

## Predicate Formation in the XS-Model

Xuhui Hu

Peking University

**Abstract:** This article outlines a mechanism that explicates the introduction of theta-role interpretation in the exo-skeletal (XS)-Model proposed in Borer (2005a, b, 2013). It is argued that the real predicates in an event are the functional heads in the functional structure EP (Event Phrase) while the lexical predicate only provides the conceptual meaning to modify the functional structure. The functional head, being the real predicate in syntactic derivation, bears a variable that has to be bound. In the cases when this variable is not bound in an EP, the whole EP functions as a complex predicate to be saturated in the further derivation, a situation that occurs in the English tough-construction and middle construction.

**Key words:** XS-Model; complex predicate; tough-construction; middle construction

### 1 Introduction

In this very short squib, I venture to propose a theory of predicate formation, which, if on the right track, is an extension and development of the exo-skeletal (XS)-Model established by Borer (2005a, b, 2013). The starting point of this research can be summarised as follows. The XS-Model provides a systematic framework to account for argument structures, in particular the source of the interpretation of the theta roles of event participants, i.e., arguments, and their structural positions in the syntactic structure. While various issues of argument structures across languages have been dealt with (cf. Borer 2005b, Hu 2018), one is still left behind: the argument structure of constructions wherein the predicate is not a single AP or VP, but a complex predicate, which, from a pure semantic view, is derived via lambda abstraction. A well-known case is the *tough*-construction in English. The standard analysis of this construction is the null operator movement analysis proposed by Chomsky (1977), according to whom, a complex predicate is formed when a null operator undergoes A' movement, which in nature is like *wh*-movement. Abstracting away technical details, the semantic effect of this null operator movement is lambda abstraction that makes an otherwise saturated event unsaturated, and the subject is then inserted to saturate this complex predicate while at the same time is co-indexed with the null operator.

(1) John<sub>*i*</sub> is tough [Op<sub>*j*</sub> to PRO<sub>ARB</sub> please *t<sub>i</sub>*].  


While the literature on *tough*-constructions abound (cf. Chomsky 1977, 1981; Williams 1983; Hornstein 2001; Rezac 2006; Hicks 2009; Fleisher 2013, 2015; Kein & Poole 2017, among others), two sets of important questions are left unaddressed. The first set concerns the theoretical foundation of the null operator analysis: what is the nature of this null operator? Where does it come from? What on earth enables it to take the

function of complex predication formation as well as co-indexing with the subject? The second set of questions are what a theory of argument structure should answer: what is the underlying argument structure of the *tough*-construction and how can this argument structure be accounted for in the theoretical framework that is expected to address all argument structure issues? If there indeed is a complex predicate involved, how can this predicate formation be derived in the theory of argument structure? In this squib, I will outline an extended version of the XS-Model to address the second set of questions, which, if on the right track, also offers an account for the nature of the null operator in the *tough*-construction. The rest of this article is organised as follows: Section 2 will provide a brief introduction to the *tough*-construction and the null-operator analysis; in Section 3 I will propose a mechanism of predicate formation within the XS-Model, which is applied to account for the nature of the derivation of the *tough*-construction in Section 4. Section 5 shows that the same mechanism is also responsible for the English middle construction. Section 6 concludes the article.

## **2 English *tough*-construction and the null operator analysis**

The English *tough*-construction is characterised by two elements linked to adjectives like *tough*: the first element is an infinitival clause in which there is an arbitrary PRO subject and a gap in the object position of the verb, and the second element is the DP subject of the whole sentence, which is understood as the object of the verb. We can take (1) as our example repeated below:

(2) John is tough to please.

In the above example, the infinitival clause takes an arbitrary PRO as the subject of the verb *please* which does not have an object, hence a gap in the object position. The subject of the whole sentence, *John*, is understood as the object of *please*.

From the perspective of argument structure, the *tough*-construction is intriguing because there is no straightforward thematic relationship between the subject and the adjective which structurally seems to be the matrix predicate of the sentence. That is, John does not possess a property of toughness; instead, this construction ascribes to John a property such that it is tough for people to please him. Semantically speaking, what *John* saturates is not the predicate *tough*, but the complex predicate ‘to please X is tough’. The natural question is thus how syntax can derive this complex predicate as well as the predicative relationship between this complex predicate and the subject.

Chomsky (1977), in his seminal work on *wh*-movement, proposes a special null operator which moves from the object position of *please* to the edge of the infinitival clause. Syntactically speaking, this null operator is like a *wh*-word, which is supported by the island constraint, as shown below:

(3) a. This violin is easy to play sonatas on.

- b. \* What sonata is this violin easy to play on.
- c. \* the sonata which the violin is easy to play on.

According to Chomsky (1977), *sonata* in the above examples cannot move up because it is within an island (the null operator is in nature a *wh*- operator):

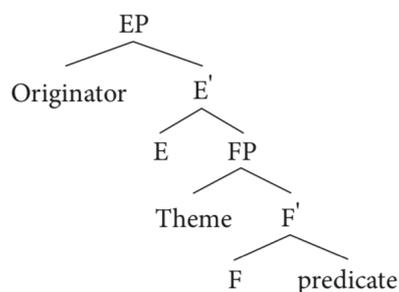
(4) This violin is easy [*which* for PRO<sub>ARB</sub> to play sonatas on *t*]

Semantically speaking, the movement of the null operator creates a complex predicate: in the infinitival clause a gap is born due to the operator movement, waiting to be saturated. As mentioned in the introduction part, we need to know what the nature of the null operator is and where it comes from. In the following section, based on the XS-Model, I will try to explain how the complex predicate is created and how the thematic relationship is established in the *tough*-construction.

### 3 Combining arguments and theta-roles in the XS-Model

A central theme of Borer's (2005a,b, 2013) XS-Model is that argument structure is not part of the grammatical information taken by the predicate stored in the lexicon. What is taken by the predicate in the lexicon is only conceptual meaning which is not part of the grammatical information, while arguments are severed from verbs/predicates. The theta-role is in nature a piece of interpretation derived from the syntactic/functional structure depending on the position where the argument is inserted. Below is a somewhat simplified structure of the syntax of events (Event Phrase, EP<sup>1</sup>).

(5)



As is shown in (5), the theta-roles originator and theme are assigned to DPs inserted in [Spec EP] and [Spec FP] respectively.

Two further issues, although not explicated in Borer's original analysis, are arguably implied. The first issue regards the relationship between the theta-role and the argument. While in most cases we only have to assume that an argument will get its theta-role in a corresponding position, we need to explore the following question: how is the

---

<sup>1</sup> In Borer's (2005b) original framework, the F node has two variants, Asp<sub>Q</sub> and F<sup>S</sup>, the former being responsible for telic events where the Theme argument is Subject of Quantity, while the latter being in an atelic event. Since telicity is not an issue at stake here, I just take FP for the convenience of explanation.

interpretation of the theta-role assigned to the argument? In Borer's (2005b) original account, the theta-role labels like originator and subject of quantity are computed on the basis of the functional structure. We should ask a further question: what is the order between argument insertion and theta role computation? That is, do we firstly insert an argument and then the functional structure assigns a role to it? Or is it the other way round — the functional structure provides an interpretation of a theta-role which has to be taken by an argument that triggers the insertion of the argument? Borer's theoretical system, as far as I can see, yields the choice of the second mechanism. This is because in this system, it is the functional structure that is responsible for the interpretation of a theta-role, regardless of whether a DP is inserted or not. In particular, a theta-role label emerges due to the entailment of the functional structure. In a telic event, the projection of the  $Asp_Q$  head (the head responsible for telicity) will yield the interpretation of the theta-role labelled as subject of quantity (of an event). In an atelic event, the projection of the  $F^s$  head will entail a default interpretation roughly equivalent to the role of theme in the traditional sense. The  $E$  head, on the other hand, entails the interpretation of the theta-role originator. Based on all these theoretical elements explicitly assumed in the XS-Model, I further propose the following hypotheses:

In a functional structure EP that is responsible for the encoding of an event,

- i. each functional head functions as an abstract predicate (Pred. for short);
- ii. the content of Pred. consists of limited possibilities, perhaps only theme and originator;
- iii. being a predicate, Pred. takes a variable  $x$  that has to be bound.

Explanations are in order. Firstly, the above hypotheses are in line with the neo-Davidsonian event semantics which is also taken as a semantic basis in the XS-Model. An essential part of the neo-Davidsonian approach to event semantics is that theta-roles are event predicates. The present analysis makes this assumption straightforward in syntax: that a theta-role is a predicate is due to the fact that there is an abstract predicate in the functional structure of the syntax that takes the theta-role as its content. An immediate consequence, which is exactly in line with the core spirit of the XS-Model, is that the verb, which is assumed to be the predicate in the traditional sense, is not in nature a predicate as it does not assign any theta-role. The relationship between the argument and the verb is not direct (hence the central constructivist assumption that argument structure information is not part of the lexical information of the verb in the lexicon), but is mediated by the functional head. The content of the verb in this system does not have any grammatical information, but only provides conceptual meaning to modify the functional structure, making the abstract meaning read off from the functional structure concrete, hence accessible to the C-I interface. We can take a simple example to illustrate these points:

(6) John kissed his baby.

For now, let's put aside how the two arguments *John* and *his baby* get their theta-roles.

Following the above hypotheses, we can say that in the functional structure that encodes this sentence, a functional head (E) is an originator Pred. while the other functional head (F) is a theme Pred. The interpretation derived from this functional structure is that there is an event where there is an originator and a theme. The derivation of this argument structure information so far has nothing to do with the verb *kiss*. I argue, following Hu (2018), that the conceptual meaning of the verb will only integrate into the interpretation at the LF level, providing a more concrete reading to be accessible to the real-world knowledge. In the present case, at the LF level, the integration of the meaning of the verb *kiss* gives rise to the reading that there is an event which engages an originator and a theme and it is a kissing event.

A crucial property of the predicate in the traditional sense is that it takes a variable, hence waiting to be saturated via variable binding. The hypotheses here preserve this point, only departing from the traditional assumption by taking the functional head as a real predicate. The variable taken by the functional head needs to be bound, and the most accessible way to bind this variable is to insert a DP in the specifier position of the functional head. This then further provides a theoretical reason for the conclusion in the XS-Model (as well as in other constructivist approaches like the first phase syntax in Ramchand (2008)) that the DP argument is always inserted in the specifier position of the functional head that is responsible for the theta-role. Still take (6) as our example. The variable taken by the F head is bound by the DP *his baby* in [Spec FP]. Since F is an abstract predicate with theme content, *his baby* is interpreted as theme. The variable of E head responsible for originator is bound by the DP *John* in [Spec EP] which thus gets the originator reading<sup>2</sup>.

Before I move on to the application of the hypotheses, caveats are in order. First, the assumptions made so far are not going back to the lexicalist approach that features the assignment of theta-roles by verbs. At first sight, the technique of variable binding and theta-role assignment by a predicate seems to be reminiscent of the lexicalist approach. However, I believe my assumptions are radically constructivist in that the predicate in the present framework is not a lexical verb, but is a functional head, which explicitly rejects the possibility of allowing a lexical verb to assign a theta-role. Second, the present analysis does not offer a new framework of event structure, but is completely in line with the XS-Model: it only provides further explanation regarding the syntactic mechanisms underlying the assumptions in the XS Model. Third, if the present analysis is on the right track, it provides an additional operation that enables the configuration of the grammar. A straightforward goal of any grammatical theory is to explain how

---

<sup>2</sup> In Borer's original analysis, the E head is not specified with an originator reading. A DP in the [Spec EP] position, if not interpreted elsewhere, is interpreted as originator as an entailment. Here I slightly deviate from this analysis and argue that for consistency, it might be more reasonable to assume that all theta-roles for the core arguments are always directly related to the functional head. Since there is also the situation where there is no originator but the E head is always there, there are two possible ways to explain the source of the originator role: (1) The E head has different flavours that determine whether it has originator content; (2) there is an extra functional head below E above F that is responsible for originator (roughly equivalent to the voice head). I keep neutral to these two possibilities, either being compatible with the analysis presented here. In this paper, just for the sake of simplification and convenience of exposition, I do not add an extra functional head, and take E as the head responsible for originator role.

discrete elements can be combined (merged) to form phrases that can be infinitely long. Ever since the start of the minimalist programme (cf. Chomsky 1995, 2000, 2001, 2013, among others), one motivation of merge is feature valuation. But if the constructivist approach is on the right track, then that an argument is inserted in a specific position (the Spec position of a functional head) is not purely out of the feature valuation in the standard sense. Following the constructivist approach, we simply insert a DP in a Spec position where it gets its theta-role. But we need to ask this question: why is a DP needed to be merged with the functional head in that specific position? The answer proposed here is that the variable of the functional head needs to be bound, and by binding the specific variable, a DP gets its corresponding theta-role reading. The functional head in the EP domain, apart from its variable, might also take its formal features like a case feature, quantity feature, etc. which thus also submits to the feature valuation mechanism. A question then arises: why don't we just say that the functional head has a theta feature, hence making everything submit to a single feature valuation mechanism? I do not make this assumption simply because theta-roles are completely different from the formal features in the standard sense: theta-roles are purely semantic notions which are inherently relational (that is, we have to say a DP is an originator/theme *of* a certain event), and thus it is not suitable to treat them as features just as subject and predicate cannot be taken to be categories as Chomsky (1965: Section 2.2) argued long ago.

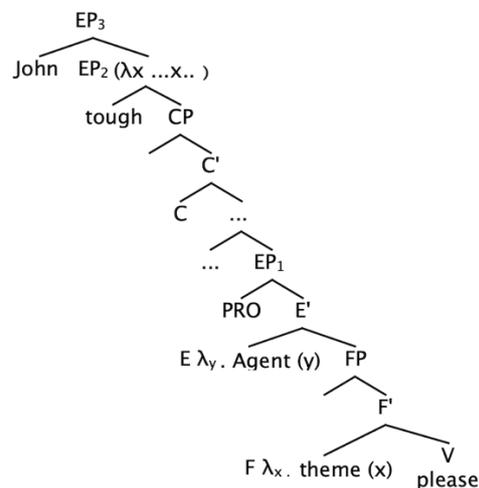
#### **4 Variable binding, predicate formation, and the *tough*-construction**

Following the hypotheses in the last section, the DP argument is inserted to bind the variable of the functional head which in nature is an abstract predicate. A prediction is that as long as there is another way to bind the variable of the functional head, a DP argument does not have to be inserted in its Spec position. Below I will argue this situation does happen, which is the source of the formation of a complex predicate that underlies constructions like *tough*-constructions and middle constructions (and perhaps topic constructions), among others.

I will start from the *tough*-construction. The general hypothesis is as follows. In the derivation of the *tough*-construction, the embedded event structure is made a predicate because the variable of the functional head F is not bound in the EP domain, and it is only bound when the subject of the whole sentence is inserted, and it is the subject that binds this variable. We can take (1) as our example for illustration. In this sentence, firstly an event is derived via an EP structure (let's call it EP<sub>1</sub>): in EP<sub>1</sub>, the variable of the F head is not bound, while the variable of E (responsible for originator) is bound by an arbitrary *pro* (*pro*<sub>ARB</sub>). If this EP then is merged with an Asp and a T head to form a CP and stops there, the sentence will not be grammatical because a variable is left unbound. In the *tough*-construction, EP<sub>1</sub> (after its extended projection of CP<sub>1</sub> is derived) is merged with an adjective *tough*, with the proposition expressed by CP<sub>1</sub> as the argument of *tough*. Now the reading we have is that 'for anyone to please x is tough'. Here, the merger of the adjective *tough* and CP<sub>1</sub> forms a new stative EP (call it EP<sub>2</sub>). EP<sub>2</sub> still has a variable because the variable in EP<sub>1</sub> remains unbound. This means that

EP<sub>2</sub> is unsaturated, appearing as a complex predicate. Finally, when the subject *John* is merged with EP<sub>2</sub>, it serves as a legitimate antecedent of the variable *x*. When the variable *x* is bound by *John*, it means that John will take the theta-role of *x*, that is the theme of the EP<sub>1</sub>. A simplified derivation is as follows:

(7)



In the above tree, the detailed structure of EP<sub>2</sub> and EP<sub>3</sub> are not presented: they both involve a stative event that ascribes the property of the complex predicate to the subject in the predication. A special thematic relationship in the *tough*-construction is that the subject is understood as the theme of the most embedded event, here the pleasing event. This thematic relationship in the present analysis is not established via the movement of the DP from the object position of *please* to the subject position of the whole sentence<sup>3</sup>. Instead, the subject *John* gets the reading that it is the theme of the pleasing event because it binds the variable of F, i.e., the theme predicate.

A potential issue with the above derivation can be summarised by the following question: as a DP argument, does the subject *John* get its own theta-role in its event domain? I argue that any DP argument should get its own theta-role from the functional structure. In the present case, it seems that *John* should get its role as an originator because it is in [Spec EP]. However, I am simplifying the structure of the above tree for expository convenience. What EP<sub>3</sub> encodes is a stative event that takes the whole EP<sub>2</sub> as its predicate while the subject DP *John* gets its theta role as the holder of the property expressed by the predicate. It can be assumed that in the EP domain there is a special functional head responsible for this property holder interpretation, or we can propose that there is another type of EP specifically responsible for the stative EP, a possibility that is also briefly mentioned in Borer (2005b). The above tree mainly follows the second possibility, but the first possibility is also compatible with our analysis here.

How about the island constraint in the *tough*-construction as illustrated in (3)? A

<sup>3</sup> For a full analysis of why the movement approach does not work, see Keine & Poole (2017).

possible account is to adopt the spirit of the null operator movement: it is the variable of the theme predicate that moves to the Spec of CP, exactly like the A' movement of the *wh*-operator. Here we also have presented the nature of this null operator: it is the variable taken by the F head in the EP structure, which is always there in any event, instead of something special that only occurs in a *tough*-construction.

## 5 Extending to middles

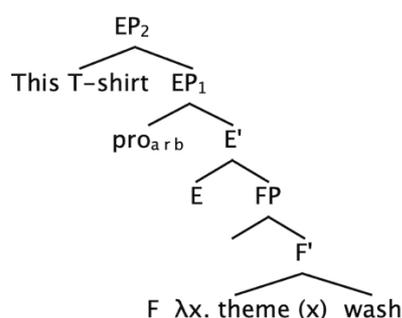
The variable binding hypotheses and complex predicate formation presented above can offer a straightforward account for the English middle construction:

(8) This T-shirt washes easily.

A close scrutiny shows that the middle construction shares syntactic and semantic similarities with the *tough*-construction. First, both constructions express a property ascribed to the subject and this property is not denoted by a single predicate but by a complex structure following the subject. For example, the middle construction in (8) expresses a reading that this T-shirt has a property such that people in general wash it very easily. Second, in both constructions, the subject is understood as the theme of the matrix verb but it is just in the subject position and the sentence goes without a passive voice.

In line with the above account for the *tough*-construction, I argue that the subject of the middle construction is also base generated instead of being moved from the object position of the matrix verb. The theme argument is not realised by a DP in the embedded event, hence creating a gap and making the embedded event a complex predicate. Following the technical assumptions in this article, this gap is created because the variable  $x$  of the F head is not bound in the embedded EP ( $EP_1$ ) domain, which is only bound when the subject of the middle construction is inserted. A simplified derivation is presented below (the adverb is not present in the tree):

(9)



Just like the derivation of the *tough*-construction,  $EP_2$  can be regarded as a stative EP with its special functional E head, and the details of this EP are abstracted away. The derivation proposed here provides an account for the core issues in English middles. First, it explains why on the one hand the matrix verb is a dynamic verb, but the whole

sentence expresses a stative event wherein a property is ascribed to the subject. This is because, following the present analysis, the matrix verb (*wash* in (9)) is the lexical predicate in the embedded event EP<sub>1</sub>, and because in EP<sub>1</sub> the variable of the F head is unbound, it serves as a predicate of EP<sub>2</sub>, a stative event. This analysis also explains the seemingly mismatched thematic relationship regarding the subject and the verb. In particular, the subject seems to take two roles: it is the property holder on the one hand, and the theme of the verb on the other. This is a natural consequence of the derivation proposed in the present analysis. The DP *this T-shirt* is the subject of the stative event EP<sub>2</sub> which takes EP<sub>1</sub> as its predicate. Since it also binds the theme variable of the F head in EP<sub>1</sub>, the DP *this T-shirt* co-refers with the theme of the washing event, hence getting the interpretation of the theme of this event. There are quite a few other properties involved in English middles left untouched here, as described and analysed extensively in studies like Hoekstra & Roberts (1993), Ackema & M. Schoorlemmer (1995), Marelj (2004), Lekakou (2005) and Reinhart & Siloni (2005). Due to the limitation and the scope of this research, I leave them aside for future exploration.

So far, the *tough*-construction and middle construction pattern quite similarly. The following examples however indicate a structural difference between them:

- (11) a. This piano is easy to play sonatas on. (*tough*-construction)  
 b. \*This piano plays sonatas on easily. (middle construction)

The underlying reason, I argue, is that the *tough*-construction involves a CP in the complex predicate, hence the variable movement is A' movement, as is well known in the literature. The middle construction involves a complex predicate that does not involve a CP layer, and hence there is no A' movement involved. For (11b), the variable is created by the preposition *on*<sup>4</sup>. To be bound by the antecedent (here the subject *this piano*), the variable has to move out of the PP phase to an edge position, which should be the specifier position of a higher CP, but there is no CP involved, leaving no landing site for the variable. The consequence is that this variable is not accessible to the subject hence is left unbound. The difference discussed here indicates that complex predicate formation occurs in different structures which therefore can exhibit special syntactic properties. This can be a topic for future researches.

## 6 Summary

In this very sketchy squib, I presented an outline to mainly address the following questions: (a) where does the theta-role information come from in a constructivist approach to argument structure, the XS-Model in particular? (b) how can a complex predicate be formed in syntax? The first question is motivated conceptually and the second one takes the *tough*-construction as the starting point. The answer to the first question provides a theoretical foundation for the answer to the second question. The

---

<sup>4</sup> This is also in line with the assumption in the XS-model, according to which a theta-role is introduced either by the functional structure or by a P.

general idea proposed in this squib is that the syntactically realistic predicate is the functional head in the EP domain, which serves as an abstract predicate with a variable to be bound, and this predicate takes very abstract meaning of theta-roles as the predicate content. This immediately explains why theta-role information is derived from the functional structure and explicitly deprives the lexical verb of its grammatical function: the lexical verb only denotes conceptual meaning to modify/enrich the abstract event information derived from syntax. This then offers another theoretical implication for the foundational issue in syntax: what motivates two elements to merge? If our account is on the right track, one of the motivations is triggered by the necessity to bind the variable of the functional head, which, together with feature valuation, motivates and guides our brain to use the UG related ability — recursive merge. I tentatively assume that the EP structure including the variable of the functional head is universal, and how a variable can be bound might constitute a dimension of cross-linguistic variation. I leave this investigation for future studies. Based on this hypothesis, I have argued in this article that an event can be made as predicate if the variable of a functional head is not bound in this EP domain, making this event unsaturated. This article shows that this is the mechanism underlying the *tough*-construction and middle construction in English, and most probably this mechanism also contributes to the derivation of the topic construction, a topic not discussed here. It should be pointed out that both the *tough*-construction and middle construction involve many complicated issues not resolved in this article. I assume that those issues are related to the mechanism of complex predicate and other factors in the derivations. Again, I leave this task for future studies.

### **Acknowledgements**

I would like to thank Jamie Douglas, Dan Macklin, and Joseph Perry for the help with English data judgement, and Joseph Perry (again) for the very important discussion during the writing of this article. Thanks also go to Yifan Chen, Yingyi Li, Yao Lin, Siyu Wang who did proofreading for an earlier version of this paper. Theresa Biberauer provided inspiring comments (as always!) and pointed out quite a few embarrassing typos --- thank you, Theresa! This research is funded under the auspices of the project of the National Social Science Fund of China: Neo-Constructional Approach-Based Studies in Grammar: With Special Reference to Yixing Dialect (18BYY044). This paper is dedicated to Hagit Borer on the occasion of her 70<sup>th</sup> birthday.

### **References**

- Ackema, P. & M. Schoorlemmer. 1995. Middles and nonmovement. *Linguistic Inquiry* 26: 173- 197.
- Borer, H. 2005a. *Structuring Sense. Vol. 1: In Name Only*. Oxford: OUP.
- Borer, H. 2005b. *Structuring Sense. Vol. 2: The Normal Course of Events*. Oxford: OUP.
- Borer, H. 2013. *Structuring Sense. Vol. 3: Taking Forms*. Oxford: OUP.
- Chomsky, N. 1965. *Aspects of the Theory of Syntax*. Cambridge, MA: MIT Press.
- Chomsky, N. 1977. On wh-movement. In P. Culicover, T. Wasow, and A. Akmajian (eds.), *Formal Syntax*. New York: Academic Press. 71–132.

- Chomsky, N. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- Chomsky, N. 1995. *The Minimalist Program*. Cambridge, MA: MIT Press.
- Chomsky, N. 2000. Minimalist inquiries: The Framework. In Roger Martin, David Michaels, Juan Uriagereka, and Samuel Jay Keyser (eds), *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*. Cambridge, MA: MIT Press. 89-155.
- Chomsky, N. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A Life in Language*. Cambridge, MA: MIT Press, 1–54.
- Fleisher, N. 2013. On the absence of scope reconstruction in tough-subject A-chains. *Linguistic Inquiry* 44:321–332.
- Fleisher, Nicholas. 2015. Rare-class adjectives in the tough-construction. *Language* 91:73–108.
- Hicks, Glyn. 2009. Tough-constructions and their derivation. *Linguistic Inquiry* 40:535–566.
- Hoekstra, T. & I. Roberts. 1993. Middle construction in Dutch and English. In E. Reuland & W. Abraham (eds.). *Knowledge and Language 2*. Dordrecht: Kluwer. 183-220.
- Hornstein, N. 2001. *Move! A Minimalist Theory of Construal*. Oxford: Blackwell.
- Hu, X. 2018. *Encoding Events: Functional Structure and Variation*. Oxford: Oxford University Press.
- Kein, F & L. Poole 2017. Intervention in tough-constructions revisited. *The Linguistic Review* 34 (2) : 295-329.
- Lekakou, M. 2005. *In the Middle, Somewhat Elevated: The Semantics of Middles and Its Crosslinguistic Realization*. Ph.D. Dissertation. University College London.
- Marelj, M. 2004. *Middles and Argument Structure across Languages*. Ph.D. Dissertation. Utrecht University.
- Ramchand, G.C. 2008. *Verb meaning and the Lexicon: A first phase syntax*. Cambridge: Cambridge University Press.
- Reinhart, T. & T. Siloni. 2005. The lexicon-syntax parameter: Reflexivization and other arity operations. *Linguistic Inquiry* 36: 389-436.
- Rezac, M. 2006. On tough-movement. In Cedric Boeckx (ed.), *Minimalist Essays*. Amsterdam: John Benjamins. 288–325.
- Williams, E. 1983. Semantic vs. syntactic categories. *Linguistics and Philosophy* 6:423–446.

**Appendix:** A personal note on the communication with Hagit

That sunny spring afternoon in London in 2012, I always believe, signals a turning point in my academic life. I was kindly invited by David Adger to give a LingLunch talk at Queen Mary. ‘Hagit will also attend your talk.’ David said in the email. It was then that I realised that Hagit had moved to London, a decision that later invisibly influenced me! I have forgotten the details of my talk. It was about resultatives in Chinese and I was trying to use some theoretical points on event structures for my analysis which touched

upon some of Hagit's ideas. I was not very familiar with Hagit's theory at that time, nor did I have the plan to take her model as the main framework. But since Hagit would be in the audience, I picked up the thick book--- Borer (2005b) ---- and was completely immersed in it in the week before the talk, with the hope of not introducing and commenting on her theory in an embarrassing way. The reading was enjoyable, and magically every time when I expected more explanation, the explanation appeared soon afterwards! That 'last-minute' reading propelled me to take Hagit's theory as the theoretical framework of my talk and later my PhD dissertation. On the day of the talk, I consistently turned to Hagit when explaining her theory and asked her: is this accurate? And every time Hagit nodded and smiled. "Email me when you have more questions." Hagit said that quite a few times that day after the talk. That was the second year of my PhD study at Cambridge, and ever since then I had the chance to have communication with Hagit either via emails or in person in her office at Queen Mary. My supervisor, Ian Roberts, also strongly supported my academic communication with Hagit and actually he discussed with me a lot of the ideas in Hagit's books.

My communication with Hagit did not cease after I had come back to China. In fact, my longest stay with Hagit was in China in 2018, when I invited Hagit to visit Peking University where Hagit gave a series of very exciting talks. Apart from that, we hung out in quite a few places in Beijing and other cities like Nanjing and Suzhou. The only pity was that Hagit did not have time to visit Xi'an. 'Next time!' We both said. That 'next time' was supposed to be implemented in 2020, but the pandemic pressed the pause button. I hope this next-time plan will not wait too long. What do you think, Hagit?

#### Author Bio

Xuhui (Freddy) Hu is currently a tenured associate professor at the Institute of Linguistics and Applied Linguistics, School of Foreign Languages, Peking University China.

E-mail: [xhu819@pku.edu.cn](mailto:xhu819@pku.edu.cn)