2. First steps into syntax

CAS/GS LX 454/754: Acquisition of Syntax

Fall 2019, September??

The syntax of the young

To the extent we care about syntax and about evidence for "early accessibility to UG" (at least to the extent that it concerns syntax), we don't really have much evidence prior to about 1;6, when children start using multiple-word utterances.

Younger than that, there are milestones and a developmental sequence, but they may arguably be not domain- or species-specific. Categorial perception, identification/discrimination of native language and mother's voice, etc. Production of vowels, then consonants, then syllables, zeroing in on the target inventory.

So, we're going to focus on something like 1;8 to 2;6.

Timeline

Around 1;6, multi-word utterances, but "telegraphic," lacking function words.

Around 2;0, grammatical bits start showing up, quickly. Subject-verb agreement, case-marked nouns, object clitics, subordinate clauses. And also the placement of verbs, which we'll return to. And evidence of structure dependence.

By around 3;0, children have probably most of the grammatical devices evident in their speech.

Arrival of grammatical knowledge

Two (among variations) approaches to understanding children's early knowledge of grammar:

One possibility: Children have access to grammatical knowledge, UG.
Sub-possibility 1a: Always.
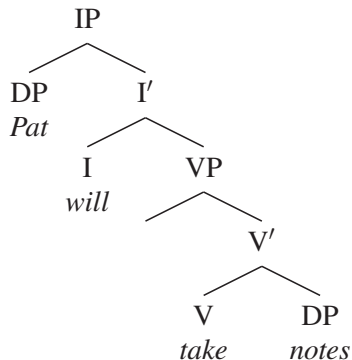Sub-possibility 1b: Maturationally.
Another possibility: Child syntax is not like adult syntax, adult grammar replaces child pseudo-grammar.

There is also an Occam's Razor angle as well—we know we need the adult mechanism, for adults. Do we need to hypothesize children learn a second one first, then abandon it? Though it does seem like there is some kind of qualitative shift at around 1;6.

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Child syntax
Setting parameters

English and the basics
Variation and the head-parameter
French and verb-raising
German and verb-second (V2)
Word order parameters and acquisition

A simple English sentence

This is where we'll start in terms of the structure of simple English sentences.

IP
├── DP
│   *Pat*
└── I′
    ├── I
    │   *will*
    └── VP
        └── V′
            ├── V
            │   *take*
            └── DP
                notes

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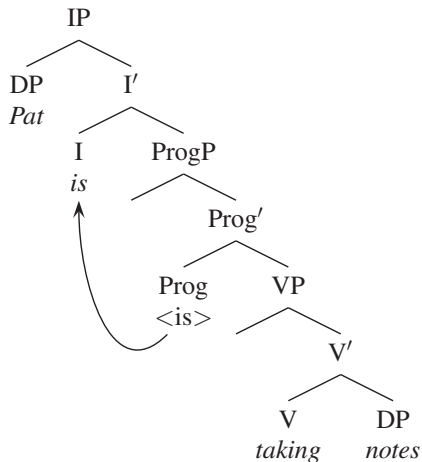Word order parameters and acquisition

Auxiliaries

To express aspect (complex tenses), English makes use of "auxiliaries"—like those "helping verbs" *have*, *be*, etc.

We will incorporate auxiliaries into the structures by giving them a specific phrase. So, for the progressive *be*, a "ProgP."
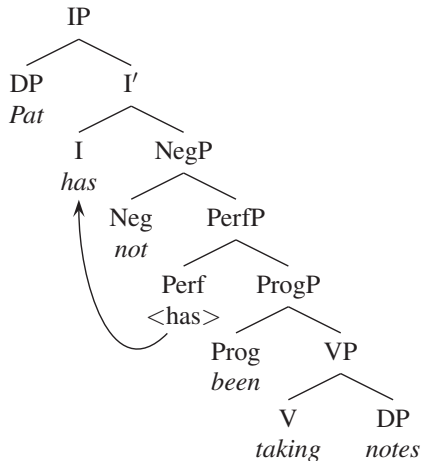
We will also assume that these *move* from their initial position up to I.

IP

DP *Pat*   I′

    I *is*   ProgP

        Prog′

        Prog ⟨is⟩   VP

               V′

               V *taking*   DP *notes*

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Verb movement

One of the reasons to assume
that auxiliaries move in English
has to do with the fact that they
are pronounced *before* the nega-
tion *not*, although there is rea-
son to believe that the NegP for
not is right under IP.

Also, it will be common to ab-
breviate trees by not drawing
specifiers when there is nothing
in them, as here.

```
                IP
              /    \
           DP       I'
           Pat     /  \
                  I     NegP
                 has   /    \
                    Neg      PerfP
                    not     /     \
                        Perf       ProgP
                       <has>      /     \
                               Prog      VP
                               been     /  \
                                       V    DP
                                    taking  notes
```

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Main verbs vs. auxiliaries in English, and *do*

Main verbs in English differ from auxiliaries in that they *do not* move up to I. Only auxiliaries move up to I. So, in these cases, where there is something like *not* between I and V, we insert the "dummy auxiliary" *do*.

Occasionally "not moving" might also be referred to as "covert movement" but for the moment we will just take that to be two names for the same thing.

```
            IP
          /    \
        DP      I′
        Pat    /  \
              I    NegP
             did   /  \
                 Neg    VP
                 not   /  \
                      V    DP
                    take   notes
```

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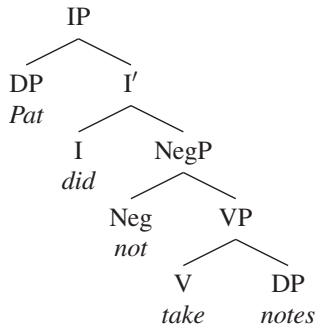
Crosslinguistic variation

The general program takes the basic syntactic structure of all languages to be pretty similar. So, for the most part, the syntax of French, Chinese, Spanish, etc. is just like what we just saw for English.
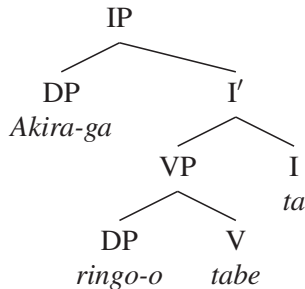
A lot of languages differ from English-type languages in that the object comes before the verb. Japanese, Korean, Turkish are languages like this ("SOV" languages). English, Chinese, French are "SVO" languages.

It is a very strong tendency for languages that put the verb after the object to actually put *all* complements after the heads.

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A simple Japanese sentence

A sentence like "Akira-ga ringo-o tabe-ta" ('Akira ate an apple') in Japanese would wind up looking something like this, where the heads are all to the right of their complement.

This is a big parameter of variation between languages: A language is either **head-initial** (like English) or **head-final** (like Japanese). So when a child is acquiring a language, this is something that must be determined about the target language.

```
            IP
          /    \
        DP      I′
     Akira-ga  /  \
             VP     I
            /  \    ta
          DP    V
       ringo-o tabe
```

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Verb-raising languages

Another difference between languages in terms of word order has to do with what verbs move to I. In English, just auxiliaries move to I, main verbs don't.
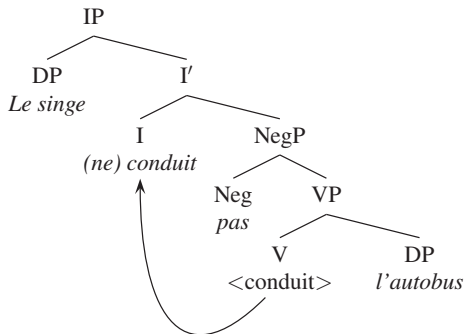
In French, *all* verbs (main verbs and auxiliaries) move to I. This is diagnosed by the fact that *pas* 'not' comes after both tense auxiliaries and after tensed main verbs.

(1)   a. Le singe   (n') est pas sur la branche.
          The monkey   is not on the branch.
          'The monkey is not on the branch.'

      b. Le singe   (ne) conduit pas l'autobus.
          the monkey   drives not the-bus.
          'The monkey isn't driving the bus.'

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Main verb raising in French

So this is another way languages can differ: main verbs move to I (French), or not (English).

Here is what a French sentence with a main verb raising to I looks like.

```
            IP
          /    \
        DP       I′
    Le singe    /  \
              I     NegP
        (ne) conduit  /  \
                   Neg    VP
                   pas   /  \
                        V    DP
                   <conduit> l'autobus
```

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V2 languages

Languages like German present a special kind of case. In German, the tensed verb or auxiliary is always *second* (hence: "verb second" or "V2"). The constituent that comes before the tensed form can be nearly anything: the subject, the object, an adverb. There must be something there (so the verb can be second), but this makes the word order of German relatively freer.

(2) a. Ein Buch kaufte Johann.
         a   book bought Johann.
         'Johann bought a book.'

     b. Johann kaufte ein Buch.
         Johann bought a   book.
         'Johann bought a book.'

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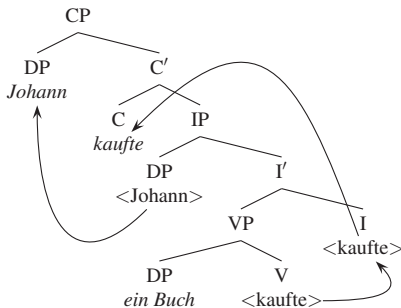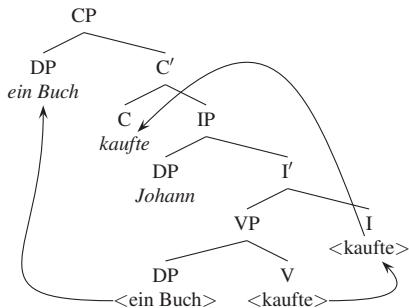Word order parameters and acquisition

The parameters of German

Apart from the fact that the verb comes second, German is otherwise generally an SOV language, where the head follows the complement.

The usual analysis of V2 languages is that the tensed verb moves all the way up to C, and the thing in "first position" is sitting in the specifier of CP. CP is also unique among the syntactic phrases in having its head before the complement.

So, generally, the bottom of the tree looks just like Japanese, but the addition of CP at the top derives V2. Actually much in the same way as in English questions ("What did John buy?") or negative inversion ("Never have I seen such a thing.")

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German OVS and SVO sentences

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Summary of verb movement possibilities

So, there are several different categories languages fall into, based on the properties of verb movement and head-complement order.

- Auxiliaries, not main verbs, move to I (English).

- Auxiliaries and main verbs move to I (French).

- Auxiliaries and main verbs move to C (German).

- Heads precede complements (SVO: English, French).

- Heads follow complements (SOV: German, Japanese).

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Parameters and acquisition

Language acquisition has seemingly paradoxical properties, but we can make sense out of them in terms of principles and parameters.

- Children acquire languages quickly.
- The effects of the environment are relatively limited.
- Languages differ.
- Children acquire the language(s) in their environment.

We can view language as a largely constant system across humans (the "principles"), with a limited number of points where variation is possible (the "parameters"). Like those we've been discussing (head-complement order, verb raising). Part of acquisition is "setting" the parameters for the target language.

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Missing morphology and auxiliaries
Differentiating finite and non-finite forms
Evidence for functional structure

Missing morphology and auxiliaries

Early on, it's common to find (English-acquiring) children saying things without the appropriate verbal morphology, modals, or auxiliaries.

(3)	a.	Papa have it.	(Eve 1;6)
	b.	Cromer wear glasses.	(Eve 2;0)
(4)	a.	Eve gone.	(Eve 1;6)
	b.	Eve cracking nut.	(Eve 1;7)
(5)	a.	That my briefcase.	(Eve 1;9)
	b.	You nice.	(Sarah 2;7)
(6)	a.	Fraser not see him.	(Eve 2;0)
	b.	Where ball go?	(Adam 2;3)

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Small trees?

The things that children are leaving out look like the things that are associated with I (tense, agreement, modals, auxiliaries). This led to one hypothesis about what's going on in children's language in this early stage.

Small clause hypothesis

Children's syntactic structures are initially just VPs (no IP etc.)

The idea is that all of the "functional" (vs. "lexical") material is missing in child syntax, and the tree kind of grows taller as the child does.

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Missing morphology beyond English

In English, we find verbs missing morphology as we saw. In a lot of other languages, we find something similar, although it seems like it is not really *missing* morphology, but rather *infinitive* ("non-finite") morphology. That is, the kind of verb form you get in English after *to*.

(7) Dormir petit bébé.
    sleep-INF little baby
    'Little baby sleep.'   (Daniel [Fr] 1;11)

(8) Earst kleine boekje lezen.
    first little book read-INF
    'First (I/we) read little book.'   (Hein [Du] 2;6)

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Variation with finite verbs

At the same time, children also seem to sometimes use correctly finite (tensed, agreeing) verbs as well. Sometimes the tense/agreement morphology is missing, sometimes it isn't.

(9)   Dort   bébé.
       sleeps baby
       'Baby sleeps.'   (Daniel [Fr] 1;11)

(10)   Hij doet   't niet.
       he makes it not
       'He does not make it'   (Hein [Du] 2;4)

This could either mean that children can't tell the difference between finite and non-finite, or that sometimes their trees are just VPs and sometimes they're taller.

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Adult differences between finite and non-finite verbs

In adult French, infinitives come *after* negative *pas*, not before—that is, infinitive verbs don't move to I. In adult German, infinitive verbs don't move to C.

(11) ... um   nicht ze essen
        in-order-to not   to eat
        '...in order not to eat'   (German)

(12) ... pour   ne pas   manger
        in-order-to not eat-INF
        '...in order not to eat'   (French)

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Verb placement in child French

Although they will sometimes fail to make a verb finite, leaving it in the infinitive form, French children seem to put infinitives where infinitives go. (Pierce 1992)

(13) Pas manger la   poupée.
      not eat-INF the doll
      'The doll does not eat.'   (Nathalie 1;9)

(14) Elle roule pas.
      it   rolls not
      'It does not go.'   (Grégoire 1;11)

	Finite	Non-finite
verb-neg	173	2
neg-verb	9	122

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Verb placement in child German

The same holds of child German as well (Poeppel & Wexler 1993).
Finite verbs are in second position, non-finite verbs are in final
position.

(15) Thorsten Caesar   haben.
      Thorsten C.(=doll) have-INF
      'Thorsten has the doll'   (Andreas 2;1)

(16) Eine Fase hab ich.
      a   vase have I
      'I have a vase.'   (Andreas 2;1)

	Finite	Non-finite
V2	192	6
V-final	11	37

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Missing morphology and auxiliaries
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Evidence for functional structure

Evidence for functional structure

The syntax of V2 for adult speakers is relatively complicated—and there is evidence that the German children are really putting the verb in second position. And that requires at least CP. For French, children move the verb past negation, which requires at least IP.

German V2: When a verb is nonfinite, children will only put a subject in first position, though when the verb is finite they allow either subjects or other things in first position (like adults)

	Finite	Non-finite
S–V	130	24
XP–V	50	0

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The "full competence hypothesis"

Partly on the basis of this German data, Poeppel & Wexler (1993) propose an alternative to the small clause hypothesis.

The full competence hypothesis

Children have full knowledge of the universal principles and processes that underlie clause structure—in particular, the abstract functional categories and the principles and processes that govern them.

The idea here is children are producing V2 clauses even when they are 2 years old, and the best grammatical model we have of V2 is the one proposed for adults, with all of the functional structure, head movement, the works.

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The machinery of acquisition
The subset principle

The child's task

If we suppose, following the full competence hypothesis, that children basically already have the principles of grammar going into acquisition, then the task of language acquisition is essentially to analyze the language that they hear in their environment (sometimes "Primary Linguistic Data" or "PLD") and set their parameters accordingly.

- Do complements precede or follow the head?
- Do auxiliaries move to I?
- Do main verbs move to I?
- Do finite forms move to C?
- . . .

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The language acquisition device

Implicit in this view is the fact that—over and above the basic structure of language knowledge—there is some kind of procedure/knowledge that children have that allows them to extract the information from the PLD and set the parameters. The "Language Acquisition Device" (or "LAD") as it is sometimes called.

- UG constrains the "shape" of language knowledge.
- LAD sets the parameters of individual grammars from PLD.

To the extent that there is a "critical period," it would seem that it is (aspects of) the LAD that is affected.

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LAD vs. UG

There are a couple of possibilities at this point about the relationship between LAD and UG and our knowledge of language. People have taken different views on this question, sometimes just implicitly.

It could be that the reason language knowledge has the "shape" it does is that this is how the LAD "formats" it—that is, there are no constraints on knowledge apart from those imposed by the acquisition device itself. This was a common kind of view early on, but it does have strong implications for adult second language acquisition. Once LAD is gone, acquiring native-like language knowledge becomes impossible. Much early research on second language acquisition concerned itself with whether "UG remains accessible" but it conflates somewhat the concepts of UG and LAD, and will make more sense if we keep the two apart.

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Parametric subset relations

When determining whether a language is head-initial or head-final, this is (given many assumptions) relatively straightforward. But there are other parameters of variation that (appear to, at least) have the property that one setting produces a subset of the other setting.

A relatively simple example is the "null subject parameter" which differentiates Spanish and English. In English, all sentences must have a subject, and if there is no logical subject, *it* is often used: *it's raining*. In Spanish, the subject can be left out, and so there is no analog to English *it*: *Llueve*.

Explicit (overt) subjects are *allowed* in Spanish too, though.

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Error-driven language acquisition

While the child navigates the "parameter space" we might suppose
that s/he observes the language in the environment, and compares it
against what his/her current grammar provides for. If the input cannot
be generated by his/her grammar, then some parameter should be
"switched."

The problem is: if the child has a "Spanish" (null subject) grammar,
nothing the child could ever hear would refute the hypothesis that null
subjects are allowed, even if the child is supposed to be acquiring
English. Sure, s/he never hears any null subjects, but everything s/he
hears is possible in his/her grammar.

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The subset principle

This leads to the presumption that language acquisition adheres to
"the Subset principle." That is: never *start* with Spanish, because you
can't get from there to English. Start with English, and if you hear
null subjects, switch to Spanish.

The subset principle

The language acquisition device selects the most restrictive
parametric value consistent with experience.

There are complex issues here about what kind of evidence a child
might be looking for ("triggers") when determining the parameter
settings of the target language. For later. Also, we'll come back in
some detail to the null subject parameter. Later.