construction has traits of the ergative in the
case marker –in.

It is split with ergative case marking on 3rd person A arguments but not on 1st or $2^{nd,}$ as the
lack of case marking on the 1st person pronoun illustrates:

(313)   ín=ash á-q'inu-sha   tílaaki-n
           I=1sg   3Obj-see-PROG woman-ACC
           'I see the woman.'

This is a common restriction as seen in Australian, TibetoBurman and American
languages, often explained by means of an animacy hierarchy (Silverstein 1976)
Delancey 1981 finds this can be reduced to simple distinction whereby 1st and 2nd differs
from 3rd and reflects a grammatical orientation only to what he calls the "deictic center",
and not so much agentivity or transitivity in particular.
We find here another cognitive category extending the list operative distinctions which
appear to partially condition ergativity in limited numbers of languages.

35.5.10 Delancey validates the concept of deictic center in multiple areas of Sahaptin grammar.

Sahaptin exhibits separate ergative markers: -in appears only on the O argument and the A argument when in 3rd person. For O in 1st or 2nd, a separate inverse ergative marker, -ni,-m, appears:

(314)   iwínsh-ni,-m=nash i-q'ínu-sha (in-áy)
man-ERG2=1sg 3Subj-see   (I-OBJ)
'The man sees me.'

(315)   iwínsh-ni,-m=nam i-q'ínu-sha   (ima-náy)
man-ERG2=2sg 3Subj-see-PROG (you-OBJ)
 'The man sees you.'

This illustrates a deixis system but furthermore these 1st and 2nd person pronouns as are restricted to emphatic / contrastive function; otherwise 1st and 2nd person exhibit pronominal clitics, attached to the initial word without case marking:

(316)   á-q'inu-sha=ash   iwinsh-na
3Obj-see-PROG=1st man-OBJ
'I see the man.'

(317)   i-q'inu-sha=ash   iwinsh-nim
3Subj-see-PROG=1st man-ERG
 'The man sees me.'

These can co-occur with independent pronouns:

(318)   ín=ash á-tuXnana yáamash-na
I-1sg 3Obj-shot   deer-OBJ
'I shot a deer.'

And also for possessors of arguments:

(319)   nishá-pa=sh wá kusikusi
house-in=1st be dog
 'My dog is in the house.'

(320)   Xlák=nash wá núsuX
lots=1sg be salmon
'I have lots of salmon.' (lit. something like 'Me, there's lots of salmon')

By way of general summary Sahaptin has invariable 1st and 2nd person required for reference to a 1st or 2nd person in the role of highlighting participants at the deictic center. This is synergistic with deictic ergative marking in a system oriented to representing the deictic center.

Overall the role of ergative marking hear bears no direct relationship to ergativity as it appears in Tibetan or Mizo, which themselves are divergent. Delancey's narrative leads to his high level

> "question of what use is a word, and more to the point, what use is a concept, which tries to subsume [these] as examples of a single category?"

Delancey illustrates further the orientation to deictic marking in Tibeto-Burman Kuki-Chan languages to demonstrate that what might appear an ergative phenomenon in Sahaptin is really rather deictic marking with only misleading traits of any fundamental ergative nature.

This discussion builds the case that there is no coherent adhesion in ergativity to a fundamental principle, and that its are diverse and scattered in ways that do not seem superficially coherent.

35.5.11   Fundamental explanations of ergativity based on S/A/O have been elusive, pointing to an alternative psychological origin.

Delancey, in pursuit of a non-circular definition for the alignment primes S,A,O underlying nominative/accusative and ergative patterning, finds there are no universal definitions The very concept of ergativity seems to depend on a universal definition for A. While the concepts of semantic agent, pragmatic topic and focus seem to have consistent general definitions and even the elusive concept of grammatical subject seems usefully reducible to attentional focus, S, A and O lack meaningful definitions even though they are descriptively universal of surface phenomena

S as a grammatical primitive is belied by languages where Split-S patterning occurs such as Lakhota or Pomo, where there appears no S category whatever.

Delancey resists much of Dixon's treatment of A and O He concedes that there is strong evidence that experiencers and agents fall into a unified class in contrast with "undergoer" roles typical of O arguments He also adverts to Dixon's observation that experiencers and agents are similar in that the former are typically potential controllers and causers of events, i.e. "that role which is most likely to be relevant to the success of the activity" (Dixon 1994:52) But crucially he notes that the A category does not represent a natural class.

Since whenever agent and experiencer behave similarly one also finds that S arguments pattern in the same way so that the fundamental category is that of subject, obviating A and S. While Dixon derives Subject as the union of A and S, i.e. they "refer to functions that can be initiating/controlling agents" (Dixon 1994:125), Delancey rejects this out of hand since a subject concept subsuming agent, experiencer, possessor, located Theme etc., is , is only a pragmatic entity reflecting attentional focus, a psychological prime, and does not have a semantic core.

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Here the attempt to understand ergativity in terms of more traditional concepts has uncovered problems pointing back to prior and wider psychological processes as more likely candidates for the unification of ergativity types in a coherent explanation.

35.5.12 For Delancey, ergative is a surface case category leaving the nominative vs. ergative distinction only superficial without a firm foundation in universal traditional linguistic systems.

From this perspective the concept ergative is a useful name for a surface case category, leaving the characterization of nominative vs. ergative languages more derivatively superficial and less profoundly operative in the universal grammatical sphere than is often assumed.

Delancey sees an array of possibilities including languages without a clear subject reflecting the fact that that there are several different manners for grammaticalizing a system sincemarking core arguments does not even necessarily result in case marking.

Delancey's main point is

" that being obsessed with the idea of "ergativity" actually pulls us away from [] very promising lines of research, and leaves us comparing bluebirds and blue jays, for no better reason that they are sort of the same color. "

35.6 Theoretical Resolution of the Paradox

The purpose of the foregoing has been to show that there is no locus of explanation or co-ordinated system of factors that can account theoretically for the observed patterns of both constancy and variability in the world's languages Our conclusion is that speakers of ergative languages are trying to do something with the structure of their language which is fundamentally neither morphological, syntactic, semantic, or discourse-pragmatic, but which bears overtones of information structuring in discourse production contexts There is in standard linguistic theory no integrative module to account for these facts, leading us to the hypothesis that introduction of an intentional module should be explored as a possible level of increased explanatory understanding for the facts of ergativity.

This is so far only a negative result. We do not attempt here to synthesize the facts of ergativity into a specific proposal for a solution based on intent We postpone the specific theoretical proposal to be presented in the context of a detailed analysis of ergativity in Inuktitut where observed facts and patterns lead naturally to a reasonable hypothesis and solution This analysis is presented separately .

36 Ergativity in Inuktitut

This section is a very rough collection of notes under development not suitable for general readers It is included here only for those collaborating in the development of Tool Grammar.

[NB: This updated section is available on request in the extended document.]
37 Covert Modification in Floated Quantifiers: Iteration and Totality

English quantifiers 'all', 'both', 'each' do not behave like 'most', 'one', and 'many' since they permit 'floating' from a subject NP to a position to its right, as illustrated by (McCawley, 1998) p. 98:

(1) All/Most of the Chopin etudes give me great pleasure.
(321)   The Chopin etudes all/*most give me great pleasure.
(322)   Each/One of the guests made a speech.
(323)   The guests each/*one made a speech.
(324)   Both of Tom's hands were filthy.
(325)   Tom's hands were both filthy.

An actioneme account for these data can involve positing $assertTotality for 'all', 'both', and $assertIteratonOverAll for 'each'. [43] As such, representing the total set, they are logically free to be introduced as modifiers after the presentation of the base noun phrase In contrast, 'most', 'one', and 'many' restrict the membership of the noun phrase, so if post-posed can result in a misleading construct insofar as they would cause a discordant re-adjustment of meaning from that set up by the prior noun phrase, having as it does, a default interpretation of totality This is a form of garden path constraint.

>Advance Notice Quantification Constraint

>Avoid placing a restrictive quantifier later than the noun phrase it modifies if the latter has set up a prior strong default interpretation of totality.

We see a related restriction among McCawley's further observations concerning quantifiers that occur among and following direct and indirect objects:

(326)   Each of/all/both the visitors gave the children a dollar.
(327)   The visitors each/all/both gave the children a dollar.
(328)   The visitors gave each of/all/both the children a dollar.
(329)   The visitors gave the children each/all/both a dollar.
(330)   The visitors gave the children a dollar each/*all/*both.

Note the ambiguity of the last sentence, for which 'each' applies either to the visitors or the children.[44]

The pattern in the last sentence can be explained by observing that 'each' refers to an iteration of a predication for an entire set of entities, i.e. visitors, children, or dollars. We propose $assertPredicationIteratingOverTotalSet as follows:

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[43] In this account it is logical to think of the predication involving an iteration over a set of individuals as coextensive with, and equivalent to, the predication on the total set established in the noun phrase, so they are meaning preserving in a basic sense even while they add a dimension of focus on the mental act of iteration.`
    [44] We find unclarity in the acceptability judgments for McCawley's other sentence: The visitors gave the children each/*all/*??both a dollar.

| (331) | The visitors each (for each visitor) gave the children a dollar |
| (332) | The visitors gave the children each (for each child) a dollar |

We contrast this with 'all, both' which more simply refer to a totality modifying 'visitors' or 'children' $assertTotality as follows:

| (333) | The visitors all/both (all/both the visitors) gave the children a dollar |
| (334) | The visitors gave the children all/both (all/both the children) a dollar. |

It is therefore not surprising that 'all, both, each' occur post-posed as clarifications next to constituents they modify, i.e. 'visitors' and 'children'

In our proposal, 'each' differs from 'all, both' in that it asserts a repeated predication over a set, and therefore involves, modifying beyond just the set (nominal), but also, in an essential way, the actual predication: the predication is iterated over the items of the set It has higher adverbial attributes. The speaker is affirming that in running through a set one by one the predication will hold In a sense 'each' modifies the larger predication adverbially conceptually beyond the nominal adjectivally From this point of view it is understandable, and perhaps elegant, that the quantifier 'each' might occur at the end of the predication itself without specifying which noun phrase the iteration applies to, thereby affording a systematic ambiguity This is a device that leaves the scope of iteration unspecified and ambiguous as we observe it is in the above sentence.

(McCawley, 1998) p. 101 also cites quantifiers after objects which are pronouns:

(335)	Arrau played them all.
(336)	*Arrau played the Beethoven concertos all.
(337)	Arrau played them both.
(338)	*Arrau played the Brahms concertos both.
(339)	I have listened to them all.
(340)	*I have listened to the Beethoven sonatas all.
(341)	

We see here again the potential for understanding floating quantifiers as governed by actionemes Since pronouns involve the linguistic action $referToPreviouslyMentionedSet they naturally allow a question whether the entire set is being referred to In light of this ambiguity it is not unnatural that pronouns should accept extent modifiers where full noun phrases involving no indirection of reference do not They contrast with the situation where a definite noun phrase such as 'the Beethoven sonatas' refers by default to the totality of items it encompasses By this logic it would be a misuse of the linguistic tool $assertTotality ('both, all') to apply it where it would redundantly have no effect given the default interpretation There is a constraint against using a tool where it is ineffectual, as noted elsewhere.

This case accumulates with the foregoing to motivate the potential for mechanisms of linguistic intention in developing explanatory theories.

38 Testability, Verifiability, Formalism

[NB: This updated section is available on request in the extended document.]

39 Theoretical Status, Universals and the Architecture of Competence in the Chomsky-an Framework

[NB: This updated section is available on request in the extended document.]

40 Toward a TG Generative Framework

[NB: This updated section is available on request in the extended document.]

41 Extending the Minimalist Rule Framework for Cognitax Tool Grammar

[NB: This updated section is available on request in the extended document.]

42 Relationship of TG Cognitax to Syntax, Semantics and Pragmatics

[NB: This updated section is available on request in the extended document.]

43 Relationship to Speech Act Research

[NB: This updated section is available on request in the extended document.]

44 Dynamic Semantics and Discourse Representation Theory

[NB: This updated section is available on request in the extended document.]

45 Donkey Pronouns

TG posits a set of linguistic actions for use in the formulation of syntactic rules It affords cognitive utilitarian solutions to syntactic problems without, since they are separable, directly facing the mass of significantly resistant linguistic issues that have been investigated in the disciplines of semantics, pragmatics, and philosophy Nevertheless, since these can overlap and interact extensively with syntactic analysis, there is reasonable hope that TG solutions might offer new perspectives even in these disciplines It is worthwhile, therefore, briefly to illustrate that TG analyses may extend beyond syntactic problems to issues in traditional semantics and

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pragmatics TG may be especially helpful where confounding issues of acceptability and permissible interpretation of particular utterances arise. In this section we address the classical problem of so-called "donkey pronouns" that is associated with theories of dynamic semantics and discourse representation theory

First, let us establish the importance of donkey sentences for work in semantics and pragmatics generally. It follows that it is important if TG can provide a substantive explanation because the issues surrounding the donkey sentence problem underlie a significant set of analyses in dynamic semantics To quote (Geurts, 2011):

> "In large part, the motivation for developing dynamic theories of interpretation, beginning with DRT, was the realization that the dichotomy between referential and bound-variable (occurrences of) pronouns is less natural than one might think—less natural in the sense that some pronouns don't fit comfortably in either category."

We provide and contrast an alternative TG analysis using analysis and examples drawn from this survey article (Geurts, 2011) (GA):

In the following sentence GA takes 'his' to refer to 'Pedro', illustrating a referential use of the pronoun.

(1) Pedro beats his donkey.

In TG we would postulate linguistic actions such as the following for elements of the above sentence.

$assertReferenceToPedro[45] ('his')
$assertPedroHasDonkey ('his')
$assertPedroBeatsDonkey ('beats')

GA holds that, in the following, "no farmer" cannot be referential, so the pronoun 'his', which refers to it, cannot be either With a reference analysis ruled out, the pronoun is viewed as being one of binding that involves quantifiers.

(342) No farmer beats his donkey.

TG avoids reliance on abstract theoretical distinctions of reference vs. binding and favors a less cultivated treatment based on direct linguistic actions In contrast with the previous example, illustrating reference to 'Pedro', TG here posits cognitive actions involving reference to concepts or thought constructs This makes unnecessary an analysis built on a pivotal assumption that there can be no reference to a set that can be empty:

$imagineFarmer ('farmer') = concept

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[45] Linguistic actions can be naturally expressed as functions such as $assertReference(Pedro), $assertHas(Pedro,Donkey), but we forestall detailed formalizations in this paper which seeks only to show the viability of a TG approach.

$imagineFarmerHasDonkey ('his')
$imagineFarmerBeatsDonkey ('beats')
$assertNoRealInstantiationsOfImaginedFarmer('no')

Beyond this, the TG approach also enables us to avoid reliance on configurational constraints to explain patterns of occurrence for particular interpretations Where a syntactic configurational constraint is called upon in GA, namely that a pronoun must be C-commanded by that to which it refers (i.e. be a sister constituent or contained in one) TG relies on cogntive utilitarian constraints Thus, in the following sentence the fact that 'his' cannot refer to 'farmer' would be explained in a syntactic account because 'his' is not C-commanded by farmer.

(343)   His donkey likes no farmer.

In contrast, the cognitactic TG approach provides an alternative hypothesis based on a natural role for sequencing of cognitive processes referring to mental constructs:

Imaginary Construct Sequence Constraint

Don't refer to an imaginary concept until the act of imagination has been stimulated in the utterance.

Above, our analysis enabled us to obviate the substantiation of the abstract claim that in "Pedro beats his donkey" 'his' can function either as a referential term or a bound variable This distinction was also called on in GA to explain the difference in interpretation of the following sentences:

(344)   Pedro beats his donkey, and Juan beats his donkey, too.
(345)   Every farmer beats his donkey, and Juan beats his donkey, too.

In the first, but not the second of these sentences the second "his donkey" refers either to Juan's donkey or Pedro's donkey In the second sentence 'his' must refer to Juan This is attributed to the proposed distinction by GA that 'his' can be construed, abstractly, either as a referential item or bound variable, but there is an alternative explanation in TG In the first clause of the second sentence a conceptual construct is referenced:

(346)   Pedro beats his donkey.

   $assertReferenceToPedro ('his)
   $assertPedroHasDonkey ('his')
   $assertPedroBeatsDonkey ('beats')

(347)   Every farmer beats his donkey.

   $imagineFarmer ('farmer') = concept
   $imagineFarmerHasDonkey ('his')
   $imagineSetOfAllFarmers ('every')

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$assertInstantiationOfAllFarmersBeatDonkeys ('beats')

Given an action analysis, we are able to account for the fact that 'his' refers only to Juan in the second sentence by postulating a natural constraint on use of imaginary concepts to avoid semantically confusing situations:

Imaginary Construct Differentiation Constraint

Don't coordinate an imaginary concept inside a construct involving parallel assertions about a parallel non-imaginary referential element.

In the second sentence "Juan beats…" sets up a concrete referential context which is incompatible with the imaginary construct reference in "Every farmer beats…".

In further consideration, GA illustrate their general point that "the dichotomy between referential and bound-variable (occurrences of) pronouns is less natural than one might think":

(348)   Pedro owns a donkey.
(349)   It is grey.

GA dismisses a co-reference account for 'it', first because "a donkey" is not seen as itself referential based on the fact that the negation of the first sentence "Pedro doesn't own a donkey" doesn't refer to some donkey Pedro doesn't own, but rather denies there is any such donkey Further, the negation makes the second sentence unacceptable.

(350)   Pedro doesn't own a donkey.
(351)   *It is grey.

This is taken to point toward a conclusion that indefinites such as "a donkey" are quantifiers rather than referential items But general problems arise here, as GA describes We quote at length:

"However, if we construe "a donkey" as an existential quantifier, how does it manage to bind the pronoun across a sentence boundary?"

"The problem … is related to the fact that the pronoun and its indefinite antecedent occur in different sentences. The following examples show, however, that similar problems arise within sentences:

If Pedro owns a donkey, he beats it.
Every farmer who owns a donkey beats it."

"…it is obvious that the pronouns don't refer, so they can't be co-referential with their antecedents, either. Nor are the pronouns bound by their antecedents, for they aren't c-commanded by them. "

"a donkey" is too deeply embedded for it to c-command "it" […] Hence, the neuter pronouns

in these sentences cannot be construed as bound variables."

"apparently, indefinites are neither quantifiers nor referential terms, and this problem entrains another one, for as long as it unclear what indefinites mean, it will also remain obscure how they can serve as antecedents to pronouns. "

The TG approach shifts the entire problem to an account that would rely instead on a principle of avoiding useless actions The following actionemes are involved in imaginary cases of indefinites such as "doesn't own a donkey"

(352)   *If Pedro doesn't own a donkey, he beats it.
(353)   *Every farmer who doesn't own a donkey beats it."

$ImagineDonkey
$ImagineXownsDonkey
$AssertXdoesn'tOwnDonkey

In a TG treatment a cognitive utilitarian constraint such as the following would account for the data:

Concept Negation Closure Constraint

Don't refer to an imaginary concept invoked for the purpose of establishing its negated existence.

The above overview illustrates some cases where TG brings the possibility of a wider range of solutions to areas of investigation where syntax, semantics and pragmatics intersect We have shown the relevance of action analysis for some general preliminary questions of pragmatics and discourse representation theory, but have not attempted to examine the extensive detailed analysis of GA or the extensive literature of these fields,presenting only some preliminary contrasts to indicate where further investigation can be fruitful While our general purpose is to propose an approach to facilitate better understanding of syntactic problems, we have endeavored in this section to illustrate how action-based analysis interacts with some problems of traditional semantics, pragmatics and the philosophy of language to reduce the burdens of explanation or restrict the domain of unexplained data The linguistic intent of cognitax is available to contribute to the investigations in the philosophy of language and its border areas.

46 TG and Information Structure

[NB: This updated section is available on request in the extended document.]

47 Wh-islands in degree questions

Introduction

(Abrusan, 2011) proposes in an extensive investigation that degree questions with wh-islands are unacceptable exactly when they are not susceptible in formal semantic analysis to a most informative true answer This approach follows in the spirit of earlier semantic analysis (Fox, 2007), which argues that other types of weak islands are blocked by Maximization Failure (MF), wherein maximization functions fail for certain operator scale conditions This vein of work involves important assumptions about the architecture of cognition which contrast with those that we will explore. Our purpose is to propose and support more direct and simpler, less elaborated hypotheses regarding the representation of degree scales as universally dense (Fox, 2007).

We present a simple analysis based on Tool Grammar (TG) TG holds, simply, that for each element of structure in a sentence there must be specified an element of linguistic structural intent, and that the intents of some tools are mutually incompatible, thereby explaining patterns of acceptability/unacceptability There are various ways in which TG might be formulated, but they have in common the constant of specification of linguistic action intent for each structural element, which is the element of TG theory considered here

Evidently, the intents of TG to be presented could be conceivably be recast in a custom tailored formalism of e.g. intensional/propositional logic. / They do not in themselves logically exclude the general thesis of a semantic analysis for wh-degree terms but do present a narrowed analysis restricted to a more limited domain of structural intent Using a pseudo code representation, as is standard for architectural design for symbolic systems, we postpone formalization in order to focus on the fundamental issue of what are the controlling factors underlying wh-island patternings

An important theme of this section is that the TG approach raises the possibility of simplifying solutions not only for theories of syntax, but for the theories of semantics and pragmatics as well. This is made possible by introducing a new level of data representation which is not included in most forms of linguistic analysis, namely that of speaker intent To the extent that this modularization is natural to the underlying systems for the purposes of explaining linguistic patterns, it is expected that the resulting analyses can involve both simpler argumentation and simpler solutions than those of approaches lacking such a perspective Since they is based on field observations by native speakers, TG specifications can be inoculated against the view that they are merely stipulative or reductionist. These are supported to the extent that the addition of a new dimension of recordable and verifiable data is subject to independent validation.

We assume familiarity with (Abrusan, 2011) and (Fox, 2007) without reconstructing their arguments We proceed by extracting the data from the work in question and proposing for it a TG analysis involving structural intents These are examined for intention conflicts and principles of incompatibility are proposed.

Both MF and TG raise important questions about the architecture of linguistic competence in a cognitive framework It is beyond the scope of the present section to attempt fully to investigate these issues here, but we seek to advance the level of understanding by presenting the

fundamental tenets of TG to contrast with those underlying MF.

Brief Orientation

The problem we address can be observed in the following data[46]:

(1) a. Which glass of wine do you know whether you should poison t?
(354)   b. *How much wine do you know whether you should poison t?

When wh questions are formed from with degree constructions they are acceptable in some cases and unacceptable in others This is explained in (Abrusan, 2011) by undertaking formal semantic analysis to show that no meaning interpretation is possible for the ill-formed sentences The problem is cast not as syntactic but one of filtering structures whereby interpretation is blocked An alternative architecture views sentence generation as a separate process from semantic interpretation and accepts the challenge of excluding the ill-formed sentences as part of structure formation TG essentially associates a linguistic intent with each structural element and seeks convincing rationales why some combinations of intents may be incompatible Based on experience with complex symbolic systems, it is commonly found that natural generalizations are only possible if sought at the appropriate level of representation, and undue complexity may otherwise result The TG hypothesis is that when intents are associated with structures simpler and more natural solutions can result For TG, semantic analysis remains valid and important but is construed as more centered in the processes of interpretation than generation This approach can leave an analysis such as (Abrusan, 2011) valid and highly interesting, but less explanatory for the process of generation.

In the above example (Abrusan, 2011) would posit that there is no viable semantic interpretation for 1b We do not review the arguments which are well explained in the source article For TG a sentence is a set of linguistic mental actions in which various intentions are exercised to produce a linguistic representation for interpretation by the addressee TG proposes that there can be a limited, finite controlled vocabulary of linguistic intents which is putatively available and universal to some considerable degree, although those latter possibilities are not explored here.[47] For 1b,. we might propose that the structure "How much wine" reflects an intent to inquire about a continuous scale judgment, while "do you know whether" represents an intent to inquire about a definite determination We represent these intents in TG using dollar symbol phrases that we refer to as actionemes:

(355)   "How much wine"   =~ $inquireContinuousScaledJudgment (CSJ)
(356)   "do you know whether" =~ $inquireDefiniteDetermination (DD)[48]

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[46] Data is from the source papers referenced above.

[47] The vocabulary of intents may well be largely shared among languages but the structures reflecting intents is evidently much more various and subject to universalities of a different order. Furthermore, the constraints on cognitive may have components of universality as well as specificity to particular languages.

[48] The intent is not actually associated with the phrases presented here but is rendered that way here for purposes of discussion.

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The fundamental claim of this section is that intents such as these can be incompatible A sentence would not be generated to simultaneously inquire about a definite determination when it is predicated on the burden of a second unresolved inquiry about a judgment on a continuous scale We will discuss this further below, but the general claim is that there is evidence for a constraint in natural language against aggregation of too much uncertainty (duty of inquiry) in cognitive representations The over-arching generalization is that cognitive processing can impose constraints to manage representations that involve uncertainty We posit controls on uncertainty overload as a defining cognitive factor in the definition of natural languages.

Source of Actionemes

Tool Grammar is inspired by the observation that natural languages include numerous terms to describe linguistic actions (assert, deny, ask, tell, etc.), so there is reason to believe that transcribed observations about action intents can provide a form of scientifically valuable primary data about the processes underlying language behavior The contention is that language itself provides some metadata about language and that this can provide a basis for developing a closed, controlled vocabulary for systematically transcribing the linguistic intents associated with linguistic structures The Tool Grammar framework includes the hypothesis that those competent in a language are thereby competent in ascertaining intents underlying linguistic utterances, albeit in a naïve, unformalized form that, for linguistic analysis, ultimately requires additional extensive refinement in a standard scientific process Beyond conscious awareness and the formulation of a controlled vocabulary of actioneme primitives, a central goal of a theory of action intents is integration with processes of structure formation in an overall theory of structural linguistic action. TG furthermore has the potential to reveal that constraints on well-formedness correspond often to high level cognitive disciplines and strategies for managing complexity, uncertainty, integrity, consistency, information density and other cybernetic principles of information representation TG can therefore be summarized as a theory of cognitive utilitarian meta-linguistic structural action intents.

Formalization of Actionemes

Actioneme symbols (represented with initial '$') are utilized for methodological convenience with an understanding that the process of formalizing TG should call eventually for a range of mathematically explicit, more rigorous elements and forms Actionemes often require phrases and reflect an internal complexity This suggests the possibility either of a form of feature representation (e.g. $inquireJudgment [+inquire, +judgment]) or of embeddable function representation. (e.g. inquire(judgment())), involving, possibly, mixed representations The use of embedded functions implies a tree representation, begging the question, which we leave open, whether representation of action intentions fits naturally into the merged tree structures that result from lexical selection and assembly into increasingly larger units. Whatever the form of improved theoretical statements, our hypothesis is that constraints on cognitive compatibility among linguistic tools can be formulated as patterns of actioneme feature or function sets, and that, furthermore, these can be integrated into the larger matrix of a linguistic theory. The general thesis is that linguistic tool intents are involved in a restrictive cognitive utilitarian mechanics, which can explain many linguistic phenomena, and is compatible with a variety of linguistic theories. Our current purpose is to advocate for the usefulness of the general approach so issues

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of formalization are not here addressed.

A TG Prospectus for wh Agreement

(Abrusan, 2011) proposes in an extensiveinvestigation that a set of degree questions with wh-islands have patterns of acceptability that can be explained by a theory that the ill-formed sentences are excluded because they can receive no semantic interpretation These arguments proceed along the lines of (Fox, 2007), based on the thesis that any question must have a maximally informative answer, i.e. one that implies all other true answers. Our purpose is not to dispute the semantic analysis presented, which is careful and sophisticated, nor to deny the underlying insights, but to open the question whether there might be some account that could explain why sentences ill-suited to understanding might not be generated in the first place.

The Conflicted Determinacy Thesis

In this section, we present a TG thesis that there are four structural intents that interact to preclude the principle set of unacceptable sentences presented in (Abrusan, 2011) We analyze the verbal data as involving in some cases an inquiry about a process of evaluation and other times one involving an establishment of a definite determination We distinguish these as distinctly different linguistic actions For the wh elements, we also distinguish crucially between the act of selection from a limited pre-selected set and a judgment about a continuous scale of measurement. Each of these intents is introduce by means of lexical item tools, with which they are associated.

Here are the associations of intents, with lexical material covered by a basic set of examples in the article. We note that a rigorous test of the semantic filtering hypothesis presented would benefit from examination of a wider range of lexical items and structures, but we restrict ourselves here to the specific patterns presented in the paper since space limitations prevent a full examination of a number of pertinent structural features.[49]

> $inquireEvaluation:
>
> > "think that you should"
> > "need to know whether"
> > "arguing about whether"
>
> $inquireDefiniteDetermination

---

[49] A full examination of the semantic filtering hypothesis might draw on a wide sample of structural contexts. Here are sample patterns that incline to favor the tool grammar approach: *Is determined,, can you determine, *is listed, *is ascertained, is to be ascertained, *did you find, do you find, *is specified, is recommended*. Note also that the yes/know feature of *know whether* is not compared semantically against the instrumental *know how*, and these too conform to tool grammar expectations.

"know whether"

$inquireSelectionFromPre-SelectedSet

"which glass"
"how many books" if inquiring about a known count

$inquireContinuousScaleJudgment

"how much wine"
"how many books" if inquiring about unknown count
"how many pounds"
"how many points"

We use the following abbreviations to represent the compatibility or conflict of intents

E	=	$inquireEvaluation
DD	=	$inquireDefiniteDetermination
PS	=	$inquireSelectionFromPre-SelectedSet
CSJ	=	$inquireContinuousScaleJudgment

Here is the intent compatibility table:

	E	DD
PS	OK	OK
CSJ	OK	*

Intent Compatibility Table

This pattern of compatibility is attributed to a principle of cognitax (syntax grounded in higher cognition) which is hypothesized to control the uncertainty or indeterminacy in an inquiry A definite determination has a higher requirement to reduce uncertainty, while an evaluation process evidently would have built-in expectations of uncertainty Inquiry about a continuous scale judgment is interpreted as having a higher level of inherent uncertainty and indeterminacy than inquiry about a pre-selected set.

Principle: Conflicted Determinacy Constraint

Inquiring about a continuous scale judgment conflicts with the aspiration to high certainty inherent in inquiring simultaneously about definite determination, since prior cognitive processing is a pre-requisite to laying the groundwork for determinacy. Binary absolute judgment can't be determined based on an uncertain categorization judgment. There is a

stricture not to overload inquiry about a definite determination with excessive unresolved uncertainty: preselection is tolerable, discrimination on a continuous scale is excessive

Note: Continuous scale judgments are more uncertain and cognitively burdened than predetermined selection.

Corollary: It's ok to embed inquiry about an uncertainty into an inquiry about an evaluation

Following are the data from (Abrusan, 2011) illustrating the application of this constraint We interpret sentences marked with '?' as basically acceptable with possible overtones of less determinacy associated with secondary variables which are beyond the scope of the present work.

    (357)   a. Which glass of wine do you know whether you should poison t?
                      $inquireSelectionFromPre-SelectedSet
                      $inquireDefiniteDetermination
                      PS/DD

    (358)   b. *How much wine do you know whether you should poison t?
                      $inquireContinuousScaleJudgment
                      $inquireDefiniteDetermination
                      *CSJ/DD

    (359)   a. Which glass of wine do you think t0 that you should poison t?
                      $inquireSelectionFromPreSelectedSet
                      $inquireJudgment
                      PS/E

    (360)   b. *How much wine do you know whether you should poison t? (=1b)
                      $inquireContinuousScaleJudgment
                      $inquireDefiniteDetermination
                      *CSJ/DD

    (361)   c. How much wine do you think you should poison t? (Our example)
                      $inquireContinuousScaleJudgment
                      $inquireJudgment
                      CSJ/E

    (362)   How many books do you know whether you should burn t?

                      There are two theoretical intents here contrasting $inquireSelectionFromPre-SelectedSet with $inquireContinuousScaleJudgment Only the former results in an acceptable sentence.

                      $inquireSelectionFromPre-selectedSet
                      $inquireDefiniteDetermination
                      PS/DD
                      $inquireContinuousScaleJudgment

$inquireDefiniteDetermination

*CSJ/DD

(363)   (4) a. *How many pounds does the World Anti-Doping Agency know whether the boxers lost last year?

$inquireContinuousScaleJudgment

$inquireDefiniteDetermination

*CSJ/DD

(364)   b. ?How many pounds does the World Anti-Doping Agency need to know whether the boxers lost last year?

$inquireContinuousScaleJudgment

$inquireJudgment

CSJ/E

(365)   (5) How many points are the judges arguing about whether to deduct?

$inquireContinuousScaleJudgment

$inquireDefiniteDetermination

CSJ/E

Based on the regularity of patterning in the above we propose that a TG solution should be considered as against the semantic filtering solution proposed by Abrusan, particularly since the actioneme transcriptions represent independent primary data, confirmable by consulting with native speakers.

The Vacuous Judgment Thesis

We present next a second TG thesis employing three structural intents that interact to preclude a further set of unacceptable sentences presented in (Abrusan, 2011) We analyze the verbal data to involve inquiry whether or not a set of circumstances is, or is not, the case We advert to the possibility that this distinction bears a relation to that of a pre-selected set as in the previous section, but treat it as distinct for purposes of initial analysis and explication here. For the wh elements, all examples involve judgment about a continuous scale of measurement, which is the action intent we presented previously. Each of these intents is introduce by means of lexical item tools, with which they are associated.

Here are the associations of intents with lexical material:

$inquireIsTheCase:

"did drive"
"does have children"

$inquireIsNotTheCase

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"didn't drive"
"doesn't have children"

$inquireContinuousScaleJudgment

"how fast"
"how many"

We use the following abbreviations to represent the compatibility or conflict of intents

ITC   = $inquireIsTheCase
NTC   = $inquireNotTheCase
CSJ   = $inquireContinuousScaleJudgment
(PS   = $inquireSelectionFromPreSelectedSet)

Here is the intent compatibility table:

	ITC	NTC
(PS	OK	OK)
CSJ	OK	*

Intent Compatibility Table

An important aspect of this analysis is the observation that selections from pre-selected sets are inherently negatable in the sense that negation of a subset can be interpreted as the complement In this sense we propose that SelectionFromPreSelectedSet is meaningfully negated by taking the complement, while ContinuousScaleJudgment cannot be.

With this in mind, the pattern of compatibility in data taken from the paper is attributed to a principle of cognitive utilitarian mechanics oriented to avoiding useless constructions reflecting vacuous situations An inquiry about a judgment on a specific situation that never occurs has no value This is an instance of a general avoidance of useless constructions, and may be considered axiomatic in a system where each structural element is introduced by specific intent for specific purpose.

Principle: Vacuous Judgment Constraint in Non-negatable Circumstances

Inquiring about a judgment concerning a specific circumstance that never occurs fails to be generated because it serves no purpose to posit a value for a non-entity.

Caveat/Qualification: In the case where alternatives are intended ($inquireSelectionFromPreSelectedSet), negation of a circumstance can imply the occurrence of the alternative circumstance which is non-vacuous.

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Following are the data from (Abrusan, 2011) that illustrate the application of this constraint.[50]

(366) (6) a. How fast did John drive?
$inquireContinuousScaleJudgment
$inquireIfTheCase
CSJ/ITC

(367) b. *How fast didn't John drive?
$inquireContinuousScaleJudgment
$inquireNotTheCase
*CSJ/NTC

(368) (7) a How many children does John have?
$inquireContinuousScaleJudgment
$inquireIfTheCase
CSJ/ITC

(369) b. *How many children doesn't John have?
$inquireContinuousScaleJudgment
$inquireNotTheCase
*CSJ/NTC

But notice the acceptability of both of the following:

(370) (8) a How many colors did Al pick?
$inquireContinuousScaleJudgment
$inquireIfTheCase
PS/ITC

(371) b. How many colors didn't Al pick?
$inquireContinuousScaleJudgment
$inquireNotTheCase
Ps/NTC

Since the constraint seems a reasonable one for structure generation, is based on transcribable

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[50] The following data support the conclusion that the operative factor is CSJ vs. PS.
How many records didn't John break? (of a list)
How many types of errors didn't John make? (known types)
How many time trials didn't John drive? (in the schedule)
How long didn't john drive? (if e.g. split between drivers or activities)
How many models didn't he drive in his Nascar career?
*How many races didn't John enter? (unless types of races)
*How many miles didn't John drive (unless e.g. comparing alternate drivers)
How many laps didn't John drive (in the race)?
*How exhausted wasn't John?
*How important wasn't John?
*??How important didn't John feel?

primary data, and covers the data presented, we propose that a TG analysis should be evaluated for its simplicity and explanatory value along side semantic and syntactic accounts.

The Scalable Modifier Thesis

In this section, we present a TG thesis that there are three structural intents that interact to preclude the data presented for responsive and rogative verbs (Karttunen, 1977)[51] We assume familiarity with these categories and their use in the (Abrusan, 2011) paper.

Here are the associations of intents with lexical material:

$assertScalableStateOfResultantKnowing :

knows/told us/remembered/guessed/forgot

$assertBinaryStateOfUncertainInquiry

wondered/asked/investigated

$assertAboveAverageDegree

mostly

We use the following abbreviations to represent the compatibility or conflict of intents

AAD = $assertAboveAverageDegree
SSRK = $assertScalableStateOfResultantKnowing (responsive)
BSUI = $assertBinaryStateOfUncertainInquiry (rogative)

Here is the intent compatibility table:

	SSRK	BSUI
AAD	OK	*

---

[51] Responsive predicates (know-class)
    Verbs of retaining knowledge know, be aware, recall, remember, forget
    Verbs of acquiring knowledge learn, notice, find out
    Verbs of communication   tell, show, indicate
    Verbs of decision decide, determine, specify, agree on
    Opinion verbs   be certain about, be convinced about
Rogative predicates (wonder-class)
    Inquisitive verbs wonder, ask, investigate, examine, consider
    Verbs of relevance   matter, be relevant, be important, care
    Verbs of dependency   depend on, be related to, have an influence on, make a difference to

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This pattern of compatibility is attributed to a principle of cognitax which is pro-forma intended to prevent combined modifications (predications) using fundamentally incompatible predicates (Since multiple categories of such incompatibility are envisaged we anticipate a feature checking mechanism, even though a feature formalism is not extensively developed in this section Note also that we might propose a specific "Degree Scale Compatibility" constraint to prevent the conflict of strictly binary categorical predicates with inherently opposite scaled degree ones, but choose to generalize the constraint in anticipation of an extended inventory of such conflicts.)

> Principle: Compatible Modification (Predication) Constraint
>
> Structures involving incompatible modification (predication) features are precluded, such as those which on the one hand imply degree scales, and those that in their binariness preclude them.
>
> In this case elements which do not match for scalable modification are blocked.

Following are the data from (Abrusan, 2011) illustrating the application of this constraint.[52]

(372)   (8) John mostly knows/told us/remembered/guessed/forgot which girls came to the party.
          'mostly' = $assertAboveAverageDegree
          Responsive verbs = $assertScalableStateOfResultantKnowing
          AAD/SSRK

(373)   (9) *John mostly wondered/asked/investigated which girls came to the party.
          'mostly' = $assertAboveAverageDegree
          Rogative verbs = $assertBinaryStateOfUncertainInquiry
          * AAD /BSUI

---

[52] Note that there are various dimensions of useful data which are not presented in Abrusan. We
     restrict analysis here but note that the following are generally supportive of our thesis.
rarely wondered
* individually wondered which girls (Plural)
*Partially wondered
*Overall wondered
mostly hypothesized
mostly speculated
Mostly wondered which of
John mostly *wondered/asked/investigated* which of the girls came to the party.
*I partially wonder where she is.
I partially know where she is.

We conclude that a TG solution based on the primary data of linguistic intention offers a simple, direct alternative to semantic filtering.

Additional Conflicted Determinacy Data

In this section we extend earlier analysis and consider a complement of data presented in (Abrusan, 2011) To a considerable extent this section overlaps and reflects the data and processes already covered We present a TG analysis here for completeness in covering the source paper.

We again present a TG thesis that there are four structural intents that interact to preclude the starred, unacceptable sentences from being generated Although TG offers solutions for more nuanced irregularities in those sentences marked with '?' we do not consider them here.

Here are the associations of intents with lexical material, overlapping, as we have indicated, with what has been presented previously.

> $inquireContinuousScaleJudgment CSJ
> > "how many inches, wine, kilograms, pounds"
> > "how tall, much"
>
> $inquireSelectionFromPre-SelectedSet PS
> > "what hair color"
> > "which problem"
> > "how fast"
> > "how many, X or Y"
>
> $inquireJudgment E
> > "are considering whether we can"
> > "investigating whether it is useful"
> > "wondering whether it is worth losing"
>
> $inquireDefinitiveDetermination DD
> > "find out whether"
> > "discover whether"
> > "forget whether"
> > "know whether"
> > "know who"
> > "predict who"
> > "regret who"

We again use the following abbreviations to represent the compatibility or conflict of intents

> E   = $inquireEvaluation
> DD   = $inquireDefiniteDetermination
> PS   = $inquireSelectionFromPre-SelectedSet
> CSJ   = $inquireContinuousScaleJudgment

Here is the intent compatibility table:

	E	DD
PS	OK	OK
CSJ	OK	*

Intent Compatibility Table

Again, this pattern of compatibility is attributed to a principle of cognitax which is understood to control the uncertainty or indeterminacy in an inquiry The data in this section is covered by the Conflicted Determinacy Constraint presented earlier We reproduce it here for reference in reading the examples below.

Principle: Conflicted Determinacy Constraint

Inquiring about a continuous scale judgment conflicts with the aspiration to high certainty inherent in inquiring simultaneously about definite determination, since prior cognitive processing is a pre-requisite to laying the groundwork for determinacy.
Binary absolute judgment can't be determined based on an uncertain categorization judgment. Don't overload inquiry about a definite determination with excessive unresolved uncertainty: preselection is tolerable, discrimination on a continuous scale is excessive

Note: Continuous scale judgments are more uncertain and cognitively burdened than predetermined selection.
Corollary: It's ok to embed inquiry about an uncertainty into an inquiry about an evaluation

Following are the data from (Abrusan, 2011) illustrating the application of this constraint.

(374)   (10) a. ?How many inches of legroom are the airline executives considering whether we can remove from economy class cabins (without people noticing)?

$inquireContinuousScaleJudgment
$inquireJudgment
CSJ/E

(375)   *How many inches of legroom did the airline executives find out whether we can remove from economy class cabins (without people noticing)?

$inquireContinuousScaleJudgment
$inquireDefinitiveDetermination
*CSJ/DD

(376)   (11) a. ?How much wine are scientists investigating/examining whether it is useful to drink in order to stay healthy?

$inquireContinuousScaleJudgment
$inquireJudgment
CSJ/E

(377)   b. *How much wine did scientists discover whether it is useful to drink in order to stay healthy?

$inquireContinuousScaleJudgment
definitiveDetermination
*CSJ/DD

(378)   (12) a. ?How many kilograms are the boxers wondering whether it is worth losing next year (in order to have a better chance to win)?

$inquireContinuousScaleJudgment
$inquireJudgment
CSJ/E

(379)   b. *How many kilograms did the boxers forget/realize/tell you whether it was worth losing last year?

$inquireContinuousScaleJudgment
$inquireDefinitiveDetermination
*CSJ/DD

(13) *How tall does Mary know whether she should be? (in order to join the basketball team)
            *CSJ/DD
            But PS is ok: What hair color does Mary know whether she should try?
                    PS/DD

(380)   (14) a ?Which problem does Mary know who should solve?

PS/DD (plus extra unknown 'who', which adds excessive uncertainty for inquiry seeking a definitive determination).

(381)   b. *How tall does Mary know who should be?

*CSJ/DD plus extra unknown 'who' same issue as above

(382)   (15) *How fast did Mary predict who should be?

*CSJ/DD plus extra unknown 'who' same issue as above

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(383)   (16) *How fast does Mary regret who should be?

            *CSJ/DD plus extra unknown 'who' same issue as above

(384)   (17) a. ?How many pounds are the boxers wondering whether to lose next year?

            CSJ/E

(385)   (18) ?How much cough syrup does the WADA need to know whether you took?

            CSJ/E

(386)   (19) ?How many pounds does the WADA want to know whether the boxers lost?

            CSJ/E

(387)   (20) ?How many pounds do the boxers know whether they need to lose next year:
        5 pounds or 7 pounds?

            PS/DD

In conclusion we find that this data also conforms to the TG analysis, suggesting it should be considered as a viable explanation for the observed patterning.

Conclusions

The goal in this section has been to widen the discussion of possible explanations of degree term phenomena We have presented a novel approach using the linguistic action intents of Cognitax Tool Grammar and shown how it efficiently covers a set of previously analyzed data using only common sense constraits

This approach involves an architecture of competence which is different from that underlying previous syntactic and semantic analyses, so emerges as an important part of an evaluation of competing theoretical frameworks.

The TG analysis is neither stipulative nor reductionist because it includes an additional level of data representation compared to other approaches, and this data can be directly elicited and transcribed from native speakers.

The structural intents of TG could be formalized using a custom tailored application of intensional/propositional/possible world logic

The TG approach does not encompass full semantic interpretation, so cannot exclude the general thesis of a semantic analysis for wh-degree terms. It only presents evidence for the viability of a

narrowed syntactic analysis restricted to a domain of structural intent Parallel ongoing research extends the arguments for the TG approach, based on analyses of a wide range of syntactic, pragmatic, and semantic phenomena To the extent that the TG approach proves viable and scientifically illuminating it can provide a level of structural cognitive compatibility explaining why many ill-formed sentences might not normally be generated The filtering consequences of incompatible intents undertake, when proven generally well motivated, to reflect an important module in the architecture of competence and serve to simplify theories of natural language sentence generation by removing complex cases to a level where they might be more naturally resolved

48 Rhetorical Structure Theory[53]

[NB: This updated section is available on request in the extended document.]

49 Stronger Constraints for Modeling the Faculty of Language[54]

Analysis of particular linguistic problems in the TG framework yields a set of putative constraints on linguistic structure formation We have proposed a preliminary set of constraints at the level of cognitive intentional formation:[55]

- Single Focus Constraint
- Overlapping Exclusion Constraint
- Cross Purpose Constraint
- Required Purpose Constraint
- Vacuous Action Constraint

- Constraint on Elaboration Beyond Essential

- Unknown Specification Constraint
- Unknown Interrogation Constraint
- Likelihood Uncertainty Constraint
- Subordinate Focus Constraint
- Conjunction Constraint on Unknowns in Assertions
- Superfluous/Null Construct Constraint
- Wasteful Structure Constraint
- Specific Expectation Constraint
- Incompatible Estimation Constraint
- Advanced Notice Quantification Constraint
- Imaginary Construct Sequence Constraint
- Imaginary Construct Differentiation Constraint

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[53]Computational approaches generally do not aim so directly toward formulations of psychological theories for the faculties of language. We limit ourselves by not covering other approaches connected with machine computation, such as computational semantics, computational pragmatics, bidirectional optimality theory, spoken dialog systems, and Bayesian methods in general.

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[55] Some of these constraints are discussed only in the expanded version of this paper.

- Concept Negation Closure Constraint
- Conflicted Determinacy Constraint
- Vacuous Judgment Constraint in Non-negatable Circumstances
- Compatible Modification Constraint
- Conflicted Determinacy Constraint

These constraints remain individually to be validated in further investigations over time but even in their first proposals they accumulate to attest to a reality in the faculty of language that underlies rapidly learned creative language use based on sparse data They clearly overlap in ways that suggest that they can be combined to produce a smaller more general set The constraints combine to impose the possibility of more concentrated and stronger limitations on the notion of possible human language than those resulting from the analysis of syntax-centric configurational rules alone without incorporating factors of linguistic action and intent It is evident that many of them may be conflatable in a strictly formal analysis to a single meta constraint:

> Linguistic Intention Umbrella Constraint
>
> In selecting an element for construction of a sentence to represent meaning do not make a choice which conflicts in intent with another element chosen for this sentence.

This general conclusion places the present work distinctly within the Chomskyan paradigm, even if it proposes a subparadigmatic shift in perspective, because stronger constraints on the characterization of the human faculty of language contribute to an understanding of infinite linguistic creativity from finite resources and how it is that children learn language so quickly when the data experience to them is so limited.

50 Summary and the Architecture of Competence

See also the *Introduction and Summary* and the section *Implications for the Generative Program* for a high level summary.

We have presented arguments that humans are not so extensively and fundamentally "syntactical animals" (Searle, June 29, 1972) as is assumed in the pervasive Chomskyan Generative Program. Instead, Tool Grammar (TG) postulates that sentence generation exhibits linguistic cognitive intention actions most fundamentally and syntax processes more procedurally. Evidence has been presented to demonstrate that there exists an empirically evident necessity for representation of linguistic structural intent which has been generally overlooked in the theory of language, including notably centralized configurational syntax in the generative program. The creativity of sentence generation is positioned in the context of speaker intention at a higher cognitive level than syntax formation This revision of the architecture of competence extends the potential of the generative program beyond current limitations

Arguments for TG emerge from considering a range of difficult and vexing problems in syntactic theory. We have pursued empirically transparent and radically penetrating solutions for these

problems under strong constraints on the bounds of human language. We find support for the hypothesis that syntactic theory requires specification of structural intent in order properly to solve a set of the most difficult theoretical challenges, and, further, that this brings unavoidable implications for the architecture of linguistic competence.

Evidence has been presented that the notion of possible human language may be more narrowly constrained by means of limitations on processing in the sphere of intention and action than by those available by consideration of syntactic processes alone without components of intention and action This work, therefore, while compatible with aspects of many approaches, is in support of the primary Chomskyan goal of explaining infinite linguistic creativity from finite resources and rapid child language learning in spite of a poverty of stimulus data.

A sentence in TG is a set of actions, a structure building performance where the initiative of intention is central rather than any primary syntactic scaffolding Each tool is an intentional device for specific effect in the process of utterance generation. It is distinguished from the traditional concept of a linguistic 'rule' by the explicit specification of intent added to the standard structural input and output conditions.

Language has communication, via external representations of internal meaning, as a purpose and tools as a means of action Tools include lexical items, build/merge/move mechanisms and functional manipulations [(trans)formations)] under constraints on usage and context The initial structure of sentences is implicit in the choice of lexical items to effect intent. They are assembled by merge operations which aggregate elements into larger constituents.[56] (Trans)formations are manipulative tools applied to basic structures to realize the intent, manner and impact of delivery. Tools, lexical and (trans)formational, embody observed regularities traditionally captured as 'rules' in linguistic descriptions but they always include as an essential core component the specification of purposeful utility for intentional structural effect Natural constraints on the cognitive inter-compatibility of tools render many rules and constraints on configurational syntax unnecessary, since unacceptable sentences often result from the incompatible misapplication of tools

Recursive functions of language in TG are formed in cognitive ideation rather than just within operational syntax, and they precede language specific structure formation Creative, generative and recursive linguistic capabilities emanate not from a source syntactic component but from pre-syntactic linguistic cognitive abilities that result in linguistic action directives Recursive, anticipative, and creative linguistic productivity is located in a higher level linguistic cognitive facility, cognate with those of semantic extraction, inference, or pragmatic derivation. The latter are interpretive and characteristically more oriented to the perspective of the addressee Language tools are more operational than interpretive and mediate between cognition and expression by providing the necessary structure..

The data essential for motivating linguistic descriptions can be enhanced by explicit field transcriptions of evident user action and intent using a controlled scientific vocabulary Linguists traditionally transcribe phonology, lexicology, morphology and syntax, but less consistently the

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[56] John Hewson (personal communication) observes the history of syntax might have been redirected by the postulation of NP + VP => S, rather than S => NP + VP.

intentional force of utterance components. Transcriptions of structural action semantics are restricted and accessible, as well as observationally prior, compared to truth semantics or intensional logic, which are inferential, indirect, derived, more obscure and proportionately complex. They may or may not necessarily adhere to principles of traditional semantics such as strict compositionality. Full semantic processing involves secondary procedural information often associated with addressee interpretation, rather than declarative knowledge that is basic to sentence origination and generation Semantic action directives use only the simpler restricted action elements of meaning involved in the intentions of sentence generation, not full-blown interpretive semantics Semantic interpretation, anticipation, inference, pragmatic construal and model theoretic mappings are deferred to the separate capabilities associated with general cognition and linguistic understanding The formalization of linguistic intents requires a new technical controlled vocabulary containing a restricted set of general action descriptors centered on a universal central core.[57] As a methodological aid for linguistic description, adding linguistic intent to linguistic structure building rules ultimately lessens the burden on the separate disciplines of semantics and pragmatics The transcription of linguistic intent, of which speakers may be conscious, inoculates the approach against the view that its elements are purely stipulative.

TG describes a performative mechanism for generating externalized representations of meaning from which conveyed meaning is derived by means of a separate interpretation by the addressee. Action tools build structures to externalize representations of meaning Sentence formation is not direct communication but the posting or publication of representations of thoughts left to be interpreted by addressees to extract and construe meaning. Sentence formation is fundamentally different and separate from sentence interpretation. Linguistic utterances satisfy internal intentions by presenting characterizations of thoughts mediated by conventionalized linguistic devices. A word is a fundamental language schema bridge used to map thoughts to external representations

TG represents a sub-paradigmatic shift in syntactic/semantic theory to the extent it can be integrated to the generative program Although not an essential scientific purpose, in accordance with traditional formalist definitions of a language as a set of acceptable sentences[58], tools, properly formalized and operating under natural constraints, together with a component able to generate linguistic intentions, have the recombinant generative capacity to output all and only the well-formed sentences of a language, but crucially involve notations of functional role as a scientifically empowering dimension.[59] Certain syntactic and cognitive dimensions of language can be conflated by adding an explicit level of structural action semantics subject to cognitive compatibility constraints Traditional generative theories seeking to account for the speed of child language learning and universal structure would benefit in their aims from a universally available vocabulary of possible sentence intent elements. TG also seeks to address the vast variability in

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[57] If there are universal tendencies in the inventory and taxonomy of linguistic actions this clearly does not necessarily extend directly to the range of structures used to represent those actions since languages have highly diverse means of expression.

[58] We reject the definition of a language as a set of sentences, but propose that TG could be configured to generate such a set for those committed to this view.

[59] The mounting complexity of contemporary solutions to syntactic problems can be symptomatic of what is known in software systems as a 'kludge', i.e. an addition of ad hoc complexity that may not be necessary if the system is structurally reorganized on different principles.

linguistic patterning among natural languages as a natural consequence of the possibilities of new tool invention and recombination under the constraints of functional compatibility Speed of child language learning can be further understood to the extent that constraints on structure formation can be shown to follow from natural universal cognitive restrictions on tool formation and compatibility. By accounting for a wide range of unacceptable sentences in terms of natural limitations on linguistic intent, TG contributes to an understanding how the complexity of human languages can be learned largely in the absence of negative data, and how intuitions might develop about the unacceptability of sentence types that have never been present in the learning environment.

The difference between semantics and grammar is seen as the difference between ideation and expression Semantic ill-formedness results from incompatible ideas ('colorless green'), while grammatical ill-formedness results from the incompatible use of tools ('colorless sleeps').

A swath of linguistic ill-formedness can evidently be attributed to the presence of incompatible cognitive intents in the elements of unacceptable sentences. When syntactic phenomena are understood to be conditioned by linguistic action/intent descriptors, various difficult problems evidently yield to straightforward solutions: conflicting intents yield ill-formed sentences TG seeks to bring much of the subtlety of syntax over into the realm of cognitive utilitarian mechanics, lifting burdens of explanation from syntax and transporting them to a specialized facility for utilitarian cognitive efficiency This is accomplished while separating the utilitarian mechanics of externalization by the speaker from cognitive issues of semantic interpretation, anticipation, disambiguation, inference, and so forth, leaving the fields of semantics and pragmatics unconfounded, and separated as a domain of higher order cognition Intentions result in the generation of thought-representational sentences, but neither interpretation nor communication can be fully effected until after a separate process of extraction is carried out by the addressee Many formerly syntactic problems appear vulnerable to the thesis of incompatible intent, separating and reducing the challenges for theories of syntax, semantics and pragmatics.

When generalizations in symbolic systems are sought at an incorrect and incapable level of representation, unnatural and unnecessarily contrived solutions unavoidably result. Re-modularization of cognitive systems can afford more rational coverage of observed phenomena By incorporating one dimension of action meaning into linguistic structure building, a large set of syntactic problems acquires a facilitative functional means: much of syntax becomes utilitarian mechanics of a specialized cognitive kind Fundamentals of syntax are reducible to a particular form of cognitive utilitarian processes The theory of grammar enjoys benefits when the complex model of linguistic cognition is re-modularized around the separate domains of expression and understanding.

TG seeks to model the psychological mechanisms underlying observable language. A specific language is a set of tools for posting and interpreting representations of thought adapted to a particular culture Language (competence),in conformance with the generative paradigm, consists of the facility for linguistic tools governed by natural constraints on their formation and inter-compatibility The set of sentences in a language is an effectuation rather than its embodiment or definition The end purpose of linguistic descriptions is to create models of the natural human competence to learn and employ the world's languages.

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We have proposed a new level of constraints on generation using representation of linguistic intent and hypothesize that generalizations at this level can simplify the statement of linguistic universals which is essential for generative grammar.

Linguistic rules evidently require linguistic structural intentions, a theoretical position that has not heretofore been thoroughly presented. From a preponderance of diverse cases involving linguistic problems that resist authoritative solutions, we have argued that linguistic theory must incorporate components of linguistic action and intention A set of problems in linguistic theory has served to demonstrate that the dimension of structural intent must necessarily be considerd for adequate solutions to emerge The absence of this level of representation in syntactic theory can plausibly account for limitations in advancing the theory in linear progress toward additional foundational achievements.

We conclude that there is evidence for the hypothesis that the exclusion of linguistic intention and action from generative rules introduces artefactual complexity and undesirably precludes the strongest possible natural constraints on characterizations of the human faculty of language The inclusion of intention in linguistic rules evidently both enables solutions of otherwise intractable problems and enables simpler, more natural solutions generally solutions while probing explanations for the profoundly important syntactic observational effects uncovered by generativist methodology (e.g. locality, crossover, C-command, control). Theorizing based on linguistic intent shows potential to provide to thinner, simplified, more directly empirical argumentation compared to the indirections necessitated by complex syntactic analysis based on central configurational syntax TG argumentation can be not infrequently inoculated against the view that it is merely stipulative or reductionist because the addition of a new dimension of recordable and verifiable data is based on primary field transcription and is subject to independent validation.

Finally, with regard to recent developments in the generative program, we note that our own investigations highlights the thesis that the Merge view of syntactic organization may likely be revalidated in TG as a fundamental discovery in the sphere of linguistic competence, a topic whose full major implications are beyond the reach of the present work.. We conclude that scientific validity can be enhanced by revising the architecture of generative linguistics from a merely mathematical sound-meaning connection to a functional connection between linguistic intention and linguistic expression.

51 Shortcomings and Future Work

We have presented the broad outlines of an alternative approach to (syntactic) utterance generation by motivating the need to include specifications of intent in formulations of linguistic processes We supported the proposals by presenting an array of solutions to challenging problems It would be premature to propose a fully elaborated system architecture but we have considered broadly some consequences and implications for linguistic theory and the architecture of competence The work is limited to schematic analysis in support of a TG framework without attempting detailed formalization, broad coverage of the full range of syntactic processes

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Similarly, we withhold analysis and judgment on the large number of syntactic processes which may be presented as derivational transformations, but are also (often equivalently) amenable as elaborated structures inserted directly from the lexicon making structural transformation unnecessary

Any work such as the present must necessarily have shortcomings due to the newness and comprehensiveness of the general approach, as well as the limitations of early stage analysis It is expected that further research can improve the particular analyses presented here There are many particular shortcomings including the absence or insufficient coverage of morphology, diachronic issues, cross-language data, opportunities for experimental validation, and so forth. It is hoped, nevertheless, that the general approach might afford new insights to the many language phenomena which remain today mysterious The constraints on construct formation in particular might be expected to undergo ongoing revision as future work proceeds Much depends on the extent to which future work might help articulate and reinforce further constraints on the formation of linguistic structures at the level of intentional action.

A principal secondary hope for this theoretical work has been that a framework might emerge which could eventually lead to the engineering of new systems for language generation and recognition While pursuing linguistic theory, it is advantageous to advance linguistic science toward modeling linguistic competence in software If the thesis that linguistic structural action semantics are operationally at the center of human, it is possible that the formulation of linguistic tools could lead to new engineering possibilities for Chomsky's generative program Much future work is required and progress may depend on other shifts in perspective by the next generation of linguistic scholars.

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