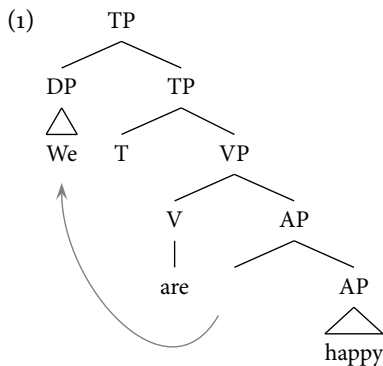


Them Chains, them chains

Arguments and Acquisition
20 November 2013

There are facts which can be interpreted as evidence that A movement is not fully acquired at some stage in children's development. Maybe, for instance, that is why "actional passives" are not permitted. The Borer and Wexler (1987) account of the passive trajectory is that the thing young children have are always adjective and not verbal passives. If A movement is not available to these children, this would account for the absence of verbal passives, as that is a necessary ingredient in its syntax. But it wouldn't fully explain why adjectives are available, as this is also a construction in which A movement seems necessary for its syntax.



More generally, since *most* sentences involve A movement of the subject argument, most sentences would be outside the reach of young children if they cannot do A movement. So we need something more nuanced.

Here is Wexler (2004)'s way of accounting for this.

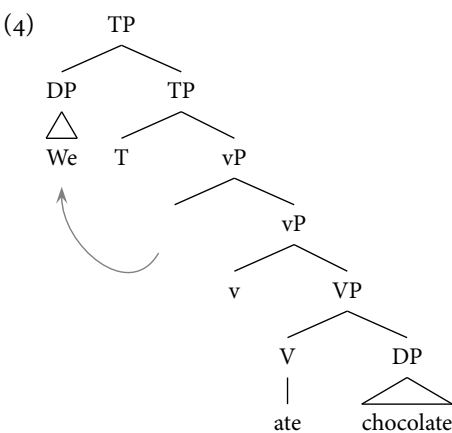
(2) Universal Phase Requirement

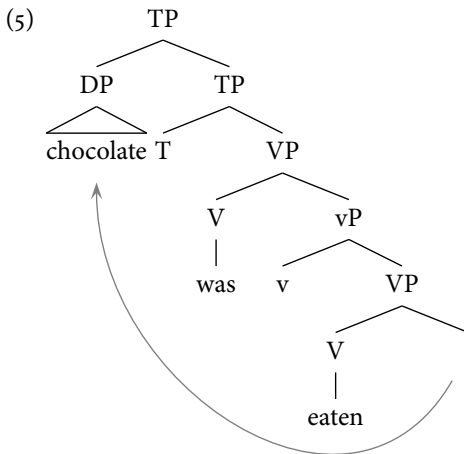
Both transitive and intransitive v defines a phase until ≈ 7 year old

Presupposed syntax:

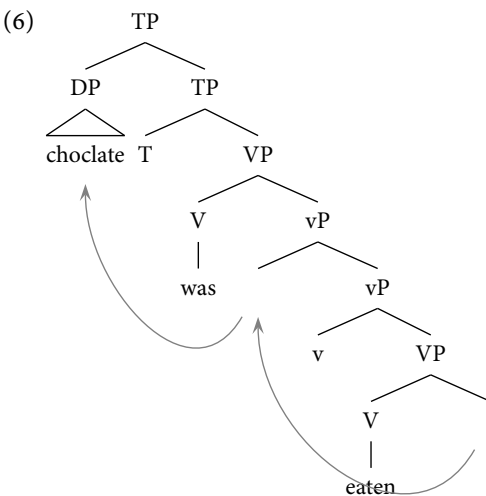
- (3) A DP that is within a phase, α , cannot A move into a position outside of α unless it is in the Specifier of α .

We should expect children who suffer UPR to allow (4), then, but not (5).





Of course we also need to make sure that (6) is blocked.



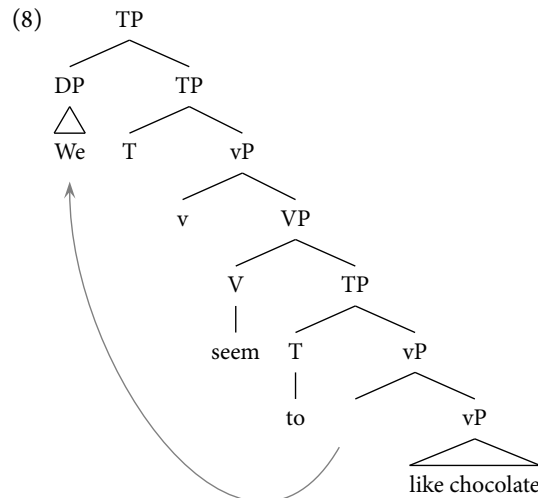
So, in addition, we need something like:

(7) No Cycle

Children cannot do successive cyclic movement (alt: there are no intermediate traces) until ≈ 7 .

Depending on the details, perhaps No Cycle could be considered sufficient.

This predicts, then, that movement of all varieties should be absent for the same kids that do not have “actional passives,” unless the moved item is moved from the Specifier of the phase(s) that contain them. I suppose this means that at the same ages we should expect no long wh-movement. We should also expect that raising should be absent.



Hirsch and Wexler (2006) argue for this conclusion and for the conclusion that raising is absent at roughly the same time that passives don't work.

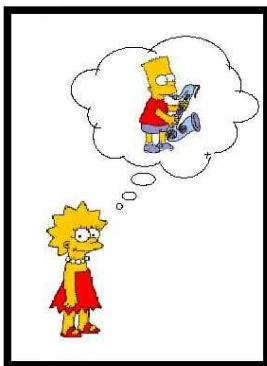
They searched all utterances in the CHILDES database as of 2004 – a database for 1051 English-speaking kids – for occurrences of *seem*. There were 448 analyzable, child-directed utterances containing *seem*. This makes *seem* more common than *hug*, *lift*, *feed* and *crawl*. They also claim that 87% of these were instances of raising. By contrast, they found only 33 non-repetitive analyzable instances of *seem* in the children's speech. A similar discrepancy is not found for *carry*, *climb*, *crawl*, *feed*, *hug*, etc. Of these 33, only 11 occur in children younger than five. All of these involve small clauses *that seems fun*. The infinitival complement cases only appear in older children.

They also did a comprehension study of raising for children ranging in ages from 3 to 9. In the study, kids were presented with the following kinds of sentences and then asked to choose between two pictures intended to be described by the sentences.

- (9) a. Homer is eating a sandwich.
 b. Lisa thinks that Bart is playing an instrument.
 c. It seems to Homer that Marge is pushing a cart.
 d. Homer seems to Maggie to be bowling a ball.

So for instance, the picture below was paired with the following sentences.

- (10) a. Lisa thinks that Bart is playing an instrument (think condition)
 b. It seems to Lisa that Bart is playing an instrument (unraised condition)
 c. Bart seems to Lisa to be playing an instrument (raised condition)



And the foils were pictures that mix up the arguments in one of the following ways.

- (11) a. Bart playing a sax, thinking about Lisa. (Matrix reversals)
 b. Lisa playing the sax, thinking about Bart. (Embedded reversal)
 c. Bart thinking about Lisa playing the sax. (Double reversal)

All their raising sentences had indirect object *to* phrases in them because they wanted to control for the problem that (12) might be interpreted by children that didn't comprehend what *seem* meant as (13).

(12) Bart seems to be playing a sax.

(13) Bart be playing a sax.

They used the *think* sentences as a test that the kids they examined had theory of mind and could otherwise understand what *seem* should mean. The transitive sentences were put in there to make sure that the kids were paying attention.

They recruited 10 children in each of 7 age groups. The following table shows the percentage of correct picture choices in each of the conditions, irrespective of foils.

	Age	Active	Think	Unraised	Raised
	3	100%	88.3%	85.6%	43.9%
	4	99.2%	92.8%	88.9%	45.6%
(14)	5	99.2%	95.6%	92.8%	44.4%
	6	99.2%	95.6%	91.7%	51.7%
	7	100%	96.1%	96.7%	71.1%
	8	99.2%	98.3%	98.9%	75.6%
	9	100%	100%	98.9%	92.2%

Ages 3-7, the Raised condition did not vary from chance, with only a 6/7% increase in performance.

Children do reasonably well (>75% correct) on all foil types with *think* and *unraised* conditions, with the greatest difficulties being the Matrix reversals. If you look just at matrix reversals, however, the foils for both these conditions lead to about 50 or 60% mistakes for the 3 year olds. They conclude that children younger than 4 might not know the meaning of *think* or *seem*.

For the raising condition, children prefer the Double Reversal foil to the target picture. That isn't true for the other foils. They conclude that children aren't guessing when confronted with the raising sentences. Nor are they ignoring *seem* and the root subject. They suggest that they are interpreting *Bart seems to Lisa to be playing an instrument* to mean *Bart thinks Lisa is playing an instrument*.

These same 70 kids were also (2 weeks later) tested for knowledge of passives.

(15) actional verbs: *kick, hold, push, kiss*

(16) psychological verbs: *remember, love, hate, see*

Eight items were constructed for active, and 16 for passives. All were semantically reversible. The pictures they chose between were "opposite."

Here are the results.

	Age	Actional Actives	Psych Actives	Actional Passives	Psych Passives
	3	96.3%	98.8%	65.6%	38.1%
	4	95%	98.8%	86.3%	50%
(17)	5	97.5%	98.8%	92.5%	58.8%
	6	97.5%	98.8%	89.4%	45.6%
	7	97.5%	97.5%	95.6%	75.6%
	8	100%	98.8%	92.5%	82.5%
	9	100%	100%	95%	90.6%

If one compares the psychological passives with the behavior of kids on raising, when just the Matrix Reversal and Embedded Reversal are considered, one finds a similar slope. Between the 6th and 7th years, kids get both of these constructions.

Orfitelli (2012)'s studies this question and largely replicates the Hirsch and Wexler findings But interestingly, she finds that not all instances of Raising are delayed. Let's look at some of her studies.

53 monolingual English speaking children, 10 in each age group ranging from 4 to 6 years of age. There were two to three testing sessions with no longer than one week between tests. Five adults (mean age 26.2) were given the same tests.

Experiment 1 was a Truth-Value Judgment task that tests children's knowledge of raising with *seem*. The subject observes a story and then comments on whether a nearby puppet's comments about the story are true or not. There were six stories, each involving two pictures and an accompanying story.

In one story, for instance, the first picture shows a white dog standing next to a lamp that is shining purple light. In the second picture, the dog steps into the light, and all but the tail of the dog appears purple. The puppet asks the children "What color is the dog in real life?" and "What color does it look like the dog is?" to make sure the children understand the scenario. Then the first picture is removed and the puppet makes one of the following comments about the second picture.

		true test item	false test item
(18)	copula	The dog really is white	The dog really is purple
	unraised	It really seems that the dog is purple	It really seems that the dog is white
	raised	The dog really seems to be purple	The dog really seems to be white

In a second story, the scenario had a picture of a man standing outside a house and holding a hose that "rains" water in front of the window. It is a sunny day. The second picture shows a woman inside the house looking out of the window. The view through the window shows what looks like rain outside. The puppet's comprehension questions are "In the story, what is the weather like outside?" and "In the story, what does it look like the weather is like outside?" Then the puppet says one of the following.

		true test item	false test item
(19)	copula	It really is sunny	It really is rainy
	weather it	It really seems to be rainy	It really seems to be sunny

21 children tested did not meet criterion on the unraised condition, which they interpreted as evidence that they did not understand the meaning of *seem*. 2 other children were thrown out because they failed to answer correctly for the copula condition. This left the 30 children in the study. Their findings:

		Raising			weather it		
		AC (7-8)	C (2-6)	BC (0-1)	AC (7-8)	C (2-6)	BC (0-1)
(20)	4 year olds	0	1	9	0	1	9
	5 year olds	1	2	7	1	2	7
	6 year olds	7	0	3	7	9	3

AC= Above Chance C = Chance BC = Below Chance

They do badly at raising until their 6th year, and that is irrespective of whether what's moving is an argument or a weather *it*. This is consistent with what we saw in the Hirsch and Wexler study. Notice that in the examples of this study, there is no *to* phrase.

Experiment 2 studied whether children had similar difficulty understanding the raising construction in (21)

(21) The snow is about to fall.

Are these really raising constructions? Yes.

(22) a. It_i is about [*t*₁ to seem that children are daft].

compare:

b. * It wanted [PRO to seem that children are daft].

This study similarly involved scenarios with two pictures and a story. Picture one, for instance, would show a clean beautiful pig standing in a field, and the experimenter would say that the pig loves rolling in mud, and that he "will roll in the mud in just a moment." The second picture shows the pig covered in mud, on its back in the filth. Similarly, in a scenario involving weather, picture one shows a town in a pretty valley with dark clouds in the sky. The experimenter

says that the dark clouds in the winter time are a sign that snow will fall very soon. The second picture shows the snow falling. Children were presented with two comprehension questions: “Which picture shows right before it happened?” and “Which picture shows it happening?” The test sentences were applied to either the first or the second picture, and they were:

		test sentence	1 st picture	2 nd picture
(23)	progressive	The pig is playing in the mud	False	True
	raised	The pig is about to be playing in the mud	True	False
	copular “weather”	It is snowing	False	True
	raised “weather”	It is about to be snowing	True	False

All but one child met criterion, and so 52 kids were tested. Children of all age groups were ridiculously good at all types of sentences.

To control for the possibility that children used a control structure for these examples, in Experiment 4, Orfitelli replicated this study with an inanimate subject. In that experiment, the two pictures involved a ball that is starting at the top of a hill enduring wind, and a following picture in which the ball is rolling down the hill. The test sentences were:

		Test sentences	1 st picture	2 nd picture
(24)	present progressive	The ball is rolling down the hill	False	True
	future progressive	The ball will be rolling down the hill	True	False
	raised	The ball is about to be rolling down the hill	True	False
	weather <i>it</i>	It is about to be rainy	True	False

Only 3 children failed control. The rest, irrespective of age, are ridiculously good. (They are very slightly less good in the age 4 and 5 categories.) She concludes that Control cannot be used in these examples and therefore Control cannot be what is responsible for children’s good performance on these tasks.

In addition to *be about*, she also tested children on sentences like (25).

(25) The flower tends to be touching the ground.

She tested 30 monolingual children that were in two groups: 5 and 6 year olds, each with 15 kids. She used a Truth Value Judgment test, where the children were presented with two pictures and a puppet making a comment about the picture. Because she assumed that kids would not know the meaning of *tend*, teaching the kids what *tend* means was also part of the set up. The training used three pairs of pictures and sentences like (26).

(26) It tends to be true that apples are red.

An example of the setup is this. There are two pictures, one of a flower growing out of the ground and another of the flower floating in the air. The experimenter says of the first picture “most of the time, flowers are touching the ground.” Of the second, the experimenter says that what is happening is unusual. As in the other experiments, the experimenter asks the child “which picture shows what happens on most days?” and “Which picture shows what is happening right now?” The test sentences are in (27), which are directed at the second picture, are (27).

		true test item	false test item
(27)	progressive	The flower is flying through the air	The flower is touching the ground
	habitual adverb	On most days, the flower is touching the ground	On most days, the flower is flying through the air
	raised	the flower tends to be touching the ground	The flower tends to be flying through the air
	raised weather <i>it</i>	it tends to be sunny	It tends to be rainy

The progressive and habitual adverb sentences were the controls. 14 children were eliminated from the study because they did not behave about chance on these tasks, leaving the 30 that were studied. Five year olds were not as good with these tasks as they were with *be about*. Indeed as a group, they did not perform above chance. But if you look at the individuals, the majority of them did.

		raised			weather it		
		AC (7–8)	C (2–6)	BC (0–1)	AC (7–8)	C (2–6)	BC (0–1)
(28)	5 year olds	11	4	0	10	5	0
	6 year olds	14	1	0	14	1	0

AC = above chance C = chance BC = below chance

Of the four five-year olds that performed at chance, three of them answered correctly 6 out of the 8 items. She concludes that they hadn't finished learning *tend*. We might also note that the task is likely harder in this condition.

Experiment 3 tests children's comprehension of verbal passives. It is a picture matching test. Children are asked to choose between 2 pictures which used thought bubbles in a fashion like that described for Hirsch and Wexler. The test sentences had three conditions, and for each there was an "actional" and "non-actional" verb. Here are a sample of the test sentences.

		test sentence	
(29)	active	Kermit pushes Miss Piggy	actional
		Kermit remembers Miss Piggy	non-actional
	short passive	Miss Piggy is pushed	actional
		Miss Piggy is remembered	non-actional
	long passive	Miss Piggy is pushed by Kermit	actional
		Miss Piggy is remembered by Kermit	non-actional

The actives were used as controls, and only one child was removed for failing the control. Here are the results.

		active		short passive		long passive	
		actional	non-actional	actional	non-actional	actional	non-actional
(30)	4 year olds	99%	96%	80%	34%	82%	38%
	5 year olds	97%	97%	96%	47%	92%	39%
	6 year olds	100%	100%	100%	79%	100%	82%

In the 6 year old group, four children were performing at chance, the remaining 6 were above chance.

Importantly, the children who performed badly in the *seem* examples in experiment 1, did comparatively badly on the non-actional passives, but great on the *be about* cases.

		<i>seem</i>		<i>be about</i>		non-actional passive	
		raised	weather-it	raised	weather-it	long	short
(31)	4 year olds	0	0	10	10	0	0
	5 year olds	1	1	10	10	1	1
	6 year olds	7	7	10	10	7	6

numbers of children showing above chance performance

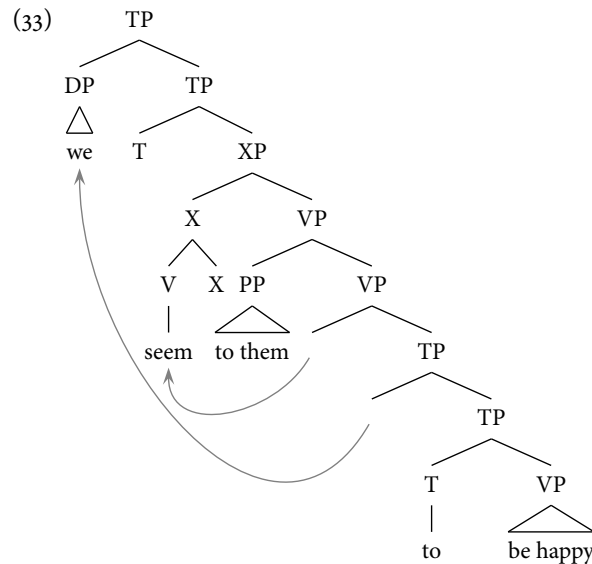
Pretty tight fit.

In place of Wexler's UPR, Orfitelli suggests that there is a constraint that prevents A movement over an intervening argument. We posit a constraint of the sort in (32).

(32) Intervention

If X A-moves from position A to position B, then there may be no Argument C such that A c-commands C and C c-commands B.

Intervention blocks the movement of *we* in (33).



Of course, this is perfectly grammatical in English. But in many closely related languages it isn't.

- (34) a. * Este taxista₁ parece a María [_{t₁} estar cansado.]
 this taxi driver seems to Mary [_{t₁} to be tired.]
 'This taxi driver seems to Mary to be tired'
- b. * Hestarnir₁ virðast mér [_{t₁} vera seinir.]
 the horses seem me-dat [_{t₁} to be slow.]
 'the horses seem to me to be slow.'
- c. * Gianni₁ sembra a María [_{t₁} essere stanco.]
 John seems to Mary [_{t₁} to be ill.]
 'John seems to Mary to be ill.'

One reason for thinking that it is the indirect object's presence in these examples that is making the movement of the subject ungrammatical is that when this indirect object is moved out of the way, in some of these languages the sentences become grammatical. That is true for Icelandic and Italian, for instance (though not Spanish).

- (35) a. * Este taxista₁ me parece [_{t₁} estar cansado.]
 this taxi driver me-dat seems [_{t₁} to be tired]
 'This taxi driver seems to me to be tired.'
- b. Hverjum₁ hafa hestarnir₂ virst _{t₁} [_{t₂} vera seinir?]
 who-dat have the horses seemed _t [_t to be slow]
 'To whom have the horses seemed to be slow?'
- c. Gianni₁ mi sembra [_{t₁} aver dormito bene]
 John me-dat seems [_{t₁} to have slept well]
 'John seems to me to have slept well.'

Somehow, then, English overcomes Intervention in these contexts. There are many hypotheses about how this might happen. What Orfitelli suggests is that what is delayed is learning how English overcomes Intervention. In view of the language variation, imagine a system like (36).

(36) Relativized Intervention

If X A-moves from position A to position B, then there may be no strong Argument C such that A c-commands C and C c-commands B.

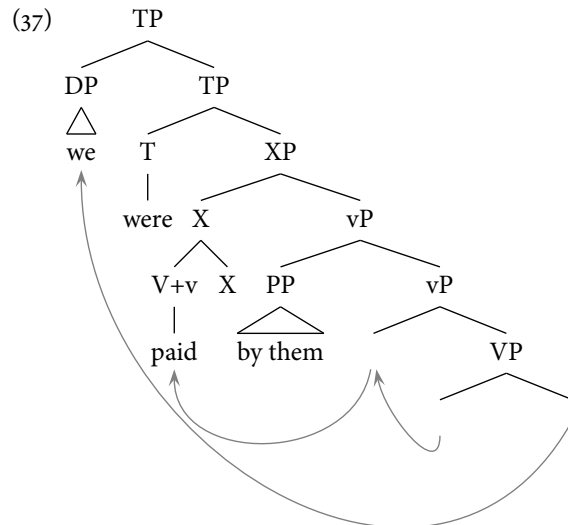
Arguments are strong only if:

- they are anything,
- they are overt,

c. they aren't English

What the child has to acquire is what strong means. Before they do, (33) is blocked.

And so would long passives be, if the *by*-phrase sits in an Argument position:



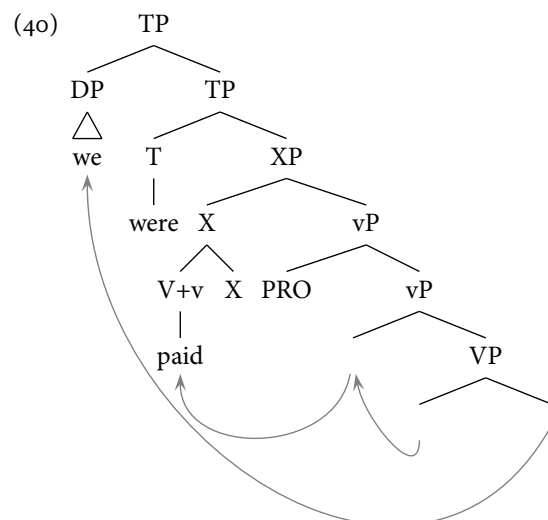
There is some evidence that in a short passive, the subject argument is still present, though silent.

- (38) a. Durum kneads easily in order to produce better fettuccine.
 b. Durum was kneaded in order to produce better fettuccine.

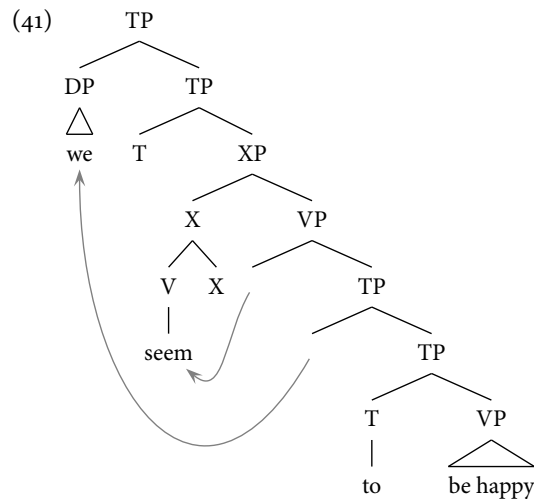
In both, the subject of the rationale clause is controlled. But only in the second is it controlled by the subject of *knead*.

- (39) a. Kyliya washes easily.
 b. Kyliya was washed.

In both of these examples, there is an understood Agent of washing. But only in the passive is that Agent understood to be different from *Kyliya*.



But I am skeptical that this could extend to the “short” raising examples. There is no evidence of the sort found in short passives that the dative is syntactic present when it is not overt. And, moreover, I believe it’s the case that in all the languages where Intervention limits raising over *seem*, there are no intervention effects when the dative is not present. I think this all points to short raising examples looking like (41), where no Intervention effect would be expected.



As this really is the fact that distinguishes Orfitelli’s view from Wexler’s, it’s not clear that we have evidence against the phase-based view. We could perhaps modify their account as follows.

- (42) a. Phases are VPs whose verbs assign a θ -role.
 b. Movement out of phase is prohibited unless it is from the left edge.
 c. Successive cyclic movement is learned during the 6th year.

(42) allows us to distance ourselves from the dubious claim that there is a “v” – that is a subject θ -role assigner – in VPs headed by raising verbs. It moves the phasehoodness to the projections of verbs. But we don’t want to let every VP be a phase. We don’t want to let *have* or *be*, for instance, build phases. So I make a distinction then between aspectual verbs and thematic ones. (This, of course, should be explained.) What makes *seem* different from *be about* and *tend*, then, could be that *seem* is an argument taker and the others are aspectual.

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