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Probing the Iroquoian Perspective: Towards a Situated Inquiry of Linguistic Relativity

DIETMAR ZAEFFERER

1 Introduction

This paper may seem a little exotic among the contributions to the present volume, not because its concern is the application of Situation Theory to Situation Semantics—there are other contributions that share this concern—but because its concern is furthermore the application of Situation Semantics to so-called exotic languages like the Iroquoian languages, which may seem premature at this stage of the development of the theory.

So why apply Situation Semantics to Iroquoian instead of, say, English or Norwegian? And why use Situation Semantics for the analysis of Iroquoian, instead of, say, Montague Semantics or the Principles and Parameters theoretical frame? The answer to the first question is that I want Situation Semantics to be tailored right from the beginning in a way that it fits any natural language, not just English or Norwegian. So I have to look for languages that are as different as possible from the well-known Standard Average European languages (or SAE languages for short, as Whorf (1956) has dubbed them), and the Iroquoian languages seem to be located at one extreme point of a scale in that they are extremely verb-oriented, whereas SAE languages are both noun and verb oriented. I will come back to what that means shortly.

In preparing this paper I have profited from the interesting discussion and encouraging comments by the participants of the Kinloch Rannoch conference as well as from remarks by Hans-Jurgen Sasse and Godehard Link. Special thanks are due to an anonymous referee whose to-the-point comments greatly helped me to clarify and revise my main issue. Remaining shortcomings should be blamed, as usual, to the author, and not to anyone of the aforementioned.

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The answer to the second question can be easily derived from a quotation from Barwise: "I think of this [the view of inquiry as crucially a situated activity] as part of a larger reaction against the dominant theme in Western thought, the idea that agents ever step back and have a God's eye view of the world, as Thomas Nagel has called it, 'a view from nowhere'. As Hilary Putnam has observed, the rejection of the view from nowhere idea is something that ties together disciplines as diverse as quantum mechanics and the work on semantical paradoxes. To my mind, it is what drives situation theory and situation semantics." (Barwise 1989, p. 251)

I may add that it is also what drives modern linguistic typology and research into linguistic universals, as well as the investigation of how much of the Humboldt-Sapir-Whorf hypothesis about linguistic relativity, if anything, remains, if the presently available data are taken into account. A situated inquiry of linguistic relativity is aware of the fact that it starts out from a view of natural languages that takes Indo-European languages (Whorf's SAE languages) as a prototype. It then looks for languages that are as far as possible from this common conception of what a language should look like. A prominent feature of this common conception is the centrality of the NP-VP-dichotomy. So languages that make only marginal use of what might be justifiably called a noun phrase, like Cayuga and other Northern Iroquoian languages are of special interest for this enterprise. Therefore, the bulk of this paper is devoted to a sketch of a situation semantics for Cayuga. The final section will assess (a) the consequences of this challenge for situation theory and (b) how well the linguistic relativity hypothesis fares in the light of the proposed analysis.

2 Stepping Back from the SAE-Perspective

If we want to develop Situation Semantics towards universal applicability we have to step back from our SAE-perspective of what a natural language looks like, and have to ask ourselves what remains constant if we compare all kinds of natural languages. One thing that has to remain stable are our basic categories such as nouns, verbs and adjectives. Within X-bar theory, the framework most recent work in the so-called generative grammar paradigm is based on, there is a widespread tendency (going back to Chomsky 1970) to reduce the four central lexical categories noun, verb, adjective, and preposition to the even more fundamental categorial features $[\pm N]$ and $[\pm V]$ in the following way:

V := [+V, -N]

N := [-V, +N]

A := [+V, +N]

P := [-V, -N]

It may be hard to see why the neither-nor case should characterize the category P instead of all the rest, but what is obvious is the view that the N-V opposition is considered something very fundamental.

In linguistic typology it is a widely accepted fact that there are languages which get along without any adjectives (the example Givón (1984, p. 53) cites is Toposa, a Nilotic language), but not all linguists agree that there are languages that collapse the N-V distinction, a possibility brought into the discussion some 70 years ago by Edward Sapir with respect to Nootka, an American Indian language of the Wakashan family. The plausibility of the assumption that there are languages which get along basically without an N-V distinction has gained new support through data from the Northern Iroquoian languages which suggest that NP's play at most a very marginal role in these languages.¹

The interesting thing is that even if a language without any N-V distinction cannot be attested, it can be argued that it is still a possible human language, i.e., that it is learnable and that it has the same general-purpose functionality and expressive power as any other full-fledged human language, and the question comes up of how this can be. Furthermore, for Situation Semantics the question of Barwise's branch point 9 (Barwise 1990, p. 267) concerning the relation between situations and objects comes up: Verbs and the sentences they head are about situations, nouns and the NP's they head are about objects (directly or indirectly). But if the N-V distinction can collapse in some languages, one should reconsider seriously Ken Olson's choice at branch point 9 such that the situation-object distinction may collapse as well, at least for some perspectives, and that where it exists it is a perspectival one. Here is the branch point as Barwise puts it:

Alternative 9.1: Every object is a situation.

Alternative 9.2: Some objects are situations, some are not.

Ken Olson's choice is 9.1, that every object is a situation. This seems to be at odds with Barwise's thesis 3 (1989, p. 232), which can be rendered schematically as follows (where '<' is to be read as 'is metaphysically prior to'):

situations < facts/soas²/objects/properties/relations < propositions

and which entails that situations are metaphysically prior to objects. But the views can be reconciled, if one takes into account Piaget's observation that objects arise in the development of human cognition at the moment where recurring situations are attributed to something more stable which causes them to come about. So objects may be considered as the result of

¹In fact, the data are less new than their interpretation in the indicated way. See Sasse 1988, 1991, n.d.

²The term 'soa' is short for 'state of affairs'. Instead of this term, I will use in what follows its successor, 'infor', which stands for 'unit of information'.

associating *prima facie* situations with certain stability conditions, which yields those time-stable 'situations' that are called objects.

But the quotation marks around 'situations' in the last sentence point at another reason for rejecting Olson's choice, a terminological one. It looks like some terminological clarifications are needed before we can assess it seriously.

3 Terminological Considerations

A third alternative not mentioned by Barwise comes into mind if one thinks about the pretheoretical use of the notions involved:

Alternative 9.3: Objects and situations are disjoint.

Pretheoretically, situations are always situations of some object(s), the situations these objects are in, and most of the time, these situations are not objects themselves. Consider for instance your current financial situation: You are an object, your financial situation is not. But how about local situations? Maybe you are sitting in a building. Then the building may be considered one of the local situations you are in. But at the same time it continues to be an object. So alternative 9.3 does not seem to be very plausible. On the other hand, if a necessary condition for situationhood is the possibility for an object to be in that situation, alternative 9.1 can be excluded as well if one assumes that there are (given some granularity) minimal objects (with respect to that granularity), namely those objects that cannot contain any other object, since these objects cannot be a situation for any other object.

But now the question comes up how closely the pretheoretical use of the notion of situation and its use in Situation Theory are tied together. In Situation Theory, situations are parts of some world that support infons relative to some scheme of individuation. Intuitively this characterization holds equally well of situations and of objects in the pretheoretical sense. But there may be other, theoretical reasons for excluding some kinds of objects from the domain of the supports relation. Without them, the only reason for rejecting Olson's choice is a terminological one.

Technical and everyday use of a term may diverge, but they should not diverge to such a degree that it hurts. Your reading this here now is a situation, part of the situation you are in right now, but you are not a situation. It may be funny to say that everybody is precisely the situation he is necessarily in all his life long, but it seems preferable not to overload the notion situation and to coin a new term that covers both situations and objects.

You are not a situation, but you are, among other things, a reader, or, equivalently, a case of a reader. The activity you are engaged in is reading, or, equivalently, a case of reading. So my proposal for a term covering both situations and objects is *case*. Now we can discuss Olson's choice in

an unbiased way, since we can say that a proposition is something that relates a (possibly concrete) case and a (necessarily abstract) infon (alias state of affairs, type, or concept) via a relation that is written ' \models ', which can be read as 'is a model of' or 'supports' or 'is correctly classified by' or 'instantiates' or 'is characterizable by'. For the sake of readability I will however stick to the conventional notation ($s \models \sigma$), asking the reader to bear in mind that s stands for cases, where cases can be conceived of as subsuming either all objects or only part of them.

Situations or cases that are of central relevance for Situation Semantics are situations or cases of language use. According to a very attractive proposal made by Jon Barwise in his Branch Point paper (1989, p. 275), we need in addition to Austinian propositions what he calls Holmesian propositions, which differ from the former in that their situations support their infons not directly, but via a collection of constraints. Holmesian propositions are at the heart of my picture of language, since cases of language use carry the important part of their information not on their sleeves, but only indirectly via certain constraints, namely the conventions defining the language in question. But instead of saying 'situation s , in addition to supporting infon σ , carries the information τ with respect to some collection of constraints C ', we can now also say 'case s , in addition to instantiating concept σ , C -indicates concept τ ', where C is again a collection of constraints holding in some supercase of s , i.e., a case that s is a part of.

So my basic picture of language use looks like follows. A case of language use is a case that instantiates some concept of a perceivable action trace pattern like the utterance of [*mira*] and that C -indicates some concept of an abstract social interaction pattern such as putting the cooperative addressee under the obligation to look, if the collection of constraints C includes the rules of Spanish grammar (in German, the outcome would be different). Symbolically: If s is a case of language use, then there are σ , C and τ such that $s \models \sigma$ and $s \models_C \tau$, where σ is a concept of a perceivable action trace pattern, C is a collection of conventions of language use, and τ a concept of an abstract social interaction pattern.

In order to compensate the reader for following me through these rather abstract terminological preliminaries I would now like to invite him to an imaginary field trip to the area north of lake Erie, where several Iroquoian Indian tribes live.

4 Comparing the English and the Iroquoian Perspective

Based on what we have heard about the Northern Iroquoian languages and their tendency to neglect the nouns and noun phrases Europeans are so fond of, our imaginary journey has at least three purposes:

1. We want to find out whether Situation Semantics is flexible enough to deal equally well with Mohawk or Cayuga as it does with English or Norwegian.
2. We want to see whether the Iroquoian languages are more easily describable if the objects are subsumed under the situations, i.e., whether their structure can be turned into an argument for Olson's choice.³
3. We would like to find some evidence for or against the Humboldt-Sapir-Whorf hypothesis of linguistic relativity, which would entail that the dramatically different structure of the Iroquoian languages forces or induces their speakers to see the world from a very different perspective.

Let us assume that the first Iroquoian Indians we come across are Cayugas, and that we immediately meet a reliable Indian informant. But before we start to ask him questions let us recapitulate what we already know about the English-Cayuga differences.

The English perspective seems to distinguish at least two kinds of cases, cases of objects and cases of situations, be they activities, events or states. This is correlated with the fact that English noun phrases denote either single objects (as with proper names and (in)definite descriptions) or sets of sets thereof (at least according to the Generalized Quantifier analysis), whereas verbs denote properties which together with appropriate arguments can characterize situations. Cayuga speakers get along in general quite well without nouns or noun phrases and it seems rather plausible that the few exceptions could fade away without doing any harm. How do the Cayugas do that?

Let us look first at the Cayuga lexicon. What we find here is basically a two-fold distinction between (a) particles, i.e., uninflected words, and (b) paradigms, i.e., inflected words with all their word forms. Some of the word forms have acquired an idiomatic reading, which is the main reason why most Iroquoianists assume that Cayuga does have nouns. But Sasse (1988) correctly points out that these forms include the same morphological marking as the other word forms, and the categories which are encoded in this morphological marking are person, number and gender of both actor and undergoer. These are typical features of conjugation rather than declension, so the conclusion seems to be warranted that these word forms are verb forms and not noun forms. It turns out furthermore that each such verb form is autonomous, i.e., its use expresses by itself a complete proposition without the need for any syntactical complements.

This is strongly reminiscent of the so-called pro-drop languages like Italian or Spanish, where single word forms like 'habla' without any comple-

³In Zaefferer 1988 I have argued for the same option, sketching a case-based semantics which is spelled out in Zaefferer 1989.

ments can encode complete propositions ('he talks'). There are, however, two important differences with the pro-drop languages. The first is that Cayuga is double-pro-drop: Not only subjects are dropped, but also objects. This can happen in Hungarian as well and, without morphological reflexes, in languages like Japanese or Korean. So the second difference is more important and more surprising: Pro-drop languages do have complements with their verbs; these complements *can* be dropped, especially if they are pronominal, in which case dropping may be obligatory for non-emphatic proforms, but in principle, they can be there as overt constituents.

Cayuga, by contrast, does not have any complements as separate constituents; arguments are (a) always morphologically encoded by means of a prefix, and (b) only pronominal in nature. So it looks as if something like 'She has prepared it' is expressible in Cayuga, whereas 'Your mother has prepared the meal' is not. How can this seeming restriction be overcome? In order to find out, we ask our informant to translate an English sentence with a two-place verb and two non-pronominal arguments into Cayuga. The sentence we choose is (1).

(1) My younger Brother has many potatoes.

Sentence (1) contains two noun phrases, 'my younger brother' and 'many potatoes', and the only verb around is 'has'. How can our informant possibly express this proposition in Cayuga without using any noun phrases? Before we look at his translation, let us first express (1) in a Situation Semantics style. I assume with Barwise (e.g., 1989, pp. 228f) that every proposition consists of the situation or case it concerns (called focus situation by Barwise, thematic situation or case by me, since in linguistic terminology, focus is something different), and the state of affairs or infon which is used to classify it, together with the supports relation that is claimed to hold between the two.

As mentioned above, the notation I use for propositions is the usual one: $(s \models \sigma)$. Following a suggestion of Barwise's,⁴ restricted parameters are written to the left of the parametric proposition in which they occur, followed by a colon and the restricting proposition; the list of restrictions is closed by a vertical stroke. In order to enhance readability, parameter restrictions are pulled as far to the left as possible.⁵ An atomic infon is written between double angles, its relation before its arguments (postspecifying constituent order), arguments are preceded by the corresponding argument role label, followed by a colon. If there is only one argument, hence no need to distinguish between arguments, no argument role is indicated; positive polarities are omitted, and tense is ignored. So a Situation Semantics representation of (1) looks like the following:

(1') $s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle)$

⁴Personal communication, September 1990.

⁵I am grateful to an anonymous referee for this notational hint.

$x : (s \models \langle\langle \text{younger-brother, possessum:}x, \text{ possessor:speaker}(s_{utt}) \rangle\rangle)$
 $y : (s \models \langle\langle \text{many-potatoes, }y \rangle\rangle)$
 $(s \models \langle\langle \text{have, possessor:}x, \text{ possessum:}y \rangle\rangle)$

(1') expresses a parametric proposition whose supporting situation is restricted by the requirement that it is thematic in the utterance situation, and whose infon is parametric in both arguments of 'have', the possessor being restricted to a younger brother of the speaker, the possessum to a large quantity of potatoes. The relations involved are: speaker in the utterance situation ('my'), 'younger brother of', i.e., 'male' and 'younger sibling of', large quantity ('many'), 'potato', and possession ('my', 'have'). The same relations will have to be expressed in the Cayuga translation of (1), but how are they expressed? Here is the translation our informant gives:⁶

(2) he-'kɛ:ʔ-ɛ ho-hɔn'at-á-k'ate'

Its analysis yields the following results. Syntactically, (2) consists of two words, hence two clauses, and forms a two-membered complex sentence. Its morphological building blocks are the following: -'kɛ'-, "younger-sibling", -hɔn'at-, "potato", and -k'ate'-, "be-many", are roots. The latter is pre-specified by the second one, yielding the complex stem -hɔn'at-á-k'ate'- with the semantically empty linker -á- and the meaning "be many with respect to potatoes", or in Sasse's (1991) wording, "be many potatowise". The first stem is also complex, the root -'kɛ:ʔ-, "younger sibling", is modified by the diminutive suffix -ɛ, and the resulting stem 'kɛ:ʔ-ɛ therefore means "little younger sibling."

Now comes the interesting part: the prefixes he- and ho- are both person prefixes and, as mentioned above, Cayuga person prefixes encode pairs of feature structures for the features thematic role, person, number, and gender. The value for the first feature is always actor for the first coordinate and undergoer for the second one. The values for the person feature can be first (exclusive and inclusive), second, and third; for the number feature singular, dual, and plural; for the gender feature masculine, feminine, and neuter. The he-prefix of the first clause in (2) encodes $\langle\langle \text{actor, first, singular, any} \rangle, \langle \text{undergoer, third, singular, masculine} \rangle\rangle$, or, shorter, 'I-him'. But in order to fully understand the first word-clause, our informant tells us, we need one additional piece of information, namely that for inalienable possessive relations 'actor' can also encode 'possessor' and 'undergoer' 'possessed'. (With alienable possession, the converse holds.) Now we are able to interpret the first part of (2) as expressing the proposition that the speaker has a male person as little younger sibling or as an equivalent of "I have a little younger brother." A Situation Semantics style representation is (2a')

⁶The example is taken from Mithun and Henry 1982 (p. 381), its analysis mostly from Sasse 1988.

$$\begin{aligned}
 (2a') \quad & s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle), \\
 & x : (s_{utt} \models \langle\langle \text{speaker}(s_{utt}), x \rangle\rangle) \cap (s \models \langle\langle \text{sg}, x \rangle\rangle), \\
 & y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle) \cap (s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle) \\
 & \quad (s \models \langle\langle \text{little-younger-sibling, possessum:}y, \text{possessor:}x \rangle\rangle)
 \end{aligned}$$

(2a') expresses a parametric proposition whose situation is restricted by the requirement that it is thematic in the utterance situation, and whose infon is parametric in both arguments of 'little-younger-sibling-of', the possessum being restricted to some non-speaking non-addressed male, the possessor to the speaker.

For an analogous interpretation of the second part of (2) we need the information encoded in the prefix *ho-*. It is $\langle\langle \text{actor, third, singular, neuter}, \langle \text{undergoer, third, singular, masculine} \rangle \rangle\rangle$. So the meaning of the whole word-clause is "it, namely being many potatowise, concerns him", or, with Sasse's transliteration "it manies him potatowise" (Sasse 1991). A Situation Semantics style representation of this is (2b'):

$$\begin{aligned}
 (2b') \quad & s' : (s_{utt} \models \langle\langle \text{thematic}, s' \rangle\rangle), \\
 & z : (s_{utt} \models \langle\langle \text{third}, z \rangle\rangle) \cap (s' \models \langle\langle \text{neuter}, z \rangle\rangle \wedge \langle\langle \text{sg}, z \rangle\rangle), \\
 & u : (s_{utt} \models \langle\langle \text{third}, u \rangle\rangle) \cap (s' \models \langle\langle \text{male}, u \rangle\rangle \wedge \langle\langle \text{sg}, u \rangle\rangle) \\
 & \quad (s' \models \langle\langle \text{be-many-potatowise, concerning:}z, \text{concerned:}u \rangle\rangle)
 \end{aligned}$$

(2b') expresses a parametric proposition whose situation is restricted by the requirement that it is thematic in the utterance situation, and whose infon is parametric in both arguments of 'be-many-potatowise', the concerning entity being restricted to some non-speaking non-addressed thing, the concerned entity to some non-speaking non-addressed male. Joining both clauses of (2) yields a maximally coherent sentence if we identify all compatible parameters, namely *s* with *s'* and *y* with *u*.

Now we can almost fully understand the literal meaning of the whole two-clause sentence (2). Our informant tells us the last missing piece of information: In Cayuga, he says, focused items come first. The literal translation "I have him as little younger sibling, he is someone who is concerned by a large potato quantity" fails to express this. A better translation would be "My younger brother has many potatoes" with focus accent on 'brother', or "Someone who does have many potatoes is my younger brother", but all these translations, in one way or the other, distort the way the information is organized in the Cayuga sentence. The Situation Semantic representation in (2') does not. It puts the background information into the restrictions of the parameters and the focal information into the infon of the proposition expressed by the whole two-clause sentence:

$$\begin{aligned}
 (2') \quad & s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle), \\
 & z : (s_{utt} \models \langle\langle \text{third}, z \rangle\rangle) \cap (s \models \langle\langle \text{neuter}, z \rangle\rangle \wedge \langle\langle \text{sg}, x \rangle\rangle), \\
 & y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle) \cap (s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle \wedge \\
 & \quad \langle\langle \text{be-many-potatowise, concerning:}z, \text{concerned:}y \rangle\rangle),
 \end{aligned}$$

$$x : (s_{utt} \models \langle\langle \text{speaker}(s_{utt}), x \rangle\rangle) \cap (s \models \langle\langle \text{sg}, x \rangle\rangle) | \\ (s \models \langle\langle \text{little-younger-sibling, possessum} : y, \text{possessor} : x \rangle\rangle)$$

(2') expresses a parametric proposition whose situation is restricted by the requirement that it is thematic in the utterance situation, and whose infon is the relation of "little-younger-sibling-of" holding between some male not involved in the discourse who is concerned by some large quantity of potatoes, and the speaker: Talking about a situation where a man has many potatoes, my little brother is such a man.

We now can see that the restriction of Cayuga complements to prefixed pronouns does not entail a restriction in expressive power, since the lexical specification of the arguments can be done by ana- or cataphoric coreference. So the answer to the question asked above: How do the Cayugas express the content of sentences like 'Your mother has prepared the meal' if the verb allows only pronominal complements as in 'She has prepared it'?—the answer is simply: by linking the three predications into a cata- and anaphoric chain: 'You have her as a mother, she has prepared it, it is the meal'.

But this answer to the first question raises immediately a second one. If virtually every word form has inherently two-place person prefixes, then the expressive power of Cayuga must be seriously restricted in another respect, since it can only express two-place relations. But this restriction can also be overcome. One way of encoding three-place relations is the incorporation of roots into complex stems mentioned above. In order to express the infon "I prepare food for you" we take the root 'prepare', premodify it by the root 'food', prefix this stem by the 'I-you' morpheme and modify the result by a dative suffix, which changes the undergoer in a benefactive role. Another imaginable way of overcoming the same restriction would be the splitting of sentences like "I do it for you" into something like "I do it, it is for you."

But how about lower arities? The problem is exactly analogous to the problem a subject-predicate language like English faces in the case of zero-place predicates like raining. The solution in English is the use of a dummy subject 'it': 'it is raining', although semantically still zero-place (location does not count here, since it is not an argument, but a specifier), is syntactically one-place, as required. The Cayuga solution to the less-than-minimal arity problem is basically the same, but due to its inherent binarity it has two possibilities for the encoding of semantically unary predicates: Either the undergoer or the actor role can be filled by a dummy. The first case, person prefixes with the feature structure $\langle \dots, \langle \text{undergoer, third, singular, neuter} \rangle \rangle$ is called the 'subject-intransitive paradigm', the second case, person prefixes with feature structure $\langle \langle \text{undergoer, third, singular, neuter} \rangle, \dots \rangle$ is called the 'object-intransitive paradigm'. Therefore the 'it-it'-case opens two possibilities: *ka-* is chosen for semantically empty undergoers, *o-* for semantically empty actors. An example of the former case is *ka-nyáhtę:*

with the root *-nyahtę*: ‘turtle’, yielding ‘it turtles (it)’ or ‘it turtles’. An example of the second case is *o-né:nq*’ containing the root *ne:nq*’ ‘warm’, literally ‘(it) warms it’ or ‘it is warmed’, meaning ‘it is warm weather’.

Another example with semantically empty actor is given by the forms built from the stem *-qkweh*’ ‘be a person’. Prefixing it by *h-*, *ak-*, and *k a:k-* with feature structures $\langle\langle$ actor, third, singular, male $\rangle\rangle$, \langle undergoer, third, singular, neuter $\rangle\rangle$, $\langle\langle$ actor, third, singular, female $\rangle\rangle$, \langle undergoer, third, singular, neuter $\rangle\rangle$, and $\langle\langle$ actor, third, plural, female $\rangle\rangle$, \langle undergoer, third, singular, neuter $\rangle\rangle$, results in clause-words meaning ‘he is a man’, ‘she is a woman’, and ‘they are women’, respectively. The translations suggest that there is informational redundancy where there is none. ‘It is a male person’, ‘it is a female person’, ‘they are female persons’ would be better, but it would not be free of wrong implicatures either. (4’) is a Situation Semantic representation of (4), the Cayuga translation of (3):

(3) He is a man.

(4) *h-qkweh*’

(4U) $s : (s_{utt} \models \langle\langle$ thematic, $s\rangle\rangle)$,
 $x : (s_{utt} \models \langle\langle$ third, $x\rangle\rangle) \cap (s \models \langle\langle$ male, $x\rangle\rangle \wedge \langle\langle$ sg, $x\rangle\rangle)$
 $(s \models \langle\langle$ person, $x\rangle\rangle)$

5 Looking for Appropriate Supporters

So far, so good. We see now how it is possible to get along without nouns and noun phrases, and how everything can be expressed by two-place predicates, and we understand thus the structure of the forms of Cayuga paradigms. But as we saw right at the beginning of our field work, when we looked at the structure of the Cayuga lexicon, there are, alongside with the paradigms, particles in Cayuga, particles like *né:kyęh*, “this,” a demonstrative.

(5) *né:kyęh*

Here, we have no person prefix, hence no motivation to represent this expression in a way similar to the representation of word forms, which wouldn’t make sense anyway, since a use of ‘this’ does clearly not constitute a speech act with a propositional content at all. What it does is rather introduce a new parameter which can only be anchored to an entity pointed at by the speaker in the utterance situation:

(5’) $x : (s_{utt} \models \langle\langle$ point-at, pointer:speaker(s_{utt}), pointed: $x\rangle\rangle)$

Therefore a use of such a deictic element constitutes always an incomplete utterance, which needs company, as in (6):

(6) *nę:kyęh h-qkweh*’

This can be translated, in an appropriate context, as “this man,” but we know that literally it means “this one, he is a person.” We could of course stick the contribution of the deictic element directly into the restriction

of the relevant parameter, as in (6'), but this would be cheating, since it would conceal the anaphoric pick-up of the person prefix, mimicking the structure of the loose translation, not of the literal one:

$$(6') \quad s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle), \\ x : (s_{utt} \models \langle\langle \text{point-at}, \text{pointer:speaker}(s_{utt}), \text{pointed:x} \rangle\rangle) \wedge \langle\langle \text{third}, x \rangle\rangle \\ \cap (s \models \langle\langle \text{male}, x \rangle\rangle \wedge \langle\langle \text{sg}, x \rangle\rangle) | (s \models \langle\langle \text{person}, x \rangle\rangle)$$

The following representation (6'') certainly gives a more precise picture of the way the meaning is composed, introducing first a parameter for a deictically identified object and then a parameter for a singular male who is neither speaking nor addressed:

$$(6'') \quad s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle), \\ x : (s_{utt} \models \langle\langle \text{point-at}, \text{pointer:speaker}(s_{utt}), \text{pointed:x} \rangle\rangle), \\ y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle) \cap (s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle) | (s \models \langle\langle \text{person}, y \rangle\rangle)$$

(6'') shows that the deictic speech-act constituted by the utterance of *né:kyeh* introduces as a new thematic entity the object pointed at by the speaker, and that the following utterance of *h-*, the person prefix of *h-qkweh'*, introduces a second parameter. Then, by anaphor resolution, the two are identified. But now another question arises: What is the role of the thematic situation *s* in such a proposition? It seems to be needed for the support of the features maleness and singularity at most. Whatever the thematic situation was before the utterance of *né:kyeh*, the utterance itself introduces a new theme into the discourse, namely the object pointed at, and therefore this very object suggests itself as the supporting part of the new proposition. This is what the representation (6''') encodes:

$$(6''') \quad s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle), \\ x : (s_{utt} \models \langle\langle \text{point-at}, \text{pointer:speaker}(s_{utt}), \text{pointed:x} \rangle\rangle), \\ y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle) \cap (s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle) | (x \models \langle\langle \text{person}, y \rangle\rangle)$$

But now we have a problem if we stick with alternative 9.2, admitting of objects that are not situations, and don't want to give up the assumption that only situations can support infons. (6''') contains a proposition-like form where an object supports an infon, and the whole thing would only be well-formed if the object pointed at happened to be a situation. But we can turn this risky business into a safe one (and one that conforms more with the intuitions, at least those of the author) if we choose alternative 9.1 and subsume all objects under the situations (or cases). Then the thematic slot of a proposition can be filled equally well by a situation and an object. And this seems to be exactly what is required for a natural account of deixis, since the entities referred to by pointing gestures are at least equally well objects as situations.

Another unfamiliar phenomenon becomes visible once the intended anaphor resolution is carried out: the proposition takes the form

$$(x \models \langle\langle \text{person}, x \rangle\rangle)$$

Does this make sense at all? Can an object possibly support an infon with that very object in the argument role of the infon's relation? I think it can, and it is even an obvious candidate for playing both roles, that of the supporter and that of an argument in the supporting infon, in cases like the one above, where the seeming argument role turns out to be no argument role at all, at least not in the standard sense of something that belongs to the arity of the relation under consideration, if we look closer at the kind of role this could be. To see this we have to ascertain first the arity of 'person'. I think it is zero-place, like 'raining', and not one-place, like 'sleeping', because every case of sleeping involves a sleeper, but cases of raining as well as cases of persons are self-sufficient: We have to bear in mind that there is a difference between playing the subject role in an instantiation of a relation and being such an instantiation itself. (The latter is sometimes referred to as 'the Davidsonian argument', misleadingly, as I would claim.) So a better notation would seem to be $(x \models \langle\langle \text{person} \rangle\rangle)$ and $(s \models \langle\langle \text{rain} \rangle\rangle)$. But then there are cases where one wants to be able to keep track of both the instantiation r of a relation R that minimally supports the corresponding infon and other, larger situations s that still support it, so it is helpful to have a notation like $(s \models \langle\langle R, i:r \rangle\rangle)$, where the 'i:' marks the pseudo-argument role of instantiation.

Now all languages have a device for turning the instantiation role into an argument role, which is called copula, if it is a word, and zero-copula, if it is simple concatenation. Semantically, this is nothing else than putting the instantiation relation into the infon. So the following are equivalent:

- (a) $\langle\langle \text{person}, i:x \rangle\rangle$
- (b) $\langle\langle \text{be-a-person}, \text{subject}:x \rangle\rangle$
- (c) $\langle\langle \text{be}, \text{subject}:x, \text{predicate}: \text{person} \rangle\rangle$
- (d) $\langle\langle \text{instantiate}, \text{instantiation}:x, \text{instantiated}: \text{person} \rangle\rangle$

Cayuga, as we have seen, is a language with zero-copula, since it encodes instantiation by concatenation of the person prefix with the word stem. Therefore, in examples like

$$(s \models \langle\langle \text{little-younger-sibling}, \text{possessum}:y, \text{possessor}:x \rangle\rangle)$$

above, we should replace the argument role label 'possessum:' by the instantiation role label 'i:'. And we should modify the notation convention about role labels: They are omitted with one-place relations for the argument role (there is only one), and with zero-place relations (there is only the instantiation role around).

I will close this section with the analysis of a complex Cayuga sentence, hoping that it will reveal more about objects as possible supporters in propositions:

- (7) a- hó- htq:' ho- tkwə't- a' nę:kyé h- qkweh'
 Past- it:him- lose it:him wallet- Nom this:one he- person

As one can read off the morphematic gloss, (7) means literally something like (and here I quote Sasse's (1991) wording): "It was lost to him, it is his wallet, this one, he is a man," or, simply, "This man lost his wallet." But unlike this English translation, (7) encodes not one, but potentially three different propositions. This is expressed by the representation (7') (disregarding tense and other subtleties):

- (7') a. $s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle)$,
 $x : (s_{utt} \models \langle\langle \text{third}, x \rangle\rangle) \cap (s \models \langle\langle \text{neuter}, x \rangle\rangle \wedge \langle\langle \text{sg}, x \rangle\rangle)$,
 $y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle) \cap (s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle)$
 $(s \models \langle\langle \text{lose}, \text{possessum}:x, \text{possessor}:y \rangle\rangle)$
- b. $s' : (s_{utt} \models \langle\langle \text{thematic}, s' \rangle\rangle)$,
 $z : (s_{utt} \models \langle\langle \text{third}, z \rangle\rangle) \cap (s' \models \langle\langle \text{neuter}, z \rangle\rangle \wedge \langle\langle \text{sg}, z \rangle\rangle)$,
 $u : (s_{utt} \models \langle\langle \text{third}, u \rangle\rangle) \cap (s' \models \langle\langle \text{male}, u \rangle\rangle \wedge \langle\langle \text{sg}, u \rangle\rangle)$
 $(s' \models \langle\langle \text{wallet}, i:z, \text{possessor}:u \rangle\rangle)$
- c. $s'' : (s_{utt} \models \langle\langle \text{thematic}, s'' \rangle\rangle)$,
 $v : (s_{utt} \models \langle\langle \text{point-at}, \text{pointer:speaker}(s_{utt}), \text{pointed}:v \rangle\rangle)$,
 $w : (s_{utt} \models \langle\langle \text{third}, w \rangle\rangle) \cap (s'' \models \langle\langle \text{male}, w \rangle\rangle \wedge \langle\langle \text{sg}, w \rangle\rangle)$
 $(v \models \langle\langle \text{person}, w \rangle\rangle)$

The truth conditions for (7') are the following: (a) There is a situation s that is thematic in the utterance situation and in s a third person male y who lost some singular object x ; (b) there is a thematic situation s' and in s' some singular wallet z belonging to a third person male u ; (c) there is a thematic situation s'' and some v pointed at by the speaker and in s'' some singular male w such that v supports the infon that w is a (male) person, i.e., a man. If we reduce (7') to its maximally coherent form, identifying all compatible parameters and thereby resolving the anaphora, and if we pack non-focused propositions into the restrictions on the parameters of the focused one, as we did above in (2'), the result is (7''):

- (7'') $s : (s_{utt} \models \langle\langle \text{thematic}, s \rangle\rangle)$,
 $x : (s_{utt} \models \langle\langle \text{third}, x \rangle\rangle) \cap (s \models \langle\langle \text{neuter}, x \rangle\rangle \wedge \langle\langle \text{sg}, x \rangle\rangle)$,
 $y : (s_{utt} \models \langle\langle \text{third}, y \rangle\rangle \wedge$
 $\langle\langle \text{point-at}, \text{pointer:speaker}(s_{utt}), \text{pointed}:y \rangle\rangle) \cap$
 $(s \models \langle\langle \text{male}, y \rangle\rangle \wedge \langle\langle \text{sg}, y \rangle\rangle \wedge \langle\langle \text{wallet}, i:x, \text{possessor}:y \rangle\rangle) \cap$
 $(y \models \langle\langle \text{person}, y \rangle\rangle)$
 $(s \models \langle\langle \text{lose}, \text{possessum}:x, \text{possessor}:y \rangle\rangle)$

(7'') is true if there is some thematic situation with some non-speaking, non-addressed singular thing and some non-speaking, non-addressed singular male pointed at by the speaker where the former is a wallet possessed by the latter who is a man, such that in that situation the former got lost to the latter. Conceivable paraphrases are 'Speaking about a wallet possessed by this man here, it got lost to him' or, keeping the postspecifying order, 'It got lost to him, where 'it' means a wallet owned by him and 'him' means this man here.'

A comparison with the English translation shows that the conveyed information is the same, whereas the way its organization is encoded differs. In both languages, the relations of getting lost, of being one's wallet, and of being a man are expressed, and the focal role of the first one is opposed to the background role of the latter ones. But the difference between focus and background information is encoded in Cayuga by the difference between first and non-first position in the sentence, whereas in English, it is expressed by the difference between verbal and nominal encoding.

A closer examination of (7'') shows that the propositions which play a role in restricting the three parameters in the main proposition fall into three categories according to what kind of entity supports the corresponding infon: The utterance situation, the thematic situation or a thematic object. The question is, if one wants to challenge Olson's choice, if we couldn't do equally well without the last type. I think we could do without the last type, but we couldn't do equally well. Suppose we replace the last restricting proposition by ($s \models \langle\langle \text{person}, y \rangle\rangle$). Then we can conjoin its infon with the three infons of the preceding proposition and we are left with two kinds of information about y : Infons supported by the thematic situation and infons supported by the utterance situation. And now the difference between the Olsonian (7'') and its alternative becomes visible: The alternative would entail nothing about the personhood of y in other situations than s , not even in the possibly different s_{utt} , whereas (7'') entails that y is a person by virtue of its identity, independent of the situation in which y happens to be, and as a result also in s_{utt} . So Olson's choice seems to be especially welcome for those propositions that ascribe non-changing properties to objects.

But was it necessary in order to reach this conclusion to travel so far to the Cayuga Indians? Of course it was not, at least epistemologically, but it certainly was psychologically helpful to gain some distance from the well-known and to look at unfamiliar languages first before coming back to the familiar ones. Now we can see that we could have gained the same insight from a thorough investigation of English sentences like "This here, it is a blackboard" or "This is a blackboard." But that's the way it sometimes is with traveling: Its pay-off comes less from having seen the foreign country with your own eyes than from being able to see your own country with foreign eyes.

6 Summary

Now it is about time to return from Ontario and to ask ourselves whether and how our imaginary trip has fulfilled the three purposes stated at the beginning of the third section.

First, we wanted to find out whether Situation Semantics is flexible enough to deal equally well with Cayuga as with English, and I think we

can say that the little evidence we could gather on the short field trip does not contradict this assumption. On the contrary, what we found supported the view that idealized languages of the Iroquoian type are even easier to handle, since the difference between verbal and nominal encoding of relations vanishes on the semantic level anyway. And this is true not just for Situation Semantics, but for most formal theories of meaning.⁷

Second, we wanted to know whether Iroquoian could better be analyzed with a theory incorporating Olson's choice, and what we found out seems to support this hypothesis. But again, our findings are not restricted to the special pairing of Situation Semantics with Cayuga. This time, we could replace Cayuga by any natural language, and argue that propositions of the form 'this is an x' are most naturally conceived of as containing a thematic case, which may at least equally well be an object as a situation, and which should be chosen according to the life-span of the validity of this property ascription.

Third, concerning the Humboldt-Sapir-Whorf hypothesis concerning the impact of linguistic structure on the ways humans carve up their world, our trip was rather inconclusive, but from the few examples we have looked at, it looks like even such a dramatic difference as the lack of lexical complements and noun phrases may force speakers to organize the information they want to convey in different ways, but it does not force or even induce them to see the world differently. As an exercise the reader may try to speak English the Cayuga way, replacing for instance 'Let us eat the pie which I have baked' by 'Let's eat it. I have baked it. It pies' and so on. My prediction is that he will develop, if he does this for a sufficiently long period, a different style of communicating, but not a different perspective on the world. This is a Gedankenexperiment, and as such, it may help to assess plausibilities, not more. But if the conjecture it suggests can be corroborated, then we have to conclude that at least that part of the Iroquoian perspective which is induced by its sentence structure differs from the European one only with respect to the style of linguistic communication, without any further far-reaching consequences.

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⁷Just as a reminder: Montague (1974) had to distinguish two categories, *t/e* (intransitive verb phrases) and *t//e* (common noun phrases) as English counterparts of the semantic type $\langle\langle s, e \rangle, t \rangle$ of properties. For an idealized language of the Iroquoian type, this distinction could simply be dropped.

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