

Beneath symbols: Convention as a semiotic phenomenon

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Introduction:

Symbolic reference is a distinguishing feature of human language. In this respect language contrasts with other species-typical vocalizations and most communicative gestures, which only provide reference iconically or indexically. Because of its arbitrary and conventional nature, symbolic reference must be acquired by learning, and lacks both the natural associations and trans-generational reproductive consequences that characterize other innately evolved communicative adaptations, like laughter and sobbing. This is why there are no innate words and why it is so extensively reliant on social (as opposed to genetic) transmission.

Iconic and indexical forms of communication are ubiquitous in the animal world as well as in human communication. They provide reference by virtue of formal and physical features shared by the sign vehicle and that to which it refers. In contrast, it is the irrelevance of any shared properties between sign vehicles (e.g. word sounds) and what they refer to—often referred to as arbitrariness—that facilitates the capacity to combine symbolic forms into vastly many complex structures (e.g. sentences and narratives) able to specify highly diverse and precise communicative contents.

To say that symbolic reference is arbitrary is to say that it is determined by convention, rather than by any intrinsic sign vehicle properties. But what is entailed in the concept of convention when used in this way? The Merriam-Webster dictionary lists three related meanings that are relevant to this issue: a convention can be a usage or custom especially in social matters, a rule of conduct or behavior, or an established technique, practice, or device.

Probably the two most common social phenomena attributed to social convention in the course of intellectual history are money and language. The claim that language is the expression of social convention is ancient. In Aristotle's work *On Interpretation* he describes a name¹ as a convention because it is not a natural feature of what it refers to. He explicitly notes that this is what makes a name a symbol. The concept of convention has also been associated with the notion of a social contract (e.g. by Rousseau and Hobbes) understood in terms of an agreement, mostly with respect to its opposition to natural tendencies or the so-called "state of nature" imagined to predate civilization. While John Locke recognized that there can be tacit conventions that arise, though no explicit agreement was negotiated.

The concept of convention was a major focus of David Hume's analysis of many regular practices found in human societies. He argued that social conventions are necessary for establishing such social phenomena as property, agreements, laws, and so forth, in which individuals elect to all conform to certain limits to or habits of behavior out of an expectation of mutual benefit. He also explicitly critiques the notion that conventions need to be the result of explicit agreements. He illustrates this with a memorable example: two

¹ By 'name' Aristotle appears to mean any general term, not merely a proper name.

men in a row boat, each with on oar, who need to coordinate and synchronize their rowing in order to reach any particular destination. Hume proposes a conventional theory of language regularities that need not arise from negotiated agreements when he states that: "... languages [are] gradually establish'd by human conventions without any explicit promise." (*Treatise of Human Nature*, p. 490)

Twentieth Century philosophers revisited the issue of the conventionality of language in a half century of debates about the nature of semantics and truth, especially as it impacted the foundations of logic. Such intellectual giants of the field as Carnap and Quine battled over the coherence of conventional theories of meaning, truth, and mathematics. At mid century this led to a particular intense debate in linguistics, particularly fueled by Noam Chomsky's strident denial of its relevance to grammar and syntax; a debate that still rages, and which will be addressed below.

An interesting reassessment of the logical structure of conventionality was provided by the philosopher David Lewis in his 1969 book appropriately titled *Convention*. Lewis argued that convention should be considered a solution to a coordination problem and that it needn't involve explicit or implicit agreement. Beginning by recounting Hume's metaphor of the rowers and framing the problem in terms of game theory he developed progressively more complex models of how groups of individuals might spontaneously arrive at what might otherwise appear as though agreed-upon collective behaviors, with nothing resembling agreement, tacit or otherwise.

The semiotics of conventionality

Conventionality is not the critical determiner of symbolic reference, even though symbols must involve conventionalized sign vehicles. There can be conventionalized icons and conventionalized indices. Conventionalized icons include the stick figures on restroom doors, the skull and crossed bones on bottles containing poison, and the cigarette drawing with a superimposed cross-out slash across it. Of course all three also are used indexically. The placement of a male or female icon on a restroom door *indicates* that it opens to a sex-specific restroom, the skull and crossed bones insignia *indicates* something about the substance in the marked container; and the crossed-out smoking cigarette *indicates* a no smoking zone. So both the formal likenesses and the factual correlations of these signs are relevant conventions. A conventional index that is minimally iconic is the white line down the middle of a two-way road. Though it might be iconically compared to a "property line" or national border, or even the outline of a coloring book figure, it does not physically prevent drivers from crossing it. But despite its conventional nature and dependence on traffic laws, the line itself is not symbolic and can only metaphorically be said to have a meaning or definition.

This distinction is important, because it helps to untangle a troublesome tendency to simply equate symbols with convention. As Charles Peirce clearly demonstrated, being a conventional sign vehicle and referring conventionally are not the same. Thus he designated conventional sign vehicles "legisigns" and non conventional sign vehicles "sinsigns" or "qualisigns" and argued that there could be iconic, indexical, and symbolic legisigns, but not symbolic sinsigns or symbolic qualisigns. In other words, symbolic reference can only be born by conventional sign vehicles. Thus symbols are doubly

conventional in that they involve conventional sign vehicles that refer conventionally as well. So to explain the development of symbolic referential capacities either in childhood language acquisition or in the case of the evolution of this capacity in humans it is necessary to account for both forms of conventionality.

This means we must answer a number of related questions: If linguistic conventions are shared dispositions that were not established via explicit social agreement or social conformity how else could they have been achieved in evolution and child development? Does this inevitably lead us to accept an innate source? And what might this mean with respect to language structure as well as other conventional forms of semiosis?

This is where insights provided by Hume's and Lewis's analysis provides an important clue. Coordination is defined with respect to achieving a common end, whether or not the agents involved know about one another's goals. This is exemplified in Lewis's framing of coordination in game theory terms. Games, as generalized in this abstract sense, are activities with explicit payoffs or goals. Even if there is no explicit communication between the agents they still may gain information about each other's goals by observing the consequences of each other's behaviors. Thus in the case of the rowers, even if they are in some way unable to interact in any other way than by rowing they can still converge on a coordinated pattern that leads to reaching a specific destination.²

What is often overlooked when describing this sort of thought experiment is that there is still information (aka semiosis) involved. The solution is achieved semiotically, just not with explicit use of language or pointing, or other explicit means for sharing their separate intentions, but by interpreting the dispositions exhibited in behavioral responses. Indeed, this could be the case even if there is only one human agent involved and an automatic rowing machine controlling the other oar. The point is that once we expand our analysis beyond language-like communication and even beyond intentionally produced communication to consider semiosis in the broadest sense, it becomes clear that the development of conventionality requires extensive semiotic activity. More specifically, to acquire or evolve the capacity to determine reference via convention—i.e. symbolic reference—prior non-conventional communication is required at some point to establish this conventionality. To restate this hypothesis in semiotic terms: in order to develop a symbolic communication system such as a language its conventional properties must be established using iconic and indexical means.

But I want to make a far stronger claim. I will argue that the conventionality of language is itself a reflection of these iconic and indexical relations re-emerging in the form of relations between symbols. These inter-symbolic relations go by more familiar linguistic terms: grammar and syntax. My goal is to recast the concept of linguistic convention in semiotic terms in order to disentangle it from the conception of linguistic convention as mere arbitrary mapping between signifiers and signifieds. I will argue that this presumed arbitrariness in the relation between sign vehicle and referent properties is enabled by the non-arbitrary iconic and indexical structure of between-symbol relations. To put this another way, communicating with sign vehicles (e.g. words, etc.) that refer by convention

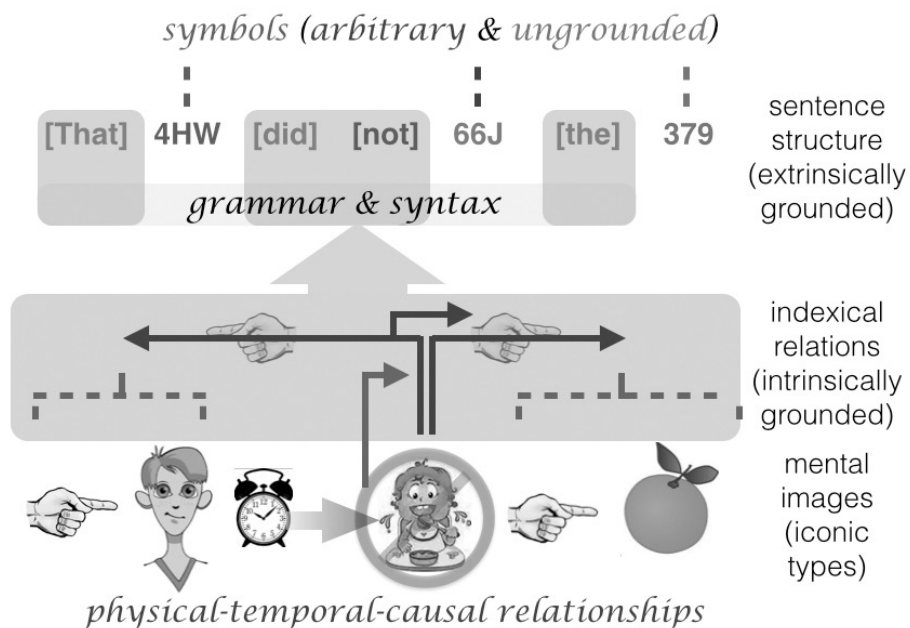
² Of course, if the agents involved have conflicting goals, whether they are aware of this or not, coordination becomes far more difficult, and may result in suboptimal results for both.

alone is made possible by combining them via non-conventional iconic and indexical properties. So not only are the coordinating conditions for language achieved by social convention, but the structure that results reflects the semiotic structure of convention itself.

The symbol un-grounding process:

In a now famous paper published in 1990 the cognitive scientist Steven Harnad articulated a worry that had long puzzled philosophers of language and cognitive scientists in general. He called it the “symbol grounding problem.” The mystery was how arbitrary marks, such as the sounds of speech or the states of a brain, could reliably become correlated with specific referents so that symbolic communication is possible. In other words, without determining this mapping extrinsically, i.e. by using symbolic communication to negotiate the establishment and sharing of these correspondences, how could these mappings ever be established in the first place. If it takes communication with symbols to establish this shared mapping convention between symbols and their referents then we are faced with a vicious regress. To clarify a potentially confusing difference of terminology, in that context the distinction between conventionality of sign vehicle and conventionality of reference are not distinguished, and yet in that paper he speculates that symbol grounding must therefore be achieved using non symbolic means.

In recent lectures and forthcoming papers Joanna Raczaszek-Leonardi and I invert this framing of the problem. We point out that the problem is actually to explain how iconic and indexical forms of communication—which are intrinsically “grounded” due to the sign vehicles sharing features with their referents—can be used to develop communication using ungrounded sign vehicles (aka words/symbols). This is of course the challenge faced by every human toddler. The reason that the challenge is seldom framed this way is because the infant-caretaker interactions are not generally understood in semiotic terms (either in psychology or development linguistics) and because the development of language competency is not seen as a transition from an earlier to a later more developed semiotic process. From a semiotic perspective, however, there is a rich and complex set of social semiotic skills being acquired during the first year of life and significantly prior to the early stages of explicit language acquisition. Seen from this semiotic perspective, then, the explosive growth of language during the second and third years of life is a process in which



these earlier iconic and indexical capabilities aid the child’s discovery of how to use words and word combinations symbolically.

This is an *ungrounding* process to the extent that the toddler has to discover how to transfer from using intrinsically grounded to using ungrounded sign vehicles, *all the while maintaining referential grounding*. This can only be maintained if these iconic and indexical relations are in some way preserved in the transition to symbolic communication. Since properties that could provide referential grounding are absent from linguistic sign vehicles grounding can only be preserved by means extrinsic to them, i.e. in the relations between them. The logic of symbol ungrounding in language is depicted in figures 1 and 2.

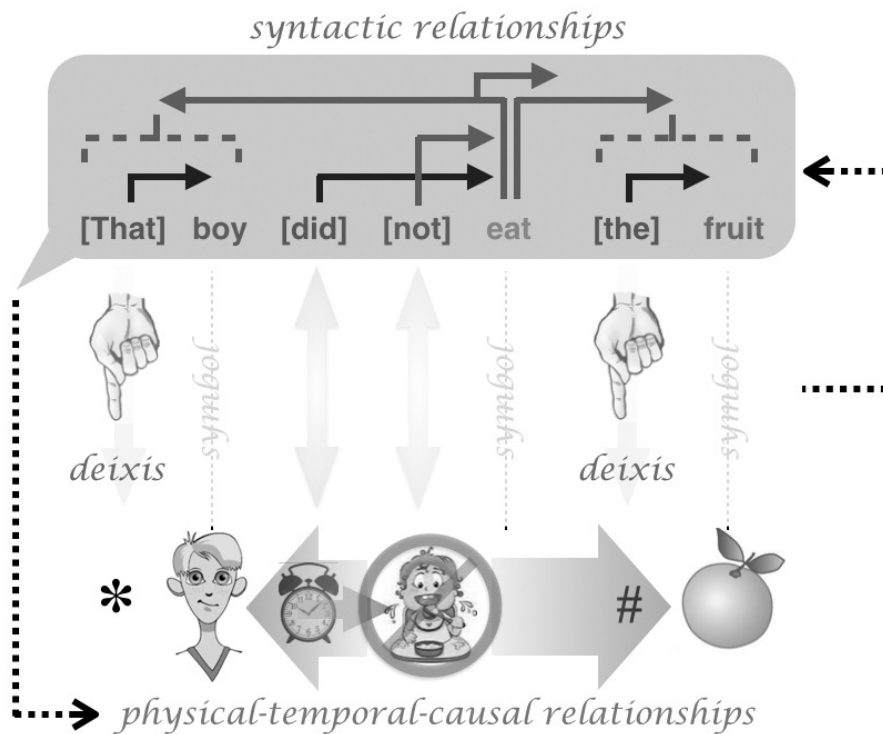


Figure 2.

Universal grammar from semiotic constraints:

This begs an important question: Can the properties that linguists understand as grammatical be explained in terms of iconic and indexical properties? In this section I will explore the possibility of explaining the some of the most ubiquitous grammatical principles—so-called grammatical universals—in terms of semiotic constraints. Specifically, I will argue that the most nearly universal features of grammar are the least arbitrary aspects of language because they are constrained by the requirements for iconic and indexical reference.

Grammatical relationships don’t automatically come to the fore with all forms of symbolic communication. This is because grammar is a property of symbolic reference that emerges when symbolic reference is amplified by combinatorial operations. Once it is recognized that symbolic reference is not a simple mapping relation, but emerges from a

base of iconic and indexical relations transferred to symbol-symbol relations, the many contributions of these underlying semiotic constraints to the structure of language will become obvious.

Iconic and indexical relationships are constituted by sharing explicit properties that with their referents. These are implicit ineluctable constraints that are inherited by features of grammar and syntax. These become re-expressed in operations involving symbol combinations, such as phrases, sentences, arguments, and narratives. These constraints emerge from below, so to speak, from the semiotic infrastructure that constitutes symbolic representation rather than needing to be imposed from an extrinsic source of grammatical principles (e.g. innate universal grammar). Although this infrastructure is largely invisible—hidden in the details of an internalized system and largely automated during early childhood—using symbols in combination in communicative contexts necessarily exposes these constraints that determine iconic and indexical grounding.

These semiotic constraints have the most ubiquitous effect on the regularization of language structure, but in addition there are sources of weaker less ubiquitous constraints also contributing to cross-linguistic regularities. These include processing constraints due to neurological limitations, requirements of communication, and cognitive biases specific to our primate/ hominid evolutionary heritage. Although none of these sources of constraint play a direct role in generating specific linguistic structures, their persistent influence over the course of countless thousands of years of language transmission tends to weed out language forms that are less effective at disambiguating reference, harder to acquire at an early age, demand significant cognitive effort and processing time, and are inconsistent with the distinctive ways that primate brains tend to interpret the world.

This list of sources of constraint on language structure can be broken down into four main categories: semiotic constraints, neural processing constraints, evolved sensorimotor schemas and cognitive biases, and pragmatic social communication constraints. These categories and specific constraints within each category are listed in Table 1 (modified from Deacon 2012) in an order that roughly corresponds to their relative strength of influence on language structure. The combined effect of these multiple constraints significantly reduces the “phase space” of probable language forms (shown as a complex Venn diagram in Figure 3). Different linguistic paradigms may prioritize one or the other of these major categories of constraint to explain certain highly regular structural features of language. For example, cognitive grammars often highlight the influences of sensorimotor schemas & cognitive biases, whereas systemic functional linguistic approaches place considerable emphasis on the pragmatics of social communication. In the following discussion, however, I will focus only on some of the most ubiquitous semiotic constraints.

Table 1.

A. Semiotic constraints

1. Recursive affordance (only symbols can provide non-destructive [opaque] recursion across logical types)
2. Predication structure (symbols must be bound to indices in order to refer)

3. Transitivity and embedding constraints (indexicality depends on immediate correlation and contiguity, and is transitive)
 4. Quantification (symbolized indices need re-specification).
Semiotic constraints can be discovered pragmatically and 'guessed' prior to language feedback (because of analogies to non-linguistic iconic and indexical experiences).
- B. Neural processing constraints
6. Chunking-branching architecture (mnemonic constraint)
 7. Algorithmic regularization (procedural automatization)
 8. Neural substrates will vary on the basis of processing logic, not linguistic categories (there should be language-specific localization differences)
- C. Evolved sensorimotor schemas and cognitive biases
9. Standard schema/frame units (via cognitive borrowing)
 10. Vocal takeover (an optimal medium for mimicry)
- D. Pragmatic communication constraints
11. Pragmatic constraints (communication roles and discourse functions)
 12. Culture-specific expectations/prohibitions (e.g. distinctive conventions of indication, ways of marking discourse perspective, prohibitions against certain kinds of expressions, etc.)

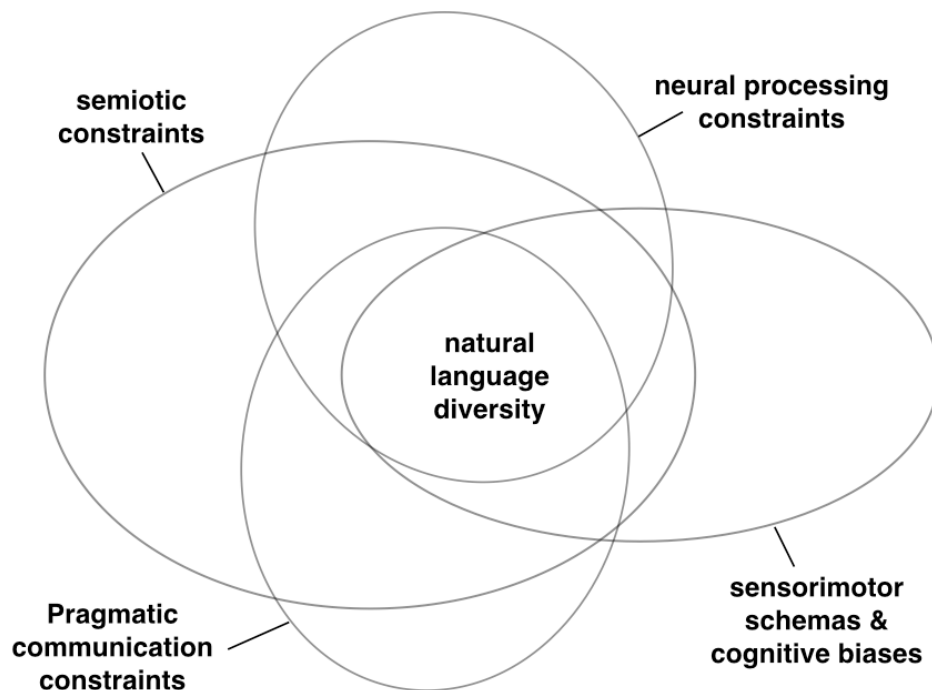


Figure 3. Venn diagram showing how overlapping constraints vastly reduce the “phase space” of possible forms of language.

Perhaps the most radical implication of this analysis is that most important and ubiquitous source of constraints on language organization arise *neither from nature nor from nurture*. That is, they are not the result of biological evolution producing innate predispositions and they are not derived from the demands of discourse or the accidents of cultural history. Semiotic constraints are those that most directly reflect the grammatical categories, syntactic limitations, and phrasal organization of language. They are in a real sense *a priori* constraints, that precede all others. Consequently they are most often confused with innate influences.

Recursive affordance:

In a recent and now well-known theoretical review of the language origins problem (Hauser, Chomsky, & Fitch, 2002) Noam Chomsky appeared to retreat from a number of earlier claims about the innate ‘faculty’ for language. In his new minimalist program he instead focuses on the ubiquity of the hierarchic combinatorial structure of language and the recursive application of an operation described as “merge.” This shift in focus doubles down on his long-term insistence that what makes the human mind unique is an innate capacity to handle recursive relationships. Most languages do indeed make extensive use of recursive combinatorial operations that are not found in nonhuman communication. Like many related claims for an innate grammatical faculty, however, this one also follows from a reductionistic conception of symbolic reference. If instead we recognize that only human communication is symbolic, whereas non-human communication is limited to iconic and indexical communication, another possible explanation for this uniquely human cognitive difference becomes available: recursion is only possible symbolically.

Because the sign vehicles used for symbolic communication (e.g. words) require no intrinsic properties linking them to their referents, they can refer to one another or to combinations of other symbols without equivocation. This allows substitutions that cross-logical-type (e.g. part for whole, member for class, word for phrase) and thus across hierarchic levels in linguistic communications. Neither icons nor indices can refer across logical types because of the involvement of sign vehicle properties (e.g. similarity of form, correlation in space or time) in determining reference. But because of the independence of sign vehicle properties from the objects of reference, symbols can represent other symbolic relationships including nearly unlimited levels of combinations of symbols (such as phrases, whole sentences, and even narratives). Recursion is not therefore an operation that must be “added” to human cognition over and above symbolic capabilities. It is a combinatorial possibility that comes for free, so to speak, as soon as symbolic reference is available. So the absence of recursion in animal communication is no more of a mystery than the absence of symbolic communication. It is simply due to their lack of symbolic abilities.

Though recursion is made available with symbolic communication, it need not be taken advantage of. So its paucity in child language and pidgins, as well as its absence in some languages (e.g. Everett, 2005) is not evidence against its universal *availability* in language. Recursion is an important means for optimizing linguistic communication because it provides a way to condense symbol strings. For example, repeated recursive operations make it possible to use a single word (e.g. pronoun) or phrase (e.g. anaphor) to refer to an extensive corpus of prior discourse. This not only optimizes communicative effort, it also reduces working memory load. Nevertheless, recursion also creates new ‘record-keeping’ demands that help to avoid the confusions made possible by this condensation. This requires incorporating iconic and indexical constraints into the ways symbols can be combined. These infra symbolic constraints on the relationships *between* words constitute the core features of grammar and syntax.

Predication structure:

Another nearly ubiquitous semiotic constraint is reflected in the combinatorial chunking that constitutes phrase and sentence structures. Combinatorial units such as complex words, clauses, and sentences are composed of elements that necessarily complement one another’s semiotic functions. In other words what can be “merged” in a way that constitutes a recursively higher order combinatorial unit is highly constrained. Such a functional unit, must include at least two semiotically distinct components, one operating on the other. For example, all languages require at least a dyadic sentential structure, i.e. something like a subject-predicate or a topic-comment sentential form. Although holophrastic utterances, commands, and expletives, are not uncommon, they typically are embedded in a pragmatic context in which what they refer to is made salient by immediate embedding in a semiotic context that fixes the reference; typically some salient feature of the immediate physical or social context. It has been suggested that this ubiquitous structure might reflect an action-object, agent-patient, or what-where dichotomy. But the ease with which these cognitive categories can be interchanged in their grammatical roles indicates that there is a more basic common constraint behind all.

Since long before efforts to formalize logical inference, scholars recognized that isolated terms express a sense but lack specific reference unless they are embedded in a combinatorial construction roughly corresponding to a proposition. The assignment of a specific reference to an expression or formula and thus to make an assertion about something is called predication. In symbolic logic, for example, a well-formed (i.e. referring) expression requires both a function and an argument (i.e. that to which the function is applied). First order predicate logic is often considered the semantic skeleton for propositional structure in language, though its primary form is seldom explicitly exhibited in natural language. It is characterized by a “predicate(argument)” structure of the form $F(x)$, where F is a function and x is a variable or “argument” operated on by that function. Such an expression is the basic atomic unit of predicate logic. Such an expression may refer to an event, state, or relationship, and there can be one-, two-, three- and zero-place predicates determined by how many arguments they take. So for example the function “lives” typically is a one-place predicate, “likes” is a two place predicate, and “gives” is a three-place predicate.

This suggests the following hypothesis: Predicate (argument) structure expresses the dependency of symbolic reference on indexical reference as in Symbol (index). Once source of evidence for this semiotic dependency is implicit in the way that deictic procedures (e.g. pointing and other indicative gestures) are used to help fix the reference of an ambiguous term or description, and can even be substituted for the subjects and arguments of a sentence. Thus for example, uttering the word “smooth” in a random context only brings attention to an abstract property, but when uttered while running one’s hand along a table top or pointing to the waveless surface of a lake, reference is thereby established. It can also refer even if uttered in isolation of any overt index in a social context where the speaker and listener have their joint attention focused on the same flawless action. In this case, as with holophrastic utterances in general, the symbolic reference is established by implicit indication presupposed in the pragmatics of the communicative interaction. Indeed, where explicit indexing is not provided, it is assumed that the most salient agreeing aspect to the immediate context is to be indicated. In general, then, any symbolic expression must be immediately linked to an indexical operation in order to refer. Without such a link there is sense but no reference.

This is a universal semiotic constraint (though not a universal rule) that is made explicit in logic and is implicit in the necessary relational structure of sentences and propositions. It is a constraint that must be obeyed in order to achieve the establishment of joint reference, which is critical to communication. Where this immediate link is missing reference is ambiguous and where this constraint is violated (e.g. by combinations that scramble this contiguity between symbolic and indexical operations; so-called word-salad) reference typically fails.

This constraint derives from the unmasking of indexical constraints implicit in the interpretation of symbolic reference. Because symbolic reference is indirect and “virtual,” by itself it can determine only ungrounded referential possibility. The subject, topic, or argument (= variable) performs a locative function by symbolizing an indexical relationship; a pointing to something else linked to it in some actual physical capacity (e.g. contiguous pragmatic or textual context). This reference determination cannot be left only in symbolic form because isolated symbols (e.g. words and morphemes) only refer reciprocally to their “position” in the system or network of other symbols.

The importance of immediate contiguity in this relationship reflects the principal defining constraint determining indexical reference. Indexical reference must be mediated by physical correlation, contiguity, containment, causality etc., with its object in some way. Indexicality fails without this immediacy. There are, of course, many ways that this immediacy can be achieved, but without it nothing is indicated. These constraints on indexicality are inherited by the grammatical categories and syntactic organization of sentences, propositions, and logical formulae.

To state this hypothesis in semiotic terms: A symbol must be contiguous with the index that grounds its reference (either to the world or to the immediate agreeing textual context, which is otherwise grounded), or else its reference fails. Contiguity thus has a doubly indexical role to play. Its contiguity (textually or pragmatically) with the symbolizing sign vehicle points to this symbol and their contiguity in turn point to

something else. This is an expression of one further feature of indexicality: transitivity of reference.

Simply stated, a pointer pointing to another pointer pointing to some object effectively enables the first pointer to also point to that object. This property is commonly exploited outside of language. Thus the uneven wear on automobile tires indicates that the tires have not been oriented at a precise right angle to the pavement, which may indicate that they are misaligned, which may in turn indicate that the owner is not particularly attentive to the condition of the vehicle. Similarly the indexical grounding of content words in a sentence can also be indirect, but only so long as no new symbolically functioning word is introduced to break this linear contiguity.

Of course, every word or morpheme in a sentence functions symbolically and a word or phrase may take on a higher order symbolic or indexical role in its combinatorial relationships to other language units at the same level. This flexibility provides a diversity of symbolized indexical relations. So, for example, arguments can be replaced by pronouns, and pronouns can point to other predicates and arguments, or they can point outside the discourse, or if a language employs gender marking of nouns a gender-specified pronoun can refer to the next most contiguous noun with agreeing gender expressed in the prior interaction, even if separated by many non-agreeing nouns and noun phrases. A sentence that lacks inferrable indexical grounding of even one component symbolic element will be judged ungrammatical for this reason. However, the basis for this judgment by nonlinguists is not determined with respect to either explicit rules or constraints. It is determined by the fact that the sentence doesn't have an unambiguous reference.

The exception that proves the rule, so-to-speak, is exemplified by highly inflected and/or agglutinated languages where indexical marking is incorporated directly into word morphology. In comparison with English, which maintains the indexical grounding of most of its symbolic functions by strict word order constraints, these languages tend to have relatively free word order. This leads to a prediction: the more completely that indexical functions are incorporated into word morphology the less restrictive the syntax and vice versa.

Quantification and transitivity:

Related to this indexical function is the role of quantification in natural language and symbolic logic. In language only nouns and the arguments of a verb require quantifiers. In logic a well-formed expression requires more than just a function and its argument. Unambiguous predication requires 'quantifying' the argument (unless it is a proper name). This latter requirement and exception are telling. In English, quantifiers include such terms as "a," "the," "some," "this," "these," and "all." These literally terms indicate the numerosity of what is being referred to, even if just in relative terms (such as "some"). Proper names are the exception because they refer to single individuals, whether an individual person or named place, like a city or country. Reference in that case is unambiguous. It can also be unambiguous in the case of so-called mass terms like "water" or abstract properties such as "justice" since they have no clear individuality. This basic structural constraint is again due to the complex infrastructure behind symbolic reference.

Words like “a” “the” “some” “many” “most” “all” etc., symbolize the virtual result of various forms of iterated indications or virtual ostentions (pointings). They are effectively virtual pointings that take advantage of transitive correlation with other indexical relationships, such as proximity information (“this” “that”) or possession information (“his” “your”) to differentiate indexicality.

Analogous to the case of implicit presupposed indexicality in holophrastic utterances, there are also contextual conditions where explicit quantification in language may be unnecessary. This is most obvious in cases where the possibility of specifying individuals is inappropriate (as in some mass nouns; e.g. “a water,” “all waters,” “few waters”). Pronominal reference doesn’t require quantification because it is supplied by the text that it indicates (transitivity of indication). But when general terms are substituted for pronouns or other words serving overt indexical functions (e.g. “this” or “that”) they inevitably require the addition of quantification. There are also, of course, many other exceptions to the need for quantification. Proper names and numbers do not require quantification when they are used to refer to a type as a singular class because indicating would again be redundant.

Consequences of a semiotic reframing of language

The long unquestioned assumption that symbolic reference lacks intrinsic structure has tricked linguists into postulating ad hoc rule systems and algorithms to explain the structural constraints of language. Failure to pay attention to the iconic and indexical underpinnings of symbolic reference has additionally exaggerated the complexity of the language acquisition problem. This myopic avoidance of semiotic analysis has led to the doctrine of an innate language faculty that includes some modicum of language-specific knowledge and this seeming logical necessity has supported an almost religious adherence to this assumption despite the biological implausibility of its evolution and the lack of neurological support for any corresponding brain structures or functions.

Unfortunately contemporary semiotic theory has not been of much assistance, primarily because it has remained a predominantly structural theory tied to a static taxonomic understanding of semiotic relationships. But when semiosis is understood as a process of interpretive differentiation in which different modes of reference are understood as dynamically and hierarchically constituent of one another these many conundrums dissolve and these once apparently independent aspects of the language mystery turn out to have a common foundation.

So approaching language acquisition semiotically provides a functional account that can unify a wide range of grammatical and syntactic relationships. It also suggests that our naïve intuition about these linguistic regularities may be more accurate than the formal rule-governed approach would suggest. A naïve speaker seldom comments that an ungrammatical sentence breaks a rule, and is generally hard-pressed to articulate such a rule. Rather, the usual comment is that it just sounds wrong or that it doesn’t make sense said that way.

In the case of ungrammatical sentences naïve speakers know there is something wrong even if they can’t articulate it, except to say that they are awkward or difficult to interpret, and require some guesswork to make sense of them. Moreover, in everyday

conversational speech, the so-called rules of grammar and syntax are only very loosely adhered to. This is usually because common interests and joint attention as well as culturally regularized interaction frames provide much of the indexical grounding, and so in such circumstances adherence to these strictures tends to be preferentially ignored. Not surprisingly, it was with the widespread increase in literacy that scholarly attention began to be focused on grammar and syntax, and with education in reading and writing these “rules” began to get formalized. With the written word shared immediate context, common pragmatic interests, and implicit presuppositions are minimally, if at all available to provide indexical disambiguation and so language-internal maintenance of these constraints becomes more critical.

Richness of the stimulus

Finally, this semiotic functional analysis also provides an alternative understanding of the so-called poverty of the stimulus problem that is often invoked to argue that knowledge of grammar must be largely innate. Consistent with the fact that naïve speakers are generally unable to articulate the “rules” that describe their understanding of what is and is not a well-formed sentence, young children learning their first language are seldom corrected for grammatical errors (in contrast to regular correction of pronunciation).

Moreover, children do not explore random combinatorial options in their speech, testing to find the ones that are approved by others. They make remarkably prescient guesses. It has been assumed, therefore, that they must have some implicit understanding of these rules already available. In fact children do have an extensive and ubiquitous source of information for learning to produce and interpret these basic semiotic constraints on predication, but it is not in the form of innate knowledge of grammar. It is in the form of knowledge about the intrinsic constraints of iconic and indexical reference that are discovered and internalized from social interactions prior and during infancy and early childhood. When so, we humans come into the world with attentional biases and behavioral tendencies that facilitate this learning.

First of all, discerning indexicality is a capacity that is basic to all cognition, animal and human. It requires no special training to become adept at the use of correlation, contiguity, etc., to make predictions and thus to understand indexical relationships. This is essential to all forms of learning.

Evolved predispositions to point or indicate desired objects or engage joint attention have long been recognized as universally shared human predispositions that are poorly developed in other species. This universal human indexical predisposition provides the ideal scaffold to support what must be negotiated and must be progressively internalized within language structure. The early experience of communicating with the aid of pointing also provides additional background training in understanding the necessary relationship between symbols and indices.

Second, although there is little if any correction of the grammar and syntax in children’s early speech there is extensive pragmatic information about success or failure to refer or to interpret reference. This is in the form of pragmatic feedback concerning the communication of unambiguous reference. And this source of information attends almost every use of words. So I would argue that children do not “know” grammar innately, nor do

they learn rules of grammar, and yet they nevertheless quickly “discover” the semiotic constraints from which grammars derive.

Although it is necessary to learn how a given language implements these constraints, the process is not inductive. It is not necessary for a child to derive general rules from many instances. Young children make good guesses about sentence structure—as though they already know “rules” of grammar—by tapping into more natural analogies to the nonlinguistic constraints and biases of iconicity and indexicality, and by getting pragmatic feedback about confused or ambiguous reference.

Universality?

Semiotic constraints should be agent-independent, species-independent, language-independent, and discourse-independent. They have been mistakenly assumed to be either innate structures or else derived from cognitive schemas or determined by sensorimotor biases and/or social communicative pragmatics. Though they are prior to language experience, and some are prerequisites to successful symbolic communication, they are neither innate nor socially derived.

They are emergent from constraints that are implicit in the semiotic infrastructure of symbolic reference and interpretive processes. They are in this way analogous to mathematical universals (e.g. prime numbers) that are “discovered” (not invented) as mathematical representation systems become more powerful. Though each form of symbol manipulation in mathematics has been an invention and thus a convention of culture, we are not free to choose just any form if we want to maintain consistency of quantitative representation. Likewise, as languages become more complex and expressively powerful they also become more constrained, and as literary forms have become removed from the pragmatic contexts of day to day spoken communication the loss of extralinguistic indexicality has demanded more rigorous adherence to semiotic constraints of grammar and syntax to avoid referential ambiguity and equivocation. It should not be surprising, then, that it is with the rise of widespread literacy that official efforts to establish norms of “proper” grammar and syntax.

Semiotic constraints are the most ubiquitous influences on language structure, and indeed they are even more universal than advocates of mentalese could have imagined; because they are not human specific. They are universal in the sense that the constraints of mathematics are universal. They would even be relevant to the evolution of symbolic communication elsewhere in the universe. But they are not like exceptionless “rules.” Different languages, everyday spoken interactions, and artistic forms of expression can diverge from these constraints to varying extents, but at the cost of ambiguity and confusion of reference. In general, these constraints will probably be the most consistent regularities across the world’s languages because means to minimize this divergence will be favored by the social evolution-like processes of language transmission from generation to generation.

Of course reflecting on the larger list of factors contributing to the properties most widely shared across languages (cf. Table 1) we must acknowledge the contributions of both human-specific neurological constraints as well as historically contingent social constraints. They too contribute to the many nearly universal regularities that characterize

the World's languages. And although many do indeed reflect innate influences that may have evolved specifically due to their contributions to easing language acquisition and performance, none determine language organization in a generative sense. Rather, along with the ubiquitous semiotic constraints discussed in this essay, they add to the collective influences of the whole set.

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