Harmonic Alignment in Morphosyntax: Subject Selection

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I Historical context

Functional/typological syntax:

Work in functional/typological syntax on 'unmarked' associations of grammatical function with semantic and pragmatic properties (Silverstein 1976; DeLancey 1981; Givón 1983; Comrie 1986)

(1) "…the most natural kind of transitive construction is one where the A is high in animacy and definiteness, and the P is lower in animacy and definiteness; and any deviation from this pattern leads to a more marked construction." (Comrie 1989, 128)

Subject	>	Object
High in animacy	>	Low in animacy
High in definiteness	>	Low in definiteness
Local	>	*3rd*

(2) I.e. *natural* vs. *unnatural* can be characterized in terms of *hierarchy alignment*.

The alignment of like endpoints is more natural (*harmonic)* than the alignment of opposite endpoints.

(3) What is the evidence for (1)?

☞ "*Any deviation from this pattern leads to a more marked construction…*"

- More marked syntactically
- More marked morphologically

(4) More marked syntactically (avoidance of simplest construction), e.g.

a) Chamorro (Chung 1998)[1]

	Active	Passive
Animate A, Inanimate P	yes	no
Animate A, Animate P	yes	yes
Inanimate A, Inanimate P	yes	yes
Inanimate A, Animate P	no	yes

[1] This holds only in clauses where both Agent and Patient are 3rd person. See (Aissen 1997).

b) Lummi (Jelinek and Demers 1983)

	Active	Passive
1st/2nd A, 3rd P	yes	no
1st/2nd A , 1st/2nd P	yes	no
3rd A, 3rd P	yes	yes
3rd A , 1st/2nd P	no	yes

- We need to go beyond Comrie's characterization, since it is not the case that *any deviation leads to a more marked construction* (cf. (i) and (ii)). Whether it does depends on other constraints in the language and how they are prioritized with respect to the ones which enforce patterns like the above.

(5) More marked morphologically (additional morphological material), e.g. *Differential case marking:*

a) Direct objects high in animacy and/or definiteness more likely to be overtly case marked than ones low in animacy and/or definiteness (Spanish, Hindi, Persian, Afrikaans, Spoken Japanese…).

b) Low animacy subjects more likely to be overtly case marked than high animacy ones (Spoken Japanese, Hua).

- Again, exactly which objects are marked and which are not depends on the language.

(6) Possible form for implicational universal:

Assuming a ranking of alignments in terms of naturalness/markedness, then: all other things being equal, if the simplest transitive construction is possible in more marked cases, it will also be possible in less marked cases.

(7) We would like to formally express the implicational universal in (6), and at the same time account for language-particular difference, including a characterization of the outcome when all other things are *not* equal

Optimality Theory

OT has emphasized these assumptions:

- Constraints are universal.
- Constraints are violable.
- The main source of language-particular variation is constraint reranking.
- Competition plays a fundamental role in deriving outputs.

(8) An early proposal to handle alignment effects linked to semantic role and discourse prominence (Legendre, Raymond et al. 1993)

LR&S propose 9 constraints, six of which are listed below:

A → C_1 (Agents receive abstract case C_1)

P → C_2 (Patients receive abstract case C_2)

A ⊄ C_2 (Agents do not receive abstract case C_2)

P ⊄ C_1 (Patients do not receive abstract case C_1)

X → C_1: High -prominence arguments receive abstract case C_1.

x ⊄ $C_{1,2}$: Low prominence arguments are not core case-marked (C_1 or C_2).

(9) Where do these constraints come from?

(10) A motivated approach to deriving constraints like these is possible using Harmonic Alignment (*HA*) (Prince and Smolensky 1993). *HA* takes a pair of scales as input and gives as output a pair of subhierarchies with fixed ranking.

- Subhierarchies derived by *HA* express implicational universals pertaining to single substantive dimensions.
- Reranking of constraints -- but not of constraints from the same subhierarchy -- accounts for differences among languages.

II Harmonic Alignment and Subject Selection -- (Aissen 1999)

A. The subject selection problem: given a clause with Agent and Patient, what determines which argument will be realized as subject and which as non-subject?

(11) The relevant factors include:

Semantic role (agent vs. patient)
Discourse status (topic vs. non-topic (T vs. t))
Person (Local (1^{st}, 2^{nd}) vs. 3^{rd})

Animacy and definiteness are also relevant. These scales are not included here.

(12) Elements of higher prominence are realized in structurally more prominent positions, while elements of lower prominence are realized in structurally less prominent positions/relations. → Harmonic Alignment expresses this intuition.

B. **Harmonic Alignment**

(13) *HA* applies to a pair of scales. [2]

A structural, binary scale	An n-ary scale, usually substantive, e.g.
Syllable Structure Positions: Peak > Margin	Sonority Scale: *a* > … > *t*
Grammatical Functions: Subject > NonSubject Subject > Object Subject > Oblique	Role Scale: Agent > Patient Topicality Scale: T > t Person Scale: Local > 3rd 1st > 3rd 2nd > 3rd

and derives harmonic alignments (see 14, middle column) and constraint subhierarchies (14, right column) →

(14)

HA (*X*, *Y*)	Harmonic Alignments	Constraint Subhierarchies
HA (*GF*, *Role*)	Su/Agent ≻ Su/Patient Oj/Patient ≻ Oj/Agent Obl/Patient ≻ Obl/Agent	*Su/Patient » *Su/Agent *Oj/Agent » *Oj/Patient *Obl/Agent » *Obl/Patient
HA (*GF*, *Topicality*)	Su/T ≻ Su/t Oj/t ≻ Oj/T Obl/t ≻ Obl/T	*Su/t » *Su/T *Oj/T » *Oj/t *Obl/T » *Obl/t
HA (*GF*, *Person*)	Su/Local ≻ Su/3 Oj/3 ≻ Oj/Local Obl/3 ≻ Obl/Local	*Su/3 » *Su/Local *Oj/Local » *Oj/3 *Obl/Local » *Obl/3

[2] Alignment. Suppose given a binary dimension D_1 with a scale X > Y on its elements {X, Y}, and another dimension D_2 with a scale a > b ... > z on its elements. The harmonic alignment of D_1 and D_2 is the pair of Harmony scales:

H_X : X/a > X/b > ... > X/z
H_Y: Y/z > ... >Y/b > Y/a

The constraint alignment is the pair of constraint hierarchies:

C_X: *X/z >> ... >> *X/b >> *X/a
C_Y : *Y/a >> *Y/b >> ... >> *Y/z

[Prince and Smolensky 1993:136]

C. Evaluations

(15) Inputs:

Predicate (x, y) x: Semantic Role/Discourse Status/Person y: Semantic Role/Discourse Status/Person

(16) Candidates considered in Aissen 1999

Clause type	Agent	Patient	Violate these high ranking markedness constraints:
Active	Subject	Object	
Passive	Oblique	Subject	*Su/Pat, *Obl/Agent

(17) Passive will need to be motivated.

- Either by some clause-external factor (e.g. requirement that Pivot of a cross clausal construction be Subject).
- Or by pragmatic or semantic properties of Agent or Patient. These cases are handled by constraints derived through $\mathcal{HA}$. Passive cannot be motivated if all associations are unmarked, e.g. [Agent/1st, Patient/3rd] or [Agent/T, Patient/t].

(18)

Clause type	Agent Local, T	Patient 3rd, t	Violate these high ranking markedness constraints:
Active	Subject	Object	
Passive	Oblique	Subject	*Su/Pat, *Obl/Agent *Su/3, *Obl/Local *Su/t, *Obl/T

- But it can be motivated if some associations are marked, as in (19) or (20)

(19)

Clause type	Agent → 3rd	Patient → Local	Violate these high ranking markedness constraints:
Active	Subject	Object	*Su/3rd, *Oj/Local
Passive	Oblique	Subject	*Su/Pat, *Obl/Agent

(20)

Clause type	Agent → t	Patient → T	Penalized by high ranking markedness constraints
Active	Subject	Object	*Su/t, *Oj/T
Passive	Oblique	Subject	*Su/Pat, *Obl/Agent

→ In these cases, output is determined by ranking of conflicting constraints.

(19) Basic schematic:

- *Su/Pat » *$\mathcal{GF}$ /$\mathcal{X}$ → no passive possible.
- To get passive, constraints which penalize active candidates must be promoted above *Su/Pat.

III Some Case Studies from Aissen 1999

(20) Simplifying assumptions:
- Since neither active nor passive violates *Oj/Agt, this constraint is ignored.
- Syntactic obliques are restricted here to AGENT obliques.

Subject selection determined solely by semantic role

(21) Fox (Algonquian): All clauses with syntactically realized AGENT and PATIENT are active (Dahlstrom 1995)

*Su/Pat » *$\mathcal{GF}$ /$\mathcal{X}$

x: Agent /3rd /t y: Patient/Local/T	*Su/Pat	*$\mathcal{GF}$ /$\mathcal{X}$
☞ ACT: Su/Agt/3/t Oj/Pat/Local/T		******
PSV: Su/Pat/Local/T Obl/Agt/3/t	*!	*****

Discourse status plays a role in subject selection

(22) "English": Passive occurs when patient is topical (Tomlin 1985; Thompson 1987)

*Su/t » *Su/Pat » *$\mathcal{GF}$ /$\mathcal{X}$

a.

x: Agent /3rd/t y: Patient/3rd/T	*Su/t	*Su/Pat	*$\mathcal{GF}$ /$\mathcal{X}$
ACT: Su/Agt/3/t Oj/Pat/3/T	*!		*****
☞ PSV: Su/Pat/3/T Obl/Agt/3/t		*	*****

b.

x: Agent /3rd/t y: Patient/3rd/t	*Su/t	*Su/Pat	*$\mathcal{GF}$ /$\mathcal{X}$
☞ ACT: Su/Agt/3/t Oj/Pat/3/t	*		*****
PSV: Su/Pat/3/t Obl/Agt/3/t	*	*!	****

Person plays a role in subject choice -- Salish (Jelinek and Demers 1983)

(23) Lushootseed

a) Like English except that passives with local person agents are excluded (a common constraint).

	Active	Passive
1st/2nd A, 3rd P	yes	no
3rd A, 3rd P	yes	yes
1st/2nd A, 1st/2nd P	yes	no
3rd A , 1st/2nd P	yes	yes

b) Ranking: *Obl/Local » *Su/t » *Su/Pat » *$\mathcal{GF}/\mathcal{X}$

c)

x: Agent/1st/t y: Patient/3rd/T	*Obl/Local	*Su/t	*Su/Pat	*$\mathcal{GF}/\mathcal{X}$
☞ ACT: Su/Agt/1/t Oj/Pat/3/T		*		*****
PSV: Su/Pat/3/T Obl/Agt/1/t	*!		*	****

(31) Lummi

a) Like Lushootseed except that active clauses with local person patients are ungrammatical.

	Active	Passive
1st/2nd A, 3rd P	yes	no
3rd A, 3rd P	yes	yes
1st/2nd A, 1st/2nd P	yes	no
3rd A , 1st/2nd P	no	yes

b) *Obl/Local » *Oj/Local » *Su/t » *Su/Pat » *$\mathcal{GF}/\mathcal{X}$

c)

x: Agent/3/T y: Patient/1st/t	*Obl/Local	*Oj/Local *or *Su/3*	*Su/t	*Su/Pat	*$\mathcal{GF}/\mathcal{X}$
ACT: Su/Agt/3/T Oj/Pat/1/t		*!			*****
☞ PSV: Su/Pat/1/t Obl/Agt/3/T			*	*	****

d)

x: Agent/2nd y: Patient/1st	*Obl/Local	*Oj/Local *or *Su/3*	*Su/t	*Su/Pat	*$\mathcal{GF}/\mathcal{X}$
☞ ACT: Su/Agt/2 Oj/Pat/1		*			*****
PSV: Su/Pat/1 Obl/Agt/2	*!			*	****

(25) Squamish (Salish) (Jelinek and Demers 1983)

a) Like Lummi except that 1st and 2nd person patients behave differently…

	Active	Passive
1st/2nd A, 3rd P	yes	no
3rd A, 3rd P	yes	yes
1st/2nd A, 1st/2nd P	yes	no
3rd A , 1st P	yes	yes
3rd A, 2nd P	no	yes

b) *Obl/Local » *Oj/2 » *Su/t » *Su/Pat » *$\mathcal{GF}/\mathcal{X}$

c)

x: Agent/3/T y: Patient/2st/t	*Obl/Local	*Oj/2	*Su/t	*Su/Pat	*$\mathcal{GF}/\mathcal{X}$
ACT: Su/Agt/3/T Oj/Pat/2/t		*!			*****
☞ PSV: Su/Pat/2/t Obl/Agt/3/T			*	*	****

x: Agent/3/t y: Patient/1st/t	*Obl/Local	*Oj/2	*Su/t	*Su/Pat	*$\mathcal{GF}/\mathcal{X}$
☞ ACT: Su/Agt/3/t Oj/Pat/1/t					******
PSV: Su/Pat/1/t Obl/Agt/3/t				*!	*****

IV. Some Questions about $\mathcal{HA}$

A. Do we need both the Subject-oriented *and* the NonSubject-oriented subhierarchies?

(26) $\mathcal{HA}$, by its nature, simultaneously characterizes relative markedness of lassociation with both ends of the binary scale. That is, for each Subject-oriented subhierarchy , $\mathcal{HA}$ automatically produces Object- and Oblique-oriented subhierarchies. In some cases, the high ranking constraints derived by a $\mathcal{HA}$ penalize exactly the same candidates. E.g.

a) *Su/Pat blocks passive in Fox in (21). But so would *Obl/Agent.
b) *Oj/Local blocks active in Lummi (24), but *Su/3 would do as well.

(27) Do we really need both of the constraint subhierarchies that $\mathcal{HA}$ generates?
Aside: We will need both types when it comes to characterizing morphological marking (Differential Case Marking).

Focussing on syntactic markedness, can we motivate the need for both types?

(28) Obl- and Oj -oriented constraints cannot be replaced by Su- oriented ones.

a) Oblique

- *Obl/Local cannot be replaced by the 'corresponding' constraint on person of subject (in passive clauses), namely *Su/3rd, because where *Obl/Local is active, it holds regardless of the person of the patient subject. (See all the Salish languages above.)

b) Object:

- High-ranked constraints on person of object in a language like Lushootseed (*Oj/2) cannot be replaced by *Su/3 because the latter would force passive with 1st person objects too.

(29) Subject-oriented constraints cannot be replaced by Obl/ Oj/ and encapsulated versions (NonSu/) when a marked subject is penalized regardless of the object or oblique. Some possible examples (all involving dimensions other than the three discussed above):

a) Halkomelem: Inanimate subjects are excluded in transitive clauses even if the object is also inanimate (Gerdts 1988). *Su/Inan is relevant, but *Oj/Anim is not.

b) Chamorro: Third person plural subjects are excluded in transitive clauses even if object is also 3rd person plural. *Su/PL is relevant, but *NonSu/SG is not.

(30) Conclusion: Markedness constraints of both types are needed.

B. Do we need constraints that penalize *both* marked and unmarked associations?

(31) $\mathcal{HA}$, by its nature, produces constraints which penalize both marked and unmarked associations (high-ranked and low-ranked constraints, resp.) Are these constraints necessary? Could they be dropped (cf. (Legendre, Raymond et al. 1993; Zeevat and Jäger 2002)?

We will see motivations for the low-ranked constraints later.

C. Some more general questions (see (Haspelmath 2001))

(32) What determines the direction of the scales, i.e. what determines prominence along the dimensions of animacy, definiteness, person, etc.?

- Nothing internal to the formal system.
- But we assume that prominence is a cognitive property associated with the discourse referents introduced by nominal expressions.
- Many have had the intuition that the relevant notion of prominence relates to high accessibility in discourse (Givón 1983, and many others; Haspelmath 2001).
- If this can be cashed out, then the constraints appealed to here are functionally grounded in the cognitive system.

(33) What constraints are there on *which* scales align?

- The only constraint which derives from the definition of harmonic alignment is that at least one scale must be binary. ☞ HA will not work if neither scale is binary.

  Suggested by the original discussion in Prince and Smolensky (1993):

- The binary scale must be structural. ☞ Constraints derived by HA concern the structural realization of substantive elements in outputs.

- There must exist elements which can be ranked on both scales.

(34) Why should *HA* exist in the first place?

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