Syntax From a Peircean Perspective

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1 Introduction

One of the inconveniences of language is that in every day discourse we never know what someone else is speaking of until he has finished speaking. This feature is in some sense baffling. Yet, in another way, it is a feature which characterizes almost every sort of action, or indeed, any sort of gesture. The only reason why we may not be disturbed by it, is that, as is the case for so many areas of human life, sequences of words or of gestures have become customary within given situations. The better we are acquainted with a person, the more we are able to predict what a particular gesture may lead to. The same goes for language. People are wont to use expressions and we often need only to hear the first word, to know exactly what will follow. Nevertheless, the fact remains that the development of sentences and of discourses has an element of unpredictibility. The premise of this paper is the paradox that the utter unpredictibility of language is nevertheless governed by laws.

The purpose of this paper is to give a Peircean account of the syntactic elements of language. In the first part, it will be argued that the received view regarding language is based upon implicit ontological presuppositions which cannot possibly do justice to some of the most important characteristics of language. In the second part, an attempt will be be made to show that a Peircean perspective presents a better chance to take into account those basic characteristics. In the third part, the syntactic aspect of language will be interpreted in terms of that Peircean perspective.

2 Ontology and language

In this part, it will be argued that Western thought has been dominated by two ontological paradigms which, though mutually exclusive, have become so mixed that we have developed the habit of jumping from one to the other with such dexterity that we have persuaded ourselves that we are using one and the same framework ([Deb98]). Indeed, the illusion that we are using one and the same framework is based in one common denominator of those two ontologies, and which may be expressed in the axiom that the really real is immutable. Against this background, it will be shown that neither one of these ontologies can do justice to the basic properties of language.

The first ontology is the one expressed in our ordinary belief that the world consists of things: people, cats, dogs, trees, pebbles, stars etc. This belief would have been utterly harmless were it not that Aristotle inferred from it a conceptual system which taught us that the world is the collection of things, and that each of those things has its own properties. I am such a thing, and there are certain properties in virtue of which I deserve being called a man rather than a monkey or a pebble. Though there are many aspects of reality which are not things, each of those derives its reality value from its connectedness to things. If red is part of reality, it must be because there are red things; and if running or flying are aspects of reality, it must be because there are things flying or running. Thus, the ontological principle of this view is that "Unless there be things with their properties, there is nothing at all." We shall call this the Aristotelian ontological principle.

The second ontology is based on the assumption that reality is a concept which is entirely dependent upon there being *facts*, where facts are basically the content of true propositions. We owe the most explicit statement of this view to Wittgenstein who wrote that "The world is the collection of facts, not of things" ([Wit22]). Though we may be mistaken about the truth of the propositions, facts are the truthmakers of propositions, and conversely, the truth of propositions implies there being facts.

Though this view may already be discerned in the doctrine of Parmenides and, later, in Stoicism, it has received its most resounding expression in modern science from classical mechanics to modern cosmologies. Thus, it is the solid belief in the law of gravity, *i.e.* in the proposition expressed by the formula of gravity that makes us say for instance that angels cannot be part of reality. Propositions are not derived from properties of things, but the things and their properties are determined by the propositions in which we believe.

The common denominator of those two ontologies is the belief that whatever is real, must somehow be immutable. In terms of the first ontology, for instance, whatever I do and whatever happens to me does not in any way affect whatever it is in virtue of which I am I (rather than somethings else). In terms of the second ontology, whatever may appear in the world is always the instantiation of some immutable formula which preferably is expressed in mathematical language.

Highly successful though these two ontologies have been, they share the inconvenience that some aspects of what we consider to be important features of our experience simply cannot be explained. Because substance ontology is married to the conviction that each substance is defined by its *properties* i.e. by certain features which entirely belong to it and to nothing else, it cannot in any way explain the interaction between substances. And because fact ontology is based upon the assumption that there are true propositions, which by their very truthfulness involve an immutable facts, it can hardly account for any change except in as much as that change may be rendered in a neat mathematical function.

3 Language and Ontology

It should not be surprising that, both in substance ontology and in fact ontology, language has never been a central topic. In as much as the tradition of substance ontology has paid any attention to it, language was considered as a quasi-entity the properties of which must be laid bare. Fact ontology, on the other hand, has either ignored language altogether or, as for instance Chomsky's approach so well illustrates, has stated the problem of language in terms of the problem of the relevant formulas by which the *structure* of language could be described. The latter point is illustrated by the following comment on Chomsky's generative grammar:

> *It is important to interpret the term generate [in generative grammar] in a static, rather than dynamic, sense. The statement that the grammar generates a particular sentence means that the sentence is one of the totality of sentences that the grammar defines to be grammatical or well formed. All the sentences are generated, as it were, simultaneously. The notion of generation must be*

interpreted as would be a mathematical formula containing variables. For example, in evaluating the formula $y^2 + y$ for different values of y, one does not say that the formula itself generates these various resultant values (2, when $y = 1$; 6, when $y = 2$; etc.) one after another or at different times; one says that the formula generates them all simultaneously or, better still perhaps, timelessly. The situation is similar for a generative grammar. Although one sentence rather than another can be derived on some particular occasion by making one choice rather than another at particular places in the grammar, the grammar must be thought of as generating all sentences statically or timelessly ([Lyo72]).

Maybe the underlying ontologies help us explaining to some extent the blind spot which linguists have had in their approach to language. But there may be a more empirical reason for the substantialist and the fact approach. To some extent, linguistics was born from dealing with 'artefacts', whether in the form of texts of inscriptions or of books or manuscripts, which indeed may be regarded as quasi-entities or facts.

But clearly written texts must be regarded as derivative forms of language. Or, more to the point, any approach which takes written texts as the primary instance of language, is bound to commit what A. N. Whitehead has called the fallacy of misplaced concreteness which consists in considering non-things or non-facts as if they were concrete entities ([Whi25]).

Clearly, speaking and listening are not entities; they are activities like walking, perceiving, drumming, singing etc. If we want to know anything about language, the first lesson is that we must turn to those activities and treat them for what they are: processes.

In other words, the basic requirement for an adequate approach to language is that an adequate theory of process be developed. It is well known that several attempts have been made in that direction. The best known of these is Whitehead's approach, as expressed in *Process and Reality*, in which he reconstructs reality in terms of 'actual entities' which must be seen as organically self-creating events ([Whi28]). But, in spite of its visionary force, Whitehead's approach suffers from the use of an implicitly substantialist model. Hence, it may be worth trying a model which, though it lacks an explicitly elaborated theory of process, offers the tools for constructing a process view of reality, and, specifically, of language.

4 Processes and Events

Because we shall attempt to describe the *process* of language in terms of what will be called 'symbol-*events*', it is important to somewhat clarify the terms 'process' and 'event'. A process will be considered to be any sequence of events such, that (1) one event initiates the sequence and another terminates it, (2) every event 'contributes' to the sequences 'yielding' the terminating event, (3) the terminating event 'governs' the decision of which events make up the sequence, and (4) the determinate character of the events making up the sequence necessitates the terminating event. An event will be considered as whatever makes a difference.

A number of important things regarding this characterization should be pointed out. First, contrary to what Whitehead suggests, 'process' and 'event' are not synonymous terms. Processes involve events, though individual events are not processes. Secondly, contrary to what the characterization seems to indicate, the expressions 'starting' and 'finishing' events do not preclude processes making part of other processes. In fact, it would be hard to find instances where this is not the case. Thus the start and the end of a process is always relative. Thirdly, the word 'govern' paradoxically does not imply that the terminating event be pre-established. Indeed, this point is dramatically illustrated by the process of language. The articulation of the sentence is 'governed' by the end of the process, even though the end of the process is in no way clearly determined. Fourthly, the fourth point, though it may seem redundant, emphasizes that a sequence of events cannot be a process unless the terminating event occurs. Though we speak of an aborted process, what we really mean is that the *process* did not really occur.

5 Peirce's Theory of Categories

The core of Peirce's philosophy is his doctrine of the three categories, which was originally developed on the basis of his work in logic. Not only was he struck by the fact that, in traditional, pre-Boolean logic, all logical arguments required at least three propositions and three terms (minor, major and middle or mediating term), but he was also the first to point out that rational thought required three methods of reasoning: deduction, induction and abduction. But though his categories were born within a logical context, he never developed a theory of language that was explicitly derived from his categories. Instead, he expanded his doctrine of the Categories into a *phaneroscopy*, literally an inspection of whatever appears.

All phenomenon according to Peirce, is marked by three aspects which he, significantly, called, respectively, Firstness, Secondness and Thirdness ([Pei31]). Because whatever appears requires a certain shock or contrast, it may be said that the appearance itself, *i.e.*, the event of appearing requires two elements which by themselves must be said to be mere 'possibles'. Thus the appearance of red undoubtedly requires 'red' though this red does not *really* appear unless it is perceived. Thus the Firstness of pure red appears only in the event of the perception consisting in the 'meeting' of the perceiver and the perceived. And thus, the appearance itself, the event of appearing, constitutes the aspect of Secondness. But the perception itself in as much as it is the merely brute fact of meeting, appears only in as much as it reveals itself as this particular perception, for instance the perception of this color red. Thus, in order to appear as perception, the perception must do so according to the rule that when this sort of event occurs, it appears as the perception of red. It is the latter aspect of the appearance that constitutes Thirdness which tell us in what respect the appearance as event reveals the 'possible' elements of Thirdness.

The most original feature of Peirce's analysis is that it shows that all appearance involves respectively a certain aspect of reality which is not related to anything but itself, a certain aspect of contrast, and a certain aspect of mediation which is precisely what has always been translated in terms of either thought or habit, or lawfulness, three terms which in Peirce's view are basically synonymous of each other. The dynamic version of the doctrine is that all event (which is the element of Secondness) involves some possible qualities (Firstness) and some aspect of order (Thirdness) ([Deb98]).

Peirce did a lot of work showing how these three categories may be traced in the phenomena of physics, of biology, of evolution, and even of history. But given the close connection between logic and language, it would seem that no phenomenon is a better candidate to be interpreted in terms of Peirce's dynamic categories than language viewed as a process.

In what follows an attempt will be made to show that Peirce's approach may be helpful in clarifying the phenomenon of language as a *syntactic* phenomenon in as much as it appears in the acts of speaking and listening.

6 The Dynamic Nature of Language

One of the most remarkable aspects of language is that most often anyone who utters a sentence begins the sentence without knowing how the sentence will develop, let alone that he knows exactly how the sentence will end. Analogously, and if anything, more obviously, the same happens on the side of the listener who, without any insight into the other's mind, must reconstruct the sentences which he hears. He too, when hearing the first word has no idea what this word is the beginning of. Thus, both the speaker and the listener participate in a game, that is to say, they must participate in an activity which, though it is subject to rules remains utterly flexible and unpredictable. It would be silly from this perspective, to say that speaking or listening has a 'structure'. It is less misleading to say that speaking and listening require an *algorithm*, albeit of a non-deterministic sort.

Again, it should be emphasized that our concern here is not language as a whole, but merely the syntactic aspect of language. Thus, suppose, someone speaks the following words: "The girl on the escalier is eating an apple," there is undoubtedly a rule which forbids the use of the word 'escalier', but the rule concerns the semantic emptiness of the term '*escalier*' within the game of the English language. Similarly, the sentence "The girl on the apple is eating a staircase" is objectionable because it violates rules related to the semantics of the words used. The reasons for objecting are related to the *meaning* of words, rather than to the proper sequence of the words used. But clearly, the second example is syntactically correct, while the first one is a syntactic 'possible'.

Now words, like sentences and stories are symbols. Symbols are signs. If, therefore, we are to know anything about the process of language formation in speaking or listening, we must know something about signs.

7 Peirce's Theory of Signs

Here again, we turn to Peirce. Peirce defines a sign as anything that stands for something else. That for which a sign stands, he calls the object of the sign. But that is only part of the story. Equally important is that a sign always stands for something else *in some respect*. Every sign must therefore have an element which tells us in what respect the sign stands for its object. For instance, it is usually acknowledged that smoke stands for fire. But smoke does not always stand for fire in the same respect. For a person lost in the wilderness, smoke may stand for fire in the sense that it indicates that people may be living there. But it may also indicate some danger. The element of a sign in virtue of which a sign stands for its object is what Peirce calls an interpretant. The interpretant should not be confused with an interpretation which is an activity in some organism. To Peirce, the interpretant is an integral part of the sign in the sense that the interpretant *together with the sign and its object* constitutes what is properly called a Sign. Thus, we shall make a distinction between a Sign and a sign. The term 'Sign' stands for the triadic structure of sign, object and interpretant, while the term 'sign' stands for whatever it is that stands in place of its object. Thus, in the case of the smoke, the Sign is constituted by the smoke-signifying-fire-as-danger, while the sign is simply the smoke.

Not all signs are symbols. Indeed, in the example given, smoke is not a symbol at all. Peirce distinguishes three types of signs: icons, indices and symbols. Basically, icons are signs by virtue of a superficial resemblance to their object. Thus, a map is an icon of the country it represents. Indices are signs by virtue of the physical connection to their object. Thus, a functioning weathervane is an index of the direction of the wind. Finally, symbols are signs in virtue of a convention. Thus, the word 'donkey' is a symbol which stands for a four-legged animal in virtue of the convention that English-speaking people will associate the word with the object for which the word stands.

In as much as a sign appears, one may speak of a sign-event which, like any other event of appearance, involves the three elements of Firstness, Secondness and Thirdness.

Language as a process is generated by symbol-events which are themselves generated according to rules which, in Peircean terms, are habits evolving from interaction with other processes. A full sentence may be considered as a symbol-event standing for its content as a unit of meaning. The syntactic interpretant of a full sentence is the satisfaction in virtue of which the set of words constituting the sentence is complete. The rules according to which the sentence constructs itself may therefore be regarded as habits conducive to satisfaction. The habits in turn may be regarded as if-then tests by which elements conducive to satisfaction are included and other elements excluded. Thus, the symbol-event 'the' elicits an indefinitely large field of possible subsequent symbol-events, but excludes, for instance, the possibility of the next symbol-event being 'is'. Though Peirce distinguished different kinds of symbol-events according to their semantic value into quali-signs, sin-signs, and legi-signs, he did not, at least not to our knowledge, pursue the analysis of the function of symbol-events according to their syntactic value. But there is no reason why this can not be done. Indeed, from a syntactical point of view, symbol-events have a specific function, regardless of their semantic function.

8 Symbol-events and Syntax

By virtue of their secondness, events, and syntactic symbol-events in particular, are marked by a binary relation between symbols such as lexical items. Lexical items, however, have by themselves a certain syntactic status. There are lexical items which by themselves have no information content whatever. Such are, in English for instance, the affixes. Other lexical items are such that, though by themselves they have some informative content, need to be complemented by another lexical item in order to make that content functional. Thus, a given adjective, has meaning, it usually needs a noun in order to make that meaning functional. Finally, there are words, such as nouns, which have a self-sufficient meaning.

Apart from this, however, strictly speaking, no one lexical item by itself is a symbol-event. The syntactic value of symbol-events will therefore depend upon the *sort* of relation that obtains between two symbols. If one of the symbols has by itself no semantic content and therefore is a mere quality (a sound or a visible character), it will need another item to actualize its 'potential' content. Such nexus of two items, one of which has mere potential content, may be called a proto-symbol-event or proto-symbol for short, which, by virtue of its reference to the rule in virtue of which a merely potential lexical item *demands* another lexical item for its actualization, corresponds to the Peircean category of firstness. An example of this is the symbol-nexus of a noun and a plural sign ("cars").

Similarly, when the nexus is constitued by an asymmetrical relation between one symbol which derives its full content from its association with another symbol which is in principle self-sufficient, it may be called a deutero-symbol which corresponds to the category of secondness. An example of this would be the nexus of an adjective and a noun ("nice car"), or the one of a determiner and a noun ("the car").

Finally, when the nexus consists of two symbols which are semantically self-sufficient but together generate the interpretant of the semantic unit formed by the sentence (or a clause), it will be called a trito-sign. An example of this would be the nexus of a noun and a verb ("the clock strikes").

To complete the picture, it is necessary to say a word about the triadic relation charcterizing each of these signs, because without such relation, they would not be signs, let alone syntactic signs. In other words, syntactic signs must, in Peirce's terms, have an object and an intepretant.

What makes a symbol a *syntactical* sign is the very fact that its object (that for which it stands) is a *rule* or a habit, in virtue of which one sort of lexical item calls for another sort of lexical item. Thus, the *object* of a syntactic sign is a *rule*. The interpretant of a syntactic sign is the selection of the next symbol- event, in as much as it contributes to the final syntactic satisfaction of the sentence as a syntactic whole.

Furthermore, because syntactical symbol-events stand for rules governing the relationship between two symbols, the occurrence of one symbol will trigger the expectation of the occurrence of the other relevant item as required by the rule in question. Such expectation may be regarded as the expression of a hypothesis (which according to Peirce is the conclusion of an abductive inference) regarding the nature of the next lexical item. As such it must obey Peirce's 'cotary propositions' regarding abduction. One of these may be called the principle of economy, which stipulates that, all things being equal, a more plausible hypothesis must be tested before a less plausible one. Thus, the expectation triggered by a lexical item will be focused first on the occurrence of the other relevant lexical item as required by the rule in question. Only if the expectation is not fulfilled, will the hypothesis allow for a less likely candidate. The principle of economy is a very important factor in the practice of language.

9 Testing the Hypothesis

Though Peirce's framework may provide a hypothetical framework for explaining how syntactic signs are generated in language, it should of course be tested. Farkas and Sarbo ([FS99]) have proved that, by means of its syntactic structure, the English language realizes signs analogous to those introduced by Peirce. Though they readily admit that such proof is made difficult on account of the ad hoc and evolutionary nature of syntactic structure in English, there is every reason to hope that precisely the combination of a dynamic interpretation of Peirce's doctrine of categories and his theory of signs allows for a continual evolution of the phenomenon of living language.

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