

# Br[eə]king news: Microvariation in Northern Irish derived contrasts<sup>\*</sup>

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## 1. Introduction

(1) The realisation of RP [eɪ] in Belfast vernacular<sup>1</sup>

	orthography	'RP'	Belfast		'RP'	Belfast	
a.	day	eɪ	dɛ:	b.	raise	eɪ	reəz
	bay	eɪ	bɛ:		gate	eɪ	geət
	pay	eɪ	pɛ:		cape	eɪ	keəp
					take	eɪ	teək
					raid	eɪ	reəd
c.	station	eɪ	steəfn				
	raisin	eɪ	ɹeəzn				

(Milroy, 1981, Wells, 1982, Harris, 1985, 1990)

(2) Smoothing and diphthongisation in Belfast

	orthography	Belfast			
a.	day	dɛ:	b.	day-s	dɛ:z
	bay	bɛ:		gay-s	gɛ:z
	play	plɛ:		play-ed	plɛ:d
c.	daze	dɛəz	d.	rais-ing	ɹeəzɪn
	gaze	gɛəz		raided	ɹeərəd
	plaid	pleəd		taking	teəkɪn
	cape	keəp			
	gate	geət	e.	made	meəd

Generalisations:

- If we assume a process of breaking it applies everywhere except at morpheme boundaries.

- If we assume a process of smoothing it applies at morpheme boundaries.

Which one do we take? Which is the base which is the allophone? Does it matter?

<sup>\*</sup> I would like to thank my colleagues and students at the University of Ulster who provided the data.

<sup>1</sup> There is considerable variation in the exact realisation of this diphthong, ranging from a high starting point [ɪə] to a mid-low starting point [eə]. In the transcriptions I chose IPA [eə] reflecting the middle ground. The realisation of the monophthongal allophone varies as well from IPA [e] to [ɛ].

Goals: Give an OT analysis of the Northern Irish pattern.

Show local variation within Northern Ireland.

Micro-comparison leads to an improved understanding of the pattern.

## 2. OT analysis of Belfast vernacular

### (3) *The Richness of the Base* (RotB):

‘Linguistic regularity emerges as a result of the interaction of constraints on surface representations.’ Thus: An OT grammar has to produce all and only the grammatical outputs regardless of the input.

OT decomposes patterns into freely rankable violable constraints.

### (4) *Factorial typology*: Any ranking of an assumed set of constraints should describe a natural language.

Complementary distribution à la Benua (1997):

Positional Markedness » Markedness » IO-Faithfulness

a. Breaking is found before consonants in non-derived environments.

b. Smoothing is found in open syllables.

### (5) Markedness constraints

a. BREΘK/\_C

b. \*DIPH

### (6) Complementary distribution

	/brɛk/	BREΘK/_C	*DIPH	IO-FAITH
☞ a.	bɾɛək			*
b.	bɾɛ:k	*!		
	/stɛʃən/			
☞ c.	stɛəʃən		*	*
d.	stɛ:ʃən	*!		
	/dɛ/			
e.	dɛə		*!	*
☞ f.	dɛ:			



## (12) Stratal OT

STEM	/input/	A	B	C	WRD	/winner level 1/	B	C	A
☞ a.	cand <sub>1</sub>			*		cand <sub>a</sub>	*!	*	*
b.	cand <sub>2</sub>		*!	*		cand <sub>b</sub>		*!	*
c.	cand <sub>3</sub>		*!	**	☞	cand <sub>c</sub>			*
d.	cand...	*!	*	*		cand...			**!

PHRSE	/winner level 2/	C	A	B
a.	cand <sub>α</sub>			**!
☞ b.	cand <sub>β</sub>			*
c.	cand <sub>γ</sub>		*!	**
d.	cand...	*!	*	*

## (13) Level 1

	/brɛk/	BREƏK/_C	*DIPH	IO-FAITH
☞ a.	bɹɛək		*	
b.	bɹɛ:k	*!		*
	/de/			
c.	deə		*!	*
☞ d.	de:			

## (14) Level 2

	/brɛk-ɪn/	IO-FAITH	BREƏK/_C	*DIPH
☞ a.	bɹɛəkɪn			*
b.	bɹɛ:kɪn	*!	*	
	/de-z/			
c.	deəz	*!		*
☞ d.	de:z		*	

**3. Variation****3.1 Potential variation**

Allophones : two

Contexts : five

(morpheme-internal open syllable, final open syllable, derived open syllable, non-derived closed syllable, derived closed syllable)

## (15) Breaking (Logically possible)

	Harris	1	2	3	4	5	6	7	8	9	10	11	12	13	...
internal open	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	...
final open			✓	✓	✓	✓	✓					✓	✓		...
der. open	✓			✓	✓	✓	✓	✓			✓		✓		...
lex closed	✓				✓	✓	✓	✓	✓		✓	✓		✓	...
der. closed						✓	✓	✓	✓	✓	✓	✓	✓	✓	...

This is cr[eə]zy/cr[e:]zy...

## (16) A more realistic view 1:

## i. Input = plain vowel

- a. Breaking in all closed syllables (surface-true)
- b. Breaking in all nonfinal nuclei ( / \_ C ) (surface-true)
- c. Breaking in all underived nonfinal nuclei (Harris, counterfeeding)
- d. Breaking in all underived closed syllables

## ii. Input = diphthong

- a'. Smoothing in all open syllables (=a)
- b'. Smoothing in all final open syllables (=b)
- c'. Smoothing in all underived final open syllables (=c)
- d'. Smoothing in all underived open syllables (=d)

## (17) A more realistic view 2:

## i. Input = plain vowel

- Breaking before C applies before affixation
- Breaking in closed syllable applies before affixation
- Breaking before C applies after affixation
- Breaking in closed syllable applies after affixation

## ii. Input = diphthong

- Word-final smoothing applies before affixation
- Syllable-final smoothing applies before affixation
- Word-final smoothing applies after affixation
- Syllable-final smoothing applies after affixation

## iii. Input = anything

- Combined options in i. and ii.

## 3.2 Predicted variation

## (18) Variation range = different patterns by possible rankings

- a. OO-FAITH » BREƏK/\_C » \*DIPH (Harris)
- b. OO-FAITH » \*DIPH » BREƏK/\_C (no breaking)
- \*DIPH » OO-FAITH » BREƏK/\_C (no breaking)
- \*DIPH » BREƏK/\_C » OO-FAITH (no breaking)

- c. BREƏK/\_C >> OO-FAITH >> \*DIPH (surface-true breaking before C)  
 BREƏK/\_C >> \*DIPH >> OO-FAITH (surface-true breaking before C)

Three options if contrastivity (i.e., high ranking IO-Faith) is left out.  
 Unlike above, potential impact of syllable structure is not integrated.

### 3.3 Attested variation

Data collected from one speaker each in 14 locations across Northern Ireland

Interview followed by word-list reading task.

Data used come from list only.



(19) Relevant list items:

Lexically closed: *plate, weight, shade, mate, made*

Derived closed: *betrayed*

Lexically open final: *bay*

Lexically open internal: *raisin*

Derived open: *chasing*

## (20) Breaking results

Variety Context	Derry, Larne	Lisburn, Ballymena, (West) Belfast, Killeel, Rural Fermanagh, Strabane, Ballycastle, North Derry, Armagh, Dundonald	Newry, Harris	Omagh
Lex. open final	-	-	-	-
Lexically closed	-	+	+	+
Derived closed	-	-	-	+
Lex open internal	-	-	+	-
Derived open	-	-	+	-

- The Omagh speaker should not exist according to our current OT analysis.
- The Lisburn, Ballymena etc. speakers should not exist either.
- Breaking before all Cs is not attested.

#### 4. Analysis of attested variation

Potential impact of syllable structure was not integrated in analysis

Usual OT fix 1: Add constraints.

Usual OT fix 2: Change constraints.

Add prosodically sensitive trigger of breaking:  $BRE\Theta K/_C)_\sigma$

or

Add prosodically sensitive blocker of breaking:  $*DIPH)_\sigma$

Adding  $BRE\Theta K/_C)_\sigma$  can't generate Lisburn & co. but produces 2 unattested patterns.

*Transderivational*

(21) Unattested (lex. cl., lex open internal, der open, der cl)

	/brɛk/	BREƏK/_C	OO-FAITH	BREƏK/_C) <sub>σ</sub>	*DIPH
☞ a.	bɹɛək				*
b.	bɹɛ:k	*!		*	
	/stɛfn/				
☞ c.	stɛə.fən				*
d.	stɛ: fən	*!			
	/de/				
e.	deə				*!
☞ f.	de:				
	/brɛk -ɪn/				
☞ g.	bɹɛəkɪn				*
h.	bɹɛ:kɪn	*!	*		
	/de -z/				
☞ i.	deəz.		*		*
j.	de:z.	*!		*	

(22) Unattested 2 (lex cl, der open, der cl)

	/brɛk/	OO-FAITH	BREƏK/_C) <sub>σ</sub>	*DIPH	BREƏK/_C
☞ a.	bɹɛək			*	
b.	bɹɛ:k		*!		*
	/stɛfn/				
c.	stɛə.fən			*!	
☞ d.	stɛ: fən				*
	/de/				
e.	deə			*!	
☞ f.	de:				
	/brɛk -ɪn/				
☞ g.	bɹɛəkɪn			*	
h.	bɹɛ:kɪn	*!			*
	/de -z/				
i.	deəz.	*!		*	
☞ j.	de:z.		*		*

## (23) Omagh (lex cl, der cl)

	/brɛk/	BREƏK/_C) <sub>σ</sub>	*DIPH	OO-FAITH	BREƏK/_C
☞ a.	bɹɛək		*		
b.	bɹɛ:k	*!			*
	/stɛʃn/				
c.	stɛə.ʃən		*!		
☞ d.	stɛ:ʃən				*
	/de/				
e.	deə		*!		
☞ f.	de:				
	/brɛk -ɪn/				
g.	bɹɛəkɪn		*!		
☞ h.	bɹɛ:kɪn			*	*
	/de -z/				
☞ i.	deəz.		*		
j.	dez.	*!		*	*

## (24) Newry

	/brɛk/	OO-FAITH	BREƏK/_C	BREƏK/_C) <sub>σ</sub>	*DIPH
☞ a.	bɹɛək				*
b.	bɹɛ:k		*!	*	
	/stɛʃn/				
☞ c.	stɛə.ʃən				*
d.	stɛ:ʃən		*!		
	/de/				
e.	deə				*!
☞ f.	de:				
	/brɛk -ɪn/				
☞ g.	bɹɛəkɪn				*
h.	bɹɛ:kɪn	*!	*		
	/de -z/				
i.	deəz.	*!			*
☞ j.	dez.		*	*	

## (25) New factorial typology

- a. OO-FAITH » \*DIPH » BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> (Derry)  
 OO-FAITH » \*DIPH » BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C (Derry)  
 \*DIPH » OO-FAITH » BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> (Derry)  
 \*DIPH » OO-FAITH » BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C (Derry)  
 \*DIPH » BREƏK/\_C » OO-FAITH » BREƏK/\_C)<sub>σ</sub> (Derry)  
 \*DIPH » BREƏK/\_C)<sub>σ</sub> » OO-FAITH » BREƏK/\_C (Derry)

- \*DIPH » BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> » OO-FAITH (Derry)  
 \*DIPH » BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C » OO-FAITH (Derry)
- b. BREƏK/\_C » OO-FAITH » \*DIPH » BREƏK/\_C)<sub>σ</sub> (breaking before C)  
 BREƏK/\_C » OO-FAITH » BREƏK/\_C)<sub>σ</sub> » \*DIPH (breaking before C)  
 BREƏK/\_C » \*DIPH » OO-FAITH » BREƏK/\_C)<sub>σ</sub> (breaking before C)  
 BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> » OO-FAITH » \*DIPH (breaking before C)  
 BREƏK/\_C » \*DIPH » BREƏK/\_C)<sub>σ</sub> » OO-FAITH (breaking before C)  
 BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> » \*DIPH » OO-FAITH (breaking before C)  
 BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C » OO-FAITH » \*DIPH (breaking before C)  
 BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C » \*DIPH » OO-FAITH (breaking before C)  
 BREƏK/\_C)<sub>σ</sub> » OO-FAITH » BREƏK/\_C » \*DIPH (breaking before C)
- c. BREƏK/\_C)<sub>σ</sub> » OO-FAITH » \*DIPH » BREƏK/\_C (Omagh)  
 BREƏK/\_C)<sub>σ</sub> » \*DIPH » OO-FAITH » BREƏK/\_C (Omagh)  
 BREƏK/\_C)<sub>σ</sub> » \*DIPH » BREƏK/\_C » OO-FAITH (Omagh)
- d. OO-FAITH » BREƏK/\_C » \*DIPH » BREƏK/\_C)<sub>σ</sub> (Harris)  
 OO-FAITH » BREƏK/\_C » BREƏK/\_C)<sub>σ</sub> » \*DIPH (Harris)
- e. OO-FAITH » BREƏK/\_C)<sub>σ</sub> » BREƏK/\_C » \*DIPH (Harris)  
 OO-FAITH » BREƏK/\_C)<sub>σ</sub> » \*DIPH » BREƏK/\_C (lex. cl. der. open)

Add \*DIPH)<sub>σ</sub>

(26) New factorial typology with option 2

- a. OO-FAITH » \*DIPH » BREƏK/\_C » \*DIPH)<sub>σ</sub> (Derry)  
 OO-FAITH » \*DIPH » \*DIPH)<sub>σ</sub> » BREƏK/\_C (Derry)  
 OO-FAITH » \*DIPH)<sub>σ</sub> » \*DIPH » BREƏK/\_C (Derry)  
 \*DIPH » OO-FAITH » BREƏK/\_C » \*DIPH)<sub>σ</sub> (Derry)  
 \*DIPH » OO-FAITH » \*DIPH)<sub>σ</sub> » BREƏK/\_C (Derry)  
 \*DIPH » BREƏK/\_C » OO-FAITH » \*DIPH)<sub>σ</sub> (Derry)  
 \*DIPH » \*DIPH)<sub>σ</sub> » OO-FAITH » BREƏK/\_C (Derry)  
 \*DIPH » BREƏK/\_C » \*DIPH)<sub>σ</sub> » OO-FAITH (Derry)  
 \*DIPH » \*DIPH)<sub>σ</sub> » BREƏK/\_C » OO-FAITH (Derry)  
 \*DIPH)<sub>σ</sub> » OO-FAITH » \*DIPH » BREƏK/\_C (Derry)  
 \*DIPH)<sub>σ</sub> » \*DIPH » OO-FAITH » BREƏK/\_C (Derry)  
 \*DIPH)<sub>σ</sub> » \*DIPH » BREƏK/\_C » OO-FAITH (Derry)
- b. BREƏK/\_C » OO-FAITH » \*DIPH » \*DIPH)<sub>σ</sub> (breaking before C)  
 BREƏK/\_C » OO-FAITH » \*DIPH)<sub>σ</sub> » \*DIPH (breaking before C)  
 BREƏK/\_C » \*DIPH » OO-FAITH » \*DIPH)<sub>σ</sub> (breaking before C)  
 BREƏK/\_C » \*DIPH)<sub>σ</sub> » OO-FAITH » \*DIPH (breaking before C)  
 BREƏK/\_C » \*DIPH » \*DIPH)<sub>σ</sub> » OO-FAITH (breaking before C)  
 BREƏK/\_C » \*DIPH)<sub>σ</sub> » \*DIPH » OO-FAITH (breaking before C)
- c. OO-FAITH » BREƏK/\_C » \*DIPH » \*DIPH)<sub>σ</sub> (Harris)  
 OO-FAITH » BREƏK/\_C » \*DIPH)<sub>σ</sub> » \*DIPH (Newry/Harris)
- c'. \*DIPH)<sub>σ</sub> » BREƏK/\_C » OO-FAITH » \*DIPH (Omagh)

- \*DIPH)<sub>σ</sub> >> BREƏK/\_C >> \*DIPH >> OO-FAITH (Omagh)
- d. OO-FAITH >> \*DIPH)<sub>σ</sub> >> BREƏK/\_C >> \*DIPH (eə in lex cl and der open)
- e. \*DIPH)<sub>σ</sub> >> OO-FAITH >> BREƏK/\_C >> \*DIPH (Lisburn)

## (27) Lisburn

	/brək/	*DIPH) <sub>σ</sub>	OO-FAITH	BREƏK/_C	*DIPH
☞ a.	bɹɛək				*
b.	bɹɛ:k			*!	
	/stɛfn/				
c.	stɛə.fən	*!			*
☞ d.	stɛ: fən			*	
	/de/				
e.	deə				*!
☞ f.	de:				
	/brək -ɪn/				
g.	bɹɛəkɪn	*!			*
☞ h.	bɹɛ:kɪn		*	*	
	/de -z/				
i.	deəz.		*!		*
☞ j.	de:z.			*	

## (28) Omagh

	/brək/	*DIPH) <sub>σ</sub>	BREƏK/_C	*DIPH	OO-FAITH
☞ a.	bɹɛək			*	
b.	bɹɛ:k		*!		
	/stɛfn/				
c.	stɛə.fən	*!		*	
☞ d.	stɛ: fən		*		
	/de/				
e.	deə			*!	
☞ f.	de:				
	/brək -ɪn/				
g.	bɹɛəkɪn	*!		*	*
☞ h.	bɹɛ:kɪn		*		
	/de -z/				
☞ i.	deəz.			*	*
j.	de:z.		*!		

## (29) Newry

	/bræk/	OO-FAITH	BREƏK/_C	*DIPH) <sub>σ</sub>	*DIPH
☞ a.	bɹɛək				*
b.	bɹɛ:k		*!		
	/stɛʃn/				
☞ c.	stɛə.ʃən			*	*
d.	stɛ:ʃən		*!		
	/de/				
e.	deə				*!
☞ f.	de:				
	/bræk -ɪn/				
☞ g.	bɹɛəkɪn			*	*
h.	bɹɛ:kɪn	*!	*		
	/de -z/				
i.	deəz.	*!			*
☞ j.	dez.		*		

## (30) Unattested (b) pattern

	/bræk/	BREƏK/_C	OO-FAITH	*DIPH) <sub>σ</sub>	*DIPH
☞ a.	bɹɛək				*
b.	bɹɛ:k	*!			
	/stɛʃn/				
☞ c.	stɛə.ʃən			*	*
d.	stɛ:ʃən	*!			
	/de/				
e.	deə				*!
☞ f.	de:				
	/bræk -ɪn/				
☞ g.	bɹɛəkɪn			*	*
h.	bɹɛ:kɪn	*!	*		
	/de -z/				
☞ i.	deəz.		*		*
j.	dez.	*!			

## (31) Unattested (d) pattern

	/brɛk/	OO-FAITH	*DIPH ) <sub>σ</sub>	BREƏK/ _C	*DIPH
☞ a.	bɪɛək				*
b.	bɪɛ:k			*!	
	/stɛʃn/				
c.	stɛə.ʃən		*!		*
☞ d.	stɛ:ʃən			*	
	/de/				
e.	deə				*!
☞ f.	de:				
	/brɛk -ɪn/				
☞ g.	bɪɛəkɪn		*		*
h.	bɪɛ:kɪn	*!		*	
	/de -z/				
i.	deəz.	*!			*
☞ j.	dez.			*	

- All patterns accounted for.
- The Lisburn pattern is by far the most popular, but predicted only by one ranking.
- We have two unattested patterns.

Should we care?

*Stratal OT*

## (32) Breaking options at level 1: none, before C, in closed syllables

L1	/brɛk/	*DIPH/ ) <sub>σ</sub>	BREƏK/ _C	*DIPH
☞☛ a.	bɪɛək			*
☺ b.	bɪɛ:k		*	
	/stɛʃən/			
☛ c.	stɛəʃən	*		*
☞☺ d.	stɛ:ʃən		*	
	/de/			
e.	deə	*		*
☞☛☺ f.	de:		*	

☞ = \*DIPH/ )<sub>σ</sub> » BREƏK/ \_C » \*DIPH; ☛ = BREƏK/ \_C » \*DIPH/ )<sub>σ</sub>, \*DIPH;

☺ = \*DIPH » \*DIPH/ )<sub>σ</sub>, BREƏK/ \_C; \*DIPH/ )<sub>σ</sub> » \*DIPH » BREƏK/ \_C

At level 2 we include IO-Faith in the ranking.

## (33) Lisburn L2

	//bʲeək//	*DIPH )σ	IO-FAITH	BREƏK/ _ C	*DIPH
☛ a.	bʲeək				*
b.	bʲe:k		*!	*	
	//steə.ʃən//				
c.	steə.ʃən	*!			*
☛ d.	ste:ʃən		*	*	
	//de://				
e.	deə		*!	*	*
☛ f.	de:				
	//bʲeək -ɪn//				
g.	bʲeəkɪn	*!			*
☛ h.	bʲe:kɪn		*	*	
	//de -z//				
i.	deəz.		*!		*
☛ j.	dez.			*	

## (34) Omagh L2

	//bʲeək//	*DIPH )σ	BREƏK/ _ C	IO-FAITH	*DIPH
☛ a.	bʲeək				*
b.	bʲe:k		*!	*	
	//steə.ʃən//				
c.	steə.ʃən	*!			*
☛ d.	ste:ʃən		*	*	
	//de://				
e.	deə		*!	*	*
☛ f.	de:				
	//bʲeək -ɪn//				
g.	bʲeəkɪn	*!			*
☛ h.	bʲe:kɪn		*	*	
	//de -z//				
☛ i.	deəz.			*!	*
j.	dez.		*		

## (35) Newry L2

	//bʲeək//	IO-FAITH	*DIPH/)_σ	BREƏK/_C	*DIPH
☛ a.	bʲeək				*
b.	bʲe:k	*!		*	
	//steə.ʃən//				
☛ c.	steə.ʃən		*		*
d.	ste:ʃən	*!		*	
	//de://				
e.	deə	*!		*	*
☛ f.	de:				
	//bʲeək -ɪn//				
☛ g.	bʲeəkɪn		*		*
h.	bʲe:kɪn	*!		*	
	//de -z//				
i.	deəz.	*!			*
☛ j.	dez.			*	

## (36) Factorial typology in Stratal OT

- L 1:
- a. \*DIPH/)\_σ » BREƏK/\_C » \*DIPH Breaking in closed syllables
  - b. BREƏK/\_C » \*DIPH » \*DIPH/)\_σ Breaking before C
  - b'. BREƏK/\_C » \*DIPH/)\_σ » \*DIPH Breaking before C
  - c. \*DIPH » \*DIPH/)\_σ » BREƏK/\_C No breaking
  - c'. \*DIPH » BREƏK/\_C » \*DIPH/)\_σ No breaking
  - c''. \*DIPH/)\_σ » \*DIPH » BREƏK/\_C No breaking

- L 2
- \*DIPH/)\_σ » BREƏK/\_C » \*DIPH » IO-FAITH
  - \*DIPH/)\_σ » BREƏK/\_C » IO-FAITH » \*DIPH
  - \*DIPH/)\_σ » \*DIPH » BREƏK/\_C » IO-FAITH
  - \*DIPH/)\_σ » \*DIPH » IO-FAITH » BREƏK/\_C
  - \*DIPH » \*DIPH/)\_σ » BREƏK/\_C » IO-FAITH
  - \*DIPH » \*DIPH/)\_σ » IO-FAITH » BREƏK/\_C
  - \*DIPH » BREƏK/\_C » \*DIPH/)\_σ » IO-FAITH
  - \*DIPH » BREƏK/\_C » IO-FAITH » \*DIPH/)\_σ
  - \*DIPH » IO-FAITH » BREƏK/\_C » \*DIPH/)\_σ
  - \*DIPH » IO-FAITH » \*DIPH/)\_σ » BREƏK/\_C
  - BREƏK/\_C » IO-FAITH » \*DIPH » \*DIPH/)\_σ
  - BREƏK/\_C » IO-FAITH » \*DIPH/)\_σ » \*DIPH
  - BREƏK/\_C » \*DIPH/)\_σ » IO-FAITH » \*DIPH
  - BREƏK/\_C » \*DIPH/)\_σ » \*DIPH » IO-FAITH
  - BREƏK/\_C » \*DIPH » \*DIPH/)\_σ » IO-FAITH
  - BREƏK/\_C » \*DIPH » IO-FAITH » \*DIPH/)\_σ
  - \*DIPH/)\_σ » IO-FAITH » BREƏK/\_C » \*DIPH

\*DIPH/\_σ >> IO-FAITH >> \*DIPH >> BREƏK/\_C  
 IO-FAITH >> \*DIPH/\_σ >> BREƏK/\_C >> \*DIPH  
 IO-FAITH >> \*DIPH/\_σ >> \*DIPH >> BREƏK/\_C  
 IO-FAITH >> BREƏK/\_C >> \*DIPH/\_σ >> \*DIPH  
 IO-FAITH >> BREƏK/\_C >> \*DIPH >> \*DIPH/\_σ  
 IO-FAITH >> \*DIPH >> BREƏK/\_C >> \*DIPH/\_σ  
 IO-FAITH >> \*DIPH >> \*DIPH/\_σ >> BREƏK/\_C

The same analysis in Stratal OT leaves us with three freely rankable constraints at level 1 and four at level 2 = 144 possible grammars (as opposed to 24). The predictions are co-extensional.

The chances for the majority pattern to actually surface are ridiculously small in either analysis (6/144=0.0416 in Stratal OT and 1/24=0.0416 in Transderivational OT).

Analysis sketch 4: The difference is caused by differences in syllabification:

- In all varieties (except Derry/Larne) the diphthong is found in closed syllables only.
- The Newry/Harris variety treats ‘word-internal lexically open’ and ‘derived open’ syllables as closed.
- ‘Derived closed syllables’ are actually open in Newry and Lisburn.

(37) Newry/Harris’ syllabification

a. rɛ:zn	b. tʃɛ:sn	c. dɛ:	d. dɛ:z	e. deəz
‘raisin’	‘chasing’	‘day’	‘days’	‘daze’

(38) Omagh syllabification

a. rɛ:zn	b. tʃɛ:sn	c. dɛ:	d. deəz.	e. deəz
‘raisin’	‘chasing’	‘day’	‘days’	‘daze’

(39) Lisburn syllabification

a. rɛ:zn	b. tʃɛ:sn	c. dɛ:	d. dɛ:z	e. deəz
‘raisin’	‘chasing’	‘day’	‘days’	‘daze’

Why should derived forms ending in a suffixed C have an open syllable?

Why should the C in ‘wd-internal lexically open’ close the syllable in some varieties?

Another wee problem: I haven’t found a set of reasonable constraints on syllable structure yet that would generate these patterns...

## 5. Conclusion

- Micro-comparison has revealed that syllable structure plays a role in the pattern.  
This was not obvious from the original data (see analysis 1<sup>st</sup> attempt)

- OT analyses aren't too bad in explaining the variation found:

1. Both analyses account for the attested patterns.
2. Both analyses overgenerate unattested patterns.
3. No analysis picks out the most common pattern as most likely.
4. Both analyses proliferate co-extensive grammars.
5. Stratal analysis yields more grammars than BO-analysis

Re 1: Fine.

- Re 2:
- a. At least the predicted patterns are less crazy than some of the logically possible patterns.
  - b. There are still blank spots on the map. Who knows what they do in Randalstown or Magerafelt?
  - b'. Hale & Reiss (2008): That a grammar/predicted pattern is unattested doesn't mean that it is impossible.

- Re 3:
- a. Explanation of frequency effects is not necessarily the domain of formal grammar, but sociolinguistics.
  - b. Lisburn has (almost) transparent application + the least marked syllables.

Re 4: No big problem. See e.g., Krämer (in press) on the reality of different analyses of identical patterns.

Re 5: So quantity seems to be the only way to select between the analyses?

*Further work to do:*

- Collect more data
  - to eventually find the missing varieties
  - to see if the two structures are distinctive in some variety.
  - to see if different following Cs can trigger different behaviour (as in tensing, Scottish Vowel Length Rule)
- What is this representationally? A [tense] / [lax] variation?

## References

- Benua, L. (1997). *Transderivational Identity: Phonological Relations between Words*. Unpublished Ph.D. dissertation, University of Massachusetts, Amherst.
- Bermúdez-Otero, Ricardo (forthcoming). *Stratal Optimality Theory*. Oxford: Oxford University Press.
- Halle, M. & K. P. Mohanan (1985). Segmental Phonology in Modern English. *Linguistic Inquiry* 16. 57-116.
- Harris, J. (1985). *Phonological variation and change: studies in Hiberno-English*. Cambridge: Cambridge University Press.
- (1990). Derived phonological contrasts. In Susan Ramsaran (ed.) *Studies in the Pronunciation of English. A Commemorative Volume in Honour of A. C. Gimson*. London: Routledge. 87-105.
- Kenstowicz, M. (1995). Base-identity and uniform exponence: alternatives to cyclicity. In J. Durand & B. Laks (eds.) *Current trends in phonology: models and methods*. University of Salford Publications. 363-393.
- Kiparsky, P. (1982). From Cyclic Phonology to Lexical Phonology. In H. van der Hulst & N. Smith (eds.) *The structure of phonological representations I*. Dordrecht: Foris. 131-175.
- (1985). Some consequences of Lexical Phonology. *Phonology Yearbook* 2. 85-138.
- (2000). Opacity and Cyclicity. *The Linguistic Review* 17. 351-365.
- Krämer, Martin (in press). Cryptovariation in Italian velar palatalisation. In Pascual J. Masullo, Erin O'Rourke, and Chia-Hui Huang (eds.) *Romance Linguistics: Structures, Interfaces, and Microparametric Variation*. Amsterdam: John Benjamins. 193-208.
- McCarthy, J. J. & Alan S. Prince. (1995). Faithfulness and Reduplicative Identity. *UMOP* 18. 249-384.
- Milroy, J. (1981). *Regional accents of English: Belfast*. Belfast: Blackstaff Press.
- Prince, A. & P. Smolensky (1993). *Optimality Theory: Constraint Interaction in Generative Grammar*. Ms., Rutgers University and University of Colorado.
- Wells, J. C. (1982). *Accents of English. Vol 2: The British Isles*. Cambridge: Cambridge University Press.