Sonia Cristofaro (University of Pavia)

Processing explanations of word order universals and diachrony: relative clause order and possessor order

SWL, Paris, 3/9/2018

(1)　The cross-linguistic implicational correlation between relative clause order and possessor order (Hawkins 1983: 83, Konstanz Universals Archive 176):

- If a language has postposed possessors, it usually also has postposed relative clauses/ if it has preposed relative clauses, it usually also has preposed possessors: **NG $\rightarrow$ NRel**, **RelN $\rightarrow$ GN**.

- This means that languages usually have

  - postposed relative clauses and postposed possessors;
  - preposed relative clauses and preposed possessors;
  - postposed relative clauses and preposed possessors;
  - but not postposed possessors and preposed relative clauses.

(2)   This pattern has been accounted for in terms of various factors related to processing ease (Heaviness Serialization Principle, Early Immediate Constituent Recognition, Minimize Domains, Maximize Online Processing, Branching Direction Theory: Hawkins 1983, 1994, 2004, 2014; Dryer 1992):

- Processing of syntactic structure is crucially dependent on fast and easy recognition of constituency relationships.

- In turn, recognition of constituency relationships is crucially dependent on recognition of heads, rather than modifiers.

(3)　Relative clauses and possessors are modifiers. If modifiers are preposed to their heads (e.g. RelN, GN), there are two drawbacks in terms of processing:

- Head recognition and consequent assignment of constituency relationships are delayed, because heads cannot be recognized until modifiers are processed; the heavier (more structurally complex) the modifier, the longer the delay.

- Modifiers must be held in working memory until the head is recognized, and the heavier the modifier, the heavier the burden on working memory.

This leads to modifiers being postposed, and heavier modifiers, such as relative clauses, have a stronger tendency to be postposed than lighter ones, such as possessors.

(4)   In an OV language, however, if modifiers are postposed, modifiers of a direct object will be placed between the direct object and the verb:

- ORelV: [the man [who came here] I saw] (for 'I saw the man who came here')

- OGV: [the father [of the boy] I saw] (for 'I saw the father of the boy')

This delays recognition of the relationship between the direct object and its verbal head, especially for heavier modifiers such as relative clauses. In OV languages, then, these modifiers can be preposed.

(5)   Yet, in an OV language, a preposed relative clause may be mistaken for a main clause (e.g. 'dog [[apple is eating] child] is biting' can be interpreted as 'the dog is biting the apple' rather than 'the dog is biting the child': Hawkins 1983: 99). This is not the case if the head is introduced first (e.g. 'dog [child [apple is eating]] is biting'). This leads to relative clauses being postposed.

(6)   These explanations are based on **the synchronic properties** of particular word orders (NG vs. GN, NRel vs. RelN), not **the actual diachronic processes** that give rise to these orders cross-linguistically.

- Relative clause constructions and possessive constructions, however, often arise from other, pre-existing constructions, and continue the word order of these constructions.

- In such cases, then, in order for processing explanations to be valid explanations of relative clause order and possessor order, they should apply to word order in the source construction.

- Is this really the case?

(7)   In many cases the available evidence about the origins of the relevant constructions does not support processing explanations of relative clause order and possessor order:

- The source construction does not have the syntactic structure assumed in the explanation, so the explanation does not apply.

- Processing ease is assumed to provide independent motivations for relative clause order and possessor order, leading to correlations between the two, but in many cases there actually are no independent motivations for the two orders.

(8)   In some cases, relative clause constructions and possessive constructions originate from an appositional construction:

- 'the VERB(ing) **one**, X', 'X, the VERB(ing) **one** > 'The X **that** VERBs';
- Y's **one**/ Y's **thing**, X', 'X, Y'**one**/Y's **thing**' > 'The X **of** Y'

Qiang (Sino-Tibetan)

(9) *upu tɕi-ʂhə-topu-**m**-le:*   *tɕəu-la   zi*
     uncle wine-drink-like/love-NMLZ/REL-DEF.CL home-LOC exist
     'The uncle who likes drinking liquor is at home' (originally, literally 'the
     uncle, the liquor drinking liking person', with the nominalizer/relative marker
     derived from a noun *mi* 'person': LaPolla 2003: 228)

Newari (Tibeto-Burman)

(10)　(a)　*ji-nə*　　　*nyan-a-***mha**　　　　　*nya*
　　　　　1SG-ERG　buy-PAST-NMLZ/REL　fish
　　　　　'The fish that I bought' (originally 'the thing that I bought, a fish', with
　　　　　the nominalizer/relative marker possibly derived from a semantically
　　　　　generic noun: DeLancey 1986, 2002: 60)

　　　　(b)　*ra:m-ya:-***mha**　　　　　*khica:*
　　　　　Ram-GEN-NMLZ/POSS　dog
　　　　　'Rham's dog' (originally 'Ram's thing, a dog', possession encoded by the
　　　　　same marker encoding relativization in (a): DeLancey 1986, 2002: 61)

Bilin (Cushitic)

(11) (a) *'aqwa ja'ag-na-ɣʷ-əl*
        water   drink-1PL-M.REL-to
        'to water that we do not drink' (relative element derived from a
        pronominal element, in an appositional structure of the type 'to water, the
        one (that) we do not drink': Aristar 1991: 13)

      (b) *ti'idad adäri-ɣʷ-əd*
        order   lord-M.GEN-DAT
        'by the order of the lord' (originally 'by order, the one of the lord',
        possession encoded by the same marker encoding relativization in (a):
        Aristar 1991: 13)

Anywa (Nilotic)

(12) (a) *wīllé*   **mū**-*ā-tɔ̀yɔ́*   *ā-wɛ́t-ā*
      bottle.PL REL-PAST-break PAST-throw.away-1SG
      'I threw the broken bottles away.' (originally 'I threw the bottles, the ones which were broken, away: Reh 1996: 406)

      (b) */'ùuDí*   **mū**   *āɲwàaɛ́/*
      house.PL POSS.PL Anywa.PL
      'the houses of the Anywas' (originally, 'the houses, the ones (of) the Anywas', possession encoded by the same marker used for relativization in (a): Reh 1996: 155)

Iaai (Oceanic)

(13) **aɲi**-*n*   *jəə*
      POSS.CLASS-3SG bone
      'its bone' (possessive classifier derived from a noun meaning 'thing' in a
      structure of the type 'its thing, the bone': Ozanne-Rivierre 1976: 159)

(14) In all of these cases, the two appositives in the source construction give rise,
      respectively, to the relative clause or the possessor on the one hand and the
      relative clause head or the possessed item on the other:

   - the appositive that gives rise to the relative clause or the possessor
     includes a pronoun or a semantically generic noun, which denote the
     referent being relativized or the possessed item and are modified by some
     other expression (a verb or a noun encoding the possessor);
   - the meaning of the pronoun or the generic noun is bleached over time,
     and these elements evolve into relative markers or possessive markers.

(15) In most accounts of this type of adpositional constructions, the construction does not have a hierarchical, head-modifier structure (see e.g. Quirk, Leech, Greenbaum, and Svartvik 1985, Keizer 2007, Bauer 2017):

- both appositives are referential expressions, which independently denote the same referent ('X_i, the VERBing **one**$_i$; 'X_i, Y's **thing**$_i$);

- both appositives have the same syntactic status, so (i) they do not stand in a head-modifier relationship, and (ii) they stand in the same syntactic relationship with respect to other elements in the sentence (e.g. both are verbal arguments).

This has several consequences for processing explanations of word order in the resulting relative clause constructions and possessive constructions.

(16) If the appositive that gives rise to the relative clause or the possessor is preposed,

- this does not lead to a delay in head recognition, because the other appositive is not a head;

- this does not lead to a burden on working memory, because the appositive is syntactically independent, so it doesn't have to be held in working memory till the other appositive is processed;

- in an OV language, this does affect recognition of the dependent status of particular elements, because the relevant elements are independent ones.

(17) If the language is OV, and the appositive that gives rise to the relative clause or the possessor is postposed,

- this does not delay recognition of the relationship between the direct object and the verb, because both appositives function as direct objects with respect to the verb (('I saw the VERBing one, X' = 'I saw the VERBing one' and 'I saw X' ; 'I saw Y's thing, X' = 'I saw Y's thing' and 'I saw X').

(18)   So in these cases processing explanations of relative clause order and possessor order do not work, because they do not apply to word order in the source construction:

- relative clause order and possessor order are ultimately motivated by whatever factors explain word order in the source construction;

- these factors need of course to be identified, but this is a separate research issue.

(19) In other cases, relative clause constructions or possessive constructions originate from constructions consisting of two independent clauses that share a participant:

- 'Y VERBs X_i, **that one**$_i$ VERBed' > 'Y VERBs the X **that** VERBed';

- 'Y VERBs **that** X_i, (he/she/it$_i$) VERBed' > 'Y VERBs the X **that** VERBed';

- 'X_i, **that**$_i$ (is of) Y', (he/she/it$_i$) VERBs' > 'The X **of** Y VERBs'.

Ancient Greek

(20) (a) *nómoisi*   **toús**   *án*   *sfi*   *Sólōn*
         law-DAT.PL REL.ACC.PL PTCL 3PL.DAT Solon.NOM
         thē-tai
         make.AOR.SUBJ-3SG
         'by whatever laws that Solon should make' (Herodotus, 1.29)

      (b) *thaúmazen*   *pur-à*   *poll-à*
         marvel-IMPF.3SG fire-ACC.PL many-ACC.PL
         tà   *kaíeto*   *Ilióthi prò*
         REL/ANAPH.NOM.PL burn-IMPF-3SG Troy   before
         'He marveled at the many fires that burned before Troy/ those burned
         before Troy/ they burned before Troy.' (Homer, Iliad 10.12; Monteil
         1963: 28)

Walmajarri (Australian)

(21) *Warnta   nyanart milyilyirla-jangka wangki Ngarpu-kura **yangka***
      Get-IMP that   brain-SOURCE   story   father-GEN   REL
      ma=nta-lu   *yi-nya*   *jarntu-warnti-rl*
      CAT=2SG.OGG-3PL.SUBJ give-PAST relation-PL-ERG
      nyuntu-kura-warnti-rlu
      you-GEN-PL-ERG
      'Get that prophecy [lit. God's story from the brain] which your family gave
      you.' (relative marker derived from a demonstrative in a structure of the type
      'Get that prophecy, your family gave you that one': McConvell 2006: 117)

Bambara

(22) *n   ye   cɛ   **min** ye ye   muru san*
      1SG PAST man REL see past knife buy
      'The man that I saw bought the knife.' (originally 'I saw that man, (he) bought
      the knife', relative marker derived from a demonstrative element: Givón 2012:
      7; Kuteva and Comrie 2005).

Kanakuru (Chadic)
(23) *ɓili   **ma**   lowoi*
      horn POSS boy
      'the boy's horn' (possessive element derived from a demonstrative, under one
      possible analysis in a construction of the type 'the horn (is) that (of) the boy':
      Schuh 1983: 183, 193)

(24)   In these cases, relative clauses or possessors evolve from an independent clause where

- a demonstrative/anaphoric element refers to the element being relativized or the possessed item;

- the meaning of this element is bleached over time, and the element evolves into a relative marker or a possessive marker.

Since these are independent clauses, they does not stand in a modifying relationship with respect to some other element. This too has consequences for processing explanations of word order in the resulting relative clause constructions and possessive constructions.

(25) If the clause that gives rise to the relative clause or the possessor is preposed,

- this does not lead to a delay in head recognition, because the clause does not stand in a modifier-head relationship with respect to some other element;

- this does not lead to a burden on working memory, because the clause is syntactically independent, so it doesn't have to be held in working memory till some other element is processed.

- in an OV language, recognition of the dependent status of the clause is not an issue, because the clause is independent.

(26)   So in these cases too several factors invoked in processing explanations of relative clause order and possessor order fail to account for word order in the source construction:

- again, relative clause order and possessor order are ultimately motivated by whatever factors motivate word order in the source construction;

- these factors need to be identified, but this is a separate research issue.

(27)   Processing ease is assumed to independently motivate particular relative clause orders and possessor order:

- For example, relative clauses and possessors are assumed to be both postposed because each of these orders independently facilitates head recognition, and the same holds for preposed relative clauses and preposed possessors in an OV language.

- This is supposed to lead to correlations between particular relative clause orders and particular possessor orders, but in many cases there actually are no independent motivations for these orders (Aristar 1991).

(28) Sometimes a single source construction gives rise to both relative clause constructions and possessive constructions, e.g. the same appositional construction gives rise to both relative clause constructions and possessive constructions depending on the modifying element in one of the appositives ('the VERBing one, X' > 'The X that VERBs'; 'Y's one, X' > 'the X of Y'): Newari, Bilin, Anywa).

- In such cases, both the relative clause construction and the possessive construction continue the order of a single source.

- There are no principles that independently motivate relative clause order and possessor order and lead to correlations between the two, because there are no distinct orders to start with.

(29) In other cases, relative clause constructions originate from possessive constructions.

Classical Tibetan (Tibeto-Burman)

(30) *bcad*-**pa-'i**   *shing*
cut-NOMLZ-GEN tree
'the tree that has been cut' (literally 'the tree of cutting': DeLancey 1999: 233)

Akkadian (Semitic)

(31)   (a) **dīn**   *šarr-im*
judgement.of king-GEN
the judgement of the king' (Deutscher 2001: 410)

(b) **tuppi**   *addin-u-šum*
tablet.of I.gave-SUBJ-to.him
the tablet that I gave to him' (originally 'the tablet of my giving':
Deutscher 2001: 410)

(32) In such cases, word order in the relative clause construction continues the order of possessive construction, so again

- there are no distinct orders to start with;

- we cannot postulate principles that independently motivate these orders and lead to correlations between them.

(33) Such principles can only be postulated for cases where relative clauses and possessors originate from distinct sources, so these cases should be disentangled when trying to account for the synchronic distribution of particular relative clause orders and possessor orders.

Cavineña (Tacanan)

(34) (a) *Cavina=ju   kwa-ya=**ke**   e-diji*
           Cavinas=LOC go-IPFV=LIG PREF-path
           'the path that goes to Cavinas'

      (b) *Lizardu=**ja**   arusu tee*
           Lizardu=GEN rice   garden
           'Lizardu's rice garden' (Guillaume 2012: 70, 502)

(35) Concluding remarks:

- To the extent that particular word orders continue the order of pre-existing constructions, explanations of these word orders and their correlations should hold for the source constructions, rather than the synchronic word orders and correlations in themselves.

- But in many cases this is not the case, both in the sense that a synchronically based explanation does not hold for word order in the source construction (because the construction does not have the assumed syntactic structure) and in the sense that there actually are no independent motivations for different word orders, because these orders originate from a single construction and maintain the order of that construction.

- This raises a host of research questions that are not usually addressed in typological work on word order correlations:

  – What source constructions usually give rise to particular word orders?

  – What are the motivations for word order in these constructions?

  – In how many cases do we actually have correlations between distinct word orders, in the sense that these orders (i) co-occur and (ii) originate from different sources?

  – When we do have such correlations, are they due to correlations between particular source constructions, and which ones?

- In line with previous work by diachronically oriented typologists (e.g Givón 1975, 1979; Bybee 1988, 2006, 2008; Aristar 1991), this calls for a new, source-oriented approach to word order universals and typological universals in general (Cristofaro 2013, 2014, 2017): explanations for these universals should refer to the multiple specific diachronic processes and source constructions that give rise to the relevant distributional patterns, rather than more general principles pertaining to these patterns in themselves.

References

Aristar, A. R. (1991). On diachronic sources and synchronic patterns: an investigation into the origin of linguistic universals. *Language 67*, 1–33.

Bauer, B. L. M. (2017). *Nominal apposition in Indo-European : its forms and functions, and its evolution in Latin-Romance*. Berlin and New York: Mouton de Gruyter.

Bybee, J. (1988). The diachronic dimension in explanation. In J. A. Hawkins (Ed.), *Explaining language universals*, pp. 350–79. Oxford: Basil Blackwell.

Bybee, J. (2006). Language change and universals. In R. Mairal and J. Gil (Eds.), *Linguistic Universals*, pp. 179–94. Cambridge: Cambridge University Press.

Bybee, J. (2008). Formal Universals as Emergent Phenomena: The Origins of Structure Preservation. In J. Good (Ed.), *Linguistic Universals and Language Change*, pp. 108–21. Oxford: Oxford University Press.

Cristofaro, S. (2013). The referential hierarchy: Reviewing the evidence in diachronic perspective. In D. Bakker and M. Haspelmath (Eds.), *Languages across Boundaries: Studies in the Memory of Anna Siewierska*, pp. 69–93. Berlin and New York: Mouton de Gruyter.

Cristofaro, S. (2014). Competing motivations and diachrony: what evidence for what motivations? In B. MacWhinney, A. Malchukov, and E. Moravcsik (Eds.), *Competing motivations in grammar and usage*, pp. 282–98. Oxford: Oxford University Press.

Cristofaro, S. (2017). Implicational universals and dependencies between grammatical phenomena. In N. Enfield (Ed.), *Dependencies in Language: On the Causal Ontology of Linguistic Systems*, pp. 9–24. Berlin: Language Science Press.

DeLancey, S. (1986). *Relativization as nominalization in Tibetan and Newari'*. Paper presented at the 19th International Conference on Sino-Tibetan Languages and Linguistics.

DeLancey, S. (1999). Relativization in Tibetan. In Y. P. Yadava and W. W. Glover (Eds.), *Topics in Nepalese Linguistics*, pp. 231–49. Kathmandu: Royal Nepal Academy.

DeLancey, S. (2002). Relativization and nominalization in bodic. In *Proceedings of the of the Berkeley Linguistic Society*, pp. 55–72.

Deutscher, G. (2001). The rise and fall of a rogue relative construction. *Studies in Language 25*, 405–22.

Dryer, M. (1992). The Greenbergian word order correlations. *Language 68*, 81–138.

Givón, T. (1975). Serial verbs and syntactic change: Niger-Congo. In C. N. Li (Ed.), *Word order and word order change*, pp. 47–112. Austin: University of Texas Press.

Givón, T. (1979). *On Understanding Grammar*. New York: Academic Press.

Givón, T. (2012). Towards a diachronic typology of relative clause. In B. Com-

rie and Z. Estrada-Fernández (Eds.), *Relative clauses in the languages of the Americas*, pp. 1–26. Amsterdam and Philadelphia: John Benjamins.

Guillaume, A. (2012). *A Grammar of Cavineña*. Berlin and New York: Mouton de Gruyter.

Hawkins, J. A. (1983). *Word order universals*. New York: Academic Press.

Hawkins, J. A. (1994). *A Performance Theory of Word Order and Constituency*. Cambridge: Cambridge University Press.

Hawkins, J. A. (2004). *Efficiency and Complexity in Grammars*. Oxford: Oxford University Press.

Hawkins, J. A. (2014). *Cross-llinguistic Variation and Efficiency*. Oxford: Oxford University Press.

Keizer, E. (2007). *The English Noun Phrase*. Cambridge: Cambridge University Press.

Kuteva, T. and B. Comrie (2005). The typology of relative clause formation in African languages. In E. Voeltz (Ed.), *African Studies*, pp. 209–28. Amsterdam and Philadelphia: John Benjamins.

LaPolla, R. J. (2003). Qiang. In G. Thurgood and R. J. LaPolla (Eds.), *The Sino-Tibetan Languages*, pp. 573–87. Routledge.

McConvell, P. (2006). Grammaticalization of Demonstratives as Subordinate Complementizers in Ngumpin-Yapa. *Australian Journal of Linguistics* (26), 107–37.

Monteil, P. (1963). *La phrase relative en grec ancien*. Paris: Klincksieck.

Ozanne-Rivierre, F. (1976). *Le iaai, langue mélanésienne d'Ouvéa (Nouvelle-Calédonie): phonologie, morphologie, esquisse syntaxique*. Paris: Selaf.

Quirk, R., G. Leech, S. Greenbaum, and J. Svartvik (1985). *A Comprehensive Grammar of the English Language*. London: Longman.

Reh, M. (1996). *Anywa language: description and internal reconstruction*. Köln:

Rüdiger Köppe.

Schuh, R. G. (1983). The evolution of determiners in Chadic. In E. Wolff and H. Meyer-Bahlberg (Eds.), *Studies in Chadic and Afroasiatic Linguistics*, pp. 157–210. Hamburg: Helmut Buske.