

Pathological Effects of Local Disjunction

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1. Overview

Local Disjunction (LD) was first proposed by Hewitt & Crowhurst (1996).

- Sometimes called Boolean Conjunction
- LD violated on domain x if **either** or **both** constraints are violated on x
- C.f. Local Conjunction violated if **both** constraints are violated.
- Has been used to explain Derived Environment Effects (Lubowicz 2005), Chain Shifts (Moreton & Smolensky 2002), and more.
- Creates pathologies when used with:
 - unrestricted domains,
 - M(arkedness)&F(airfulness) (Itô & Mester 1998)

Local Conjunction vs. Local Disjunction

$x/$	P	Q	P&Q	PVQ
a. satisfies both				
b. violates Q	*			*
c. violates P	*			*
d. violates both	*	*	*	*

CLAIM: Local Disjunction creates pathological languages. This is true even when:

- restricted to acting on MVM and FVF
- defined upon the smallest possible domain.

2. MVF is Problematic

MVF Disjunction creates a constraint that is neither markedness nor faithfulness. (Wolf 2007)

$/gi/$	*gVId(VOICE)	*g	Id(VOICE)
a. gi	*	*	
b. ki	*		*

$/ki/$	*gVId(VOICE)	*g	Id(VOICE)
c. ki			*

- MVF is not faithfulness constraint
 - $/gi/ \rightarrow [gi]$ violates *gVId(VOICE)
- MVF is not markedness constraint
 - $/gi/ \rightarrow [ki]$ incurs a violation, but $/ki/ \rightarrow [ki]$ does not
- Having constraints that are neither M or F can cause a language to not be idempotent. (Moreton 1999)

3. How LD produces problematic ties

- Local Disjunction creates languages standard OT does not.
- LD favors **the best of the best** candidate that violates neither of the conjoined constraints.
- LD **creates a tie** between the candidates that violate P, Q or both, that cannot be created otherwise.
- If P V Q must be violated, because of some higher-ranked A, the decision of which constraint to violate is left to the ranking of P and Q.
 - UNLESS** there is an intervening constraint B.
- If B prefers a different candidate than P does, that candidate wins.
- B only matters if the best of the best candidate is ruled out by A.

$x/$	A	PVQ	B	P	Q	$y/$	A	PVQ	B	P	Q
a. x_a	*					a. y_a	*				
\neq b. x_b		*			*	b. y_b		*	*	*	*
c. x_c			*	*	*	\neq c. y_c			*	?	*
d. x_d		*	*	*	*	\neq ? d. y_d		*	*	*	*

- MVM creates clear pathologies
- FVF creates questionable languages.

4. Example of MVM Effects

MVM can create languages where a marked position can only allow some marked structure(s).

NoCoDA V *VcdObs \gg DEP \gg NoCoDA, *VcdObs

- All other faithfulness constraints high-ranking

$/patmu/$	MAX	NoCoDA V *VcdObs	DEP	NoCoDA	*VcdObs
a. pat.mu				L	*W
\neq b. pa.ti.mu				*	
c. pa.mu	*W		L		

$/pampu/$	MAX	NoCoDA V *VcdObs	DEP	NoCoDA	*VcdObs
a. pam.pu				L	*W
\neq b. pa.mi.pu				*	
c. pa.pu	*W		L		

- Most consonant clusters broken up with epenthesis

$/padmu/$	MAX	NoCoDA V *VcdObs	DEP	NoCoDA	*VcdObs
\neq a. pad.mu		*		*	*
b. pa.di.mu		*		L	*
c. pa.mu	*W	L		L	

- With a voiced obstruent, NoCoDA V *VcdObs is violated by all candidates that reach it.
- DEP becomes active because of the tie.
- So only voiced obstruents surface in syllable codas.

This is the opposite of the intuition captured by positional privilege (Beckman 1998)

The same type of markedness reversal as that shown by Itô & Mester (1998) to be possible with M&F.

5. Example of FVF Effects

FVF can create languages where a structure only does not appear if it is in a marked position in the Fully Faithful Candidate (FFC).

*VcdObs/CODA \gg DEP V Id(VOICE) \gg *g \gg Id(VOICE) \gg DEP

- With no higher ranked violations, neither DEP nor Id(voice) are violated.

$/ib/$	*VcdObs/CODA	DEP V Id(VOICE)	*g	Id(VOICE)	DEP
a. ib	*W		L		L
\neq b. i.bi		*			*
c. ip		*		*W	L

- If the FFC is ruled out because it has a voiced coda, there is a tie on the disjunction
- Epenthesis is preferred to devoicing because Id(VOICE) \gg DEP.

$/ig/$	*VcdObs/CODA	DEP V Id(VOICE)	*g	Id(VOICE)	DEP
\neq a. ik		*		*	
b. ig	*W		L	*W	L
c. i.gi		*		*W	*W

- But, if the obstruent in question is $/g/$, *g breaks the tie, leading to devoicing.

$/gi/$	*VcdObs/CODA	DEP V Id(VOICE)	*g	Id(VOICE)	DEP
\neq a. gi			*		
b. ki		*W		L	*W

- Prevocalic $/g/$ is protected by the disjunction.
- This language allows g , except when it would be in a coda in the FFC.
- This language, while not as clearly pathological as the MVM example, seems questionable.
- This shows a sort of cumulative effect between *VcdObs/CODA and *g, changing the repair if their loci of violations overlap.

This type of language cannot be created without a disjunction..

Conclusion: *MVF, *MVM, *(?)FVF