

Resumptive Fake Indexicals in Irish

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The Irish examples in this talk are from a syntactic database developed and maintained by Jim McCloskey.

Many thanks to Jim for sharing his data and discussing some of these issues. Any remaining errors are my own.

The Issue

- Fake indexicals are indexical (1st or 2nd person) pronouns with bound readings (unexpected).
- Kratzer (2006) argues that fake indexicals provide evidence that pronominal binding is local.
- Irish 1st and 2nd person resumptives are bound pronouns and therefore fake indexicals.
- Irish resumptives are not subject to locality conditions.
- ★ Fake indexicals always have the form of true indexicals. The strongest possible explanation of this is that there is only one underlying form.

Overview

- Introduce concept of fake indexicals
- Some Irish data
- Introduce theory of resumption and its foundations.

Resource Sensitivity:

Natural language is universally resource sensitive.

- Intuitive discussion of the analysis of Irish, including fake indexicals

Fake Indexicals

Fake Indexicals

(1) I'm the only one around here who can take care of **my** children.

True indexical interpretation:

The speaker is the only x around here such that x can take care of the speaker's children.

Bound (fake indexical) interpretation:

The speaker is the only x around here such that x can take care of x's own children.

Kratzer (2006)

Fake Indexicals

(2) Only **you** eat what **you** cook.

True indexical interpretation:

The hearer is the only x such that x eats what the hearer cooks.

Bound (fake indexical) interpretation:

The hearer is the only x such that x eats what x cooks.

Kratzer (2006)

Fake Indexicals

(3) **We** all think **we**'re smart.

True indexical interpretation:

Each of us thinks that we (all of us) are smart.

Bound (fake indexical) interpretation:

Each of us thinks that he/she is smart.

- Compare:

4. We each/all think we're the smartest person in the world.

5. # We're the smartest person in the world.

➔ Both **person** and **number** can be 'irrelevant'.

Rullmann (2004)

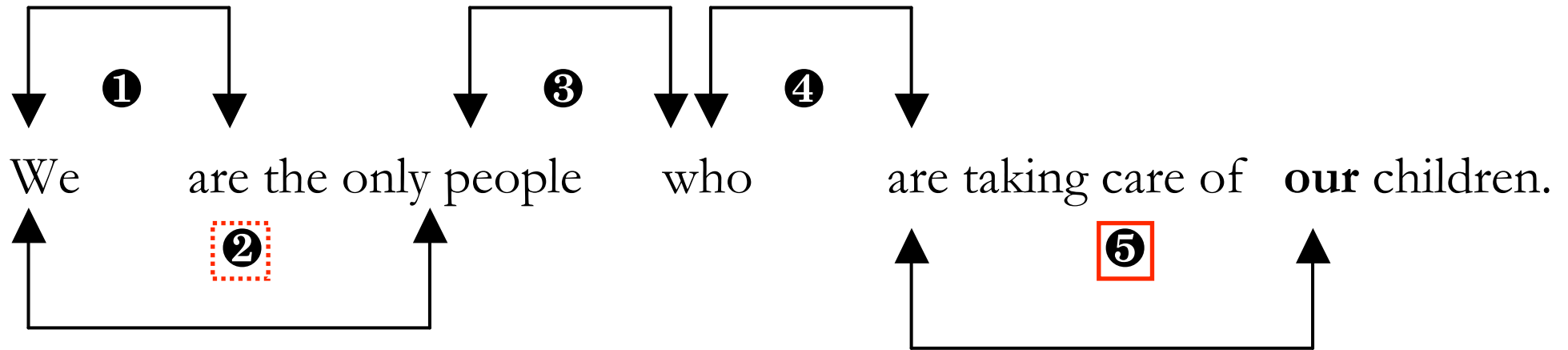
Irish Resumptive Fake Indexicals

- (1) **sibhse** a dtig an fhilíocht **libh**
you aN comes the poetry with-you
‘you to whom poetry comes easily’ [POC162, Donegal]
- (2) cuidiú **linne** a ndearnadh neamart mór **inár** gcuid léinn
help [-FIN] with-us aN was-done neglect great in-our CLASS education
‘to help those of us whose education was greatly neglected’ [GNC223, Donegal]
- (3) Is **sinne** an bheirt ghasúr a-r dhíol tú **ár** lóistín.
COP.PRES we the two boy aN-PAST paid you our lodging
‘We are the two boys that you paid our lodging.’ [SHS119, Donegal]
- (4) A Alec, **tusa** a bhfuil an Béarla **aige**
hey Alec you aN is the English at-him
‘Hey, Alec — you that know(s) English’

Kratzer's Minimal Pronouns

- Kratzer (2006):
‘Referential and bound variable pronouns look the same because they are made to look the same by the phonological spell-out component.’
- Bound variable pronouns = **Minimal Pronouns**
- Minimal Pronouns enter the derivation without a complete set of features.
- Minimal Pronouns receive further features via chains of local agreement relations in the syntax.
- ➔ Minimal Pronouns end up with the same features as referential pronouns have underlyingly.

Kratzer's Minimal Pronouns



- ① Subject verb agreement
- ② Agreement between a predicative DP and its subject
- ③ Agreement between a relative pronoun and its head
- ④ Subject verb agreement
- ⑤ Agreement between a verb and a possessive pronoun in the specifier position of the verb's direct object.

Kratzer's Conclusions

- Bound variable pronouns = **Minimal Pronouns**
- Minimal Pronouns enter the derivation without a complete set of features.
- Minimal Pronouns receive further features via chains of local agreement relations in the syntax.
- ➔ Minimal Pronouns end up with the same features as referential pronouns have underlyingly.

Problems

- Kratzer's theory of Minimal Pronouns does not take morpho-syntax seriously.
 - No independent motivation for the existence of certain of the agreement chains
 - No morphological realization of some of the putative agreement relations (also cross-linguistically)
 - No real motivation for the PF realization of true and fake indexicals as the same element (coincidence/conspiracy)
- ★ The theory predicts that fake indexicals, as Minimal Pronouns, should be subject to **syntactic locality effects** (Adger 2007).

Fake Indexicals and Locality

- David Adger, talk given at ‘Resumptives at the Interfaces’, Paris 7, 2007: availability of bound readings in island contexts
- Judgements here are as reported by David on his handout **for the bound reading**
- Complex NP
 1. * Only I heard the rumour that Sue told me.
 2. * I am the only one that heard the rumour that Sue told me.
- Wh-Island
 3. ?? I’m the only one that wondered how I can get home early.
- Coordinate Structure Constraint
 4. * Only I met David early and did my homework.

Fake Indexicals and Locality

- Left Branch Constraint

0. I'm the only one around here who can take care of my children.

cf. a. * Whose did you see car?

b. * Who did you see car?

- Complex NP

1'. Only I believed the rumour that Sue told me.

2'. I am the only one that believed the rumour that Sue told me.

- Wh-Island

3'. I'm the only one that wondered how my friends could desert me.

3''. I'm the only one that wondered where I could smoke.

- Coordinate Structure Constraint

4'. Only I did my homework and met David early.

Irish Resumptive Fake Indexicals

- Irish resumptives are not subject to syntactic locality effects (McCloskey 1979, 1990, 2002, 2006, Sells 1984).
- Irish resumptives are bound variables (McCloskey 1979, 2002, Sells 1984).
- Irish resumptive 1st and 2nd person pronouns:
 - Are bound variables, therefore fake indexicals
 - Are not subject to locality effects
 - Have the same form as non-resumptive indexicals

The Logic of Pronominal Resumption

- Background hypothesis/principle

Resource Sensitivity:

Natural language is universally resource-sensitive.

1. McCloskey's Generalization:

Resumptive pronouns are ordinary pronouns (McCloskey 2002, Asudeh 2004).

2. Consequence of Resource Sensitivity:

The essential problem of resumption is that a resumptive pronoun saturates a semantic argument position that must be left open for successful semantic composition (Asudeh 2004).

The Resource Management Theory of Resumption

Glue Semantics

- Glue Semantics is a type-logical semantics that can be tied to any syntactic formalism that supports a notion of headedness.
- Glue Semantics can be thought of as *categorial semantics without categorial syntax*.
- The independent syntax assumed in Glue Semantics means that the logic of composition is *commutative*, unlike in Categorical Grammar.
- Selected works:
Dalrymple (1999, 2001), Crouch & van Genabith (2000),
Asudeh (2004, 2005a,b, in prep.), Lev 2007, Kokkonidis (in press)

Glue Semantics

- Lexically-contributed *meaning constructors* :=

Meaning language term $\mathcal{M} : G$ Composition language term

- Meaning language := some lambda calculus
 - Model-theoretic
- Composition language := linear logic
 - Proof-theoretic
- Curry Howard Isomorphism between formulas (meanings) and types (proof terms)
- Successful Glue Semantics proof:

$$\Gamma \vdash \mathcal{M} : G_t$$

Key Glue Proof Rules with Curry-Howard Terms

Application : Implication Elimination

$$\frac{\begin{array}{c} \vdots \\ a : A \end{array} \quad \begin{array}{c} \vdots \\ f : A \multimap B \end{array}}{f(a) : B} \multimap_{\varepsilon}$$

Abstraction : Implication Introduction

$$\frac{\begin{array}{c} [x : A]^1 \\ \vdots \\ f : B \end{array}}{\lambda x. f : A \multimap B} \multimap_{\mathcal{I},1}$$

Pairwise Substitution : Conjunction Elimination

$$\frac{\begin{array}{c} \vdots \\ a : A \otimes B \end{array} \quad \begin{array}{c} [x : A]^1 \quad [y : B]^2 \\ \vdots \\ f : C \end{array}}{\text{let } a \text{ be } x \times y \text{ in } f : C} \otimes_{\varepsilon,1,2}$$

Beta reduction for let:

$$\text{let } a \times b \text{ be } x \times y \text{ in } f \Rightarrow_{\beta} f[a/x, b/y]$$

Example: *Mary laughed*

1. $mary : \uparrow_{\sigma_e}$

2. $laugh : (\uparrow \text{SUBJ})_{\sigma_e} \multimap \uparrow_{\sigma_t}$

$$f \left[\begin{array}{ll} \text{PRED} & \text{'laugh' } \langle \text{SUBJ} \rangle \\ \text{SUBJ} & g \left[\text{PRED} \quad \text{'Mary'} \right] \end{array} \right]$$

1'. $mary : g_{\sigma_e}$

2'. $laugh : g_{\sigma_e} \multimap f_{\sigma_t}$

1''. $mary : m$

2''. $laugh : m \multimap l$

Proof

1. $mary : m$	Lex. Mary
2. $laugh : m \multimap l$	Lex. laughed
3. $laugh(mary) : l$	E \multimap , 1, 2

\equiv

Proof

$mary : m$	$laugh : m \multimap l$	
<hr/>		$\multimap \varepsilon$
$laugh(mary) : l$		

Example: *Most presidents speak*

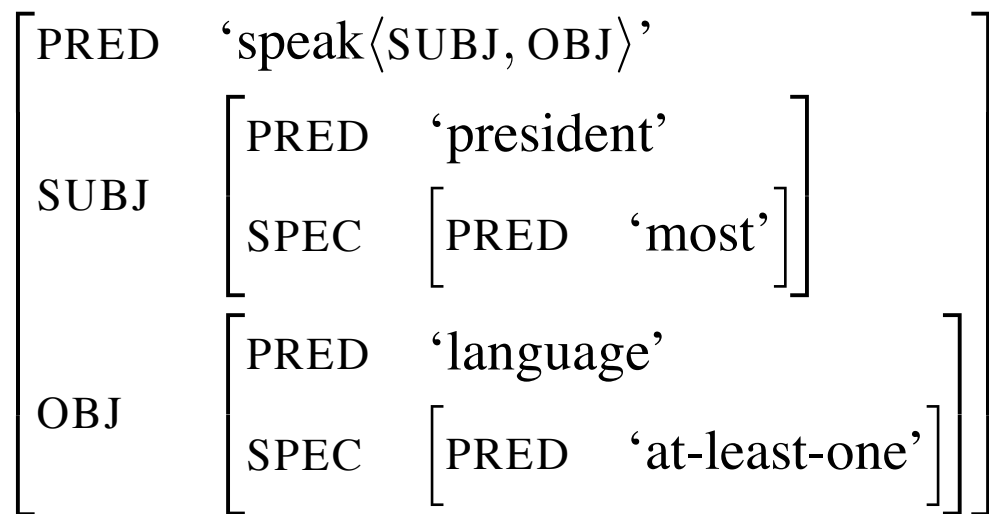
- | | |
|---|------------------------|
| 1. $\lambda R \lambda S. most(R, S) : (v \multimap r) \multimap \forall X. [(p \multimap X) \multimap X]$ | Lex. most |
| 2. $president^* : v \multimap r$ | Lex. presidents |
| 3. $speak : p \multimap s$ | Lex. speak |

$\lambda R \lambda S. most(R, S) :$	$president^* :$
$(v \multimap r) \multimap \forall X. [(p \multimap X) \multimap X]$	$v \multimap r$

$\lambda S. most(president^*, S) :$	$speak :$	
$\forall X. [(p \multimap X) \multimap X]$	$p \multimap s$	
<hr/>		$\multimap \varepsilon, [s/X]$
$most(president^*, speak) : s$		

Example:

Most presidents speak at least one language



Single parse



Multiple scope possibilities
(Underspecification through
quantification)

1. $\lambda R \lambda S. \text{most}(R, S) :$
 $(v1 \multimap r1) \multimap \forall X. [(p \multimap X) \multimap X]$
2. $\text{president}^* : v1 \multimap r1$
3. $\text{speak} : p \multimap l \multimap s$
4. $\lambda P \lambda Q. \text{at-least-one}(P, Q) :$
 $(v2 \multimap r2) \multimap \forall Y. [(l \multimap Y) \multimap Y]$
5. $\text{language} : v2 \multimap r2$

Lex. **most**

Lex. **presidents**

Lex. **speak**

Lex. **at least one**

Lex. **language**

Pronouns in Glue Semantics

- Variable-free: pronouns are functions on their antecedents (Jacobson 1999, among others)
- Commutative logic of composition allows pronouns to compose **directly** with their antecedents.

Pronouns in Glue Semantics

1. Joe said he bowls.

- Pronominal meaning constructor:

$$\lambda z.z \times z : A \multimap (A \otimes P)$$

$$\begin{array}{c}
 \begin{array}{c}
 \text{joe} : \quad \lambda z.z \times z : \\
 j \quad \quad j \multimap (j \otimes p)
 \end{array}
 \quad
 \frac{
 \begin{array}{c}
 [x : j]^1 \quad \lambda u \lambda q. \text{say}(u, q) : \\
 j \multimap b \multimap s
 \end{array}
 }{
 \begin{array}{c}
 \lambda q. \text{say}(x, q) : \\
 b \multimap s
 \end{array}
 }
 \quad
 \frac{
 \begin{array}{c}
 [y : p]^2 \quad \lambda v. \text{bowl}(v) : \\
 p \multimap b
 \end{array}
 }{
 \begin{array}{c}
 \text{bowl}(y) : \\
 b
 \end{array}
 }
 \\
 \hline
 \begin{array}{c}
 \text{joe} \times \text{joe} : j \otimes p
 \end{array}
 \quad
 \begin{array}{c}
 \text{say}(x, \text{bowl}(y)) : s
 \end{array}
 \\
 \hline
 \frac{
 \text{let } \text{joe} \times \text{joe} \text{ be } x \times y \text{ in } \text{say}(x, \text{bowl}(y)) : s
 }{
 \text{say}(\text{joe}, \text{bowl}(\text{joe})) : s
 } \Rightarrow_{\beta}
 \end{array}
 \quad
 \otimes_{\varepsilon,1,2}
 \end{array}$$

Logical Resource Sensitivity

- Linear logic is a **resource logic**

Premise reuse	
Classical/Intuitionistic Logic	Linear Logic
$A, A \rightarrow B \vdash B$	$A, A \multimap B \vdash B$
$A, A \rightarrow B \vdash B \wedge A$	$A, A \multimap B \not\vdash B \otimes A$
Premise A reused, conjoined with conclusion B	Premise A is consumed to produce conclusion B , no longer available for conjunction with B

Premise nonuse	
Classical/Intuitionistic Logic	Linear Logic
$A, B \vdash A$	$A, B \not\vdash A$
Can ignore premise B	Cannot ignore premise B

Linguistic Resource Sensitivity

- **Resource Sensitivity:**
Natural language is universally resource sensitive.
- Semantics:
 - The logic of semantic composition is a resource logic.
 - Semantic composition is commutative:
Functors don't care what side they find their arguments on.
 - Commutative resource logic = linear logic
- Linguistically motivated goal for meaning construction (proofs):
$$\Gamma \vdash \mathcal{M} : G_t$$

The Composition Problem

✓ Who did Mary see?

[[who]] = The set of x's for which it is true that ___

[[did Mary see]] = Mary saw x

➔ [[who]] ([[did Mary see]]) =
The set of x's for which it is true that Mary saw x

* Who did Mary see him?

[[did Mary see him]] = Mary saw the-antecedent-of-him

➔ [[who]] ([[did Mary see him]]) =
The set of x's for which it is true that Mary saw
the-antecedent-of-him **Bad meaning!**

The Composition Problem

(1) Who did Mary see?

$$\begin{array}{c}
 \mathbf{Mary} \quad \mathbf{see} \\
 m \quad m \multimap w \multimap s \\
 \hline
 \mathbf{who} \\
 \forall X. [(w \multimap X) \multimap X] \\
 \hline
 s
 \end{array}
 \quad
 \begin{array}{c}
 \hline
 w \multimap s \\
 [s/X]
 \end{array}$$

(2) *Who did Mary see him?

$$\begin{array}{c}
 \mathbf{Mary} \quad \mathbf{see} \\
 m \quad m \multimap w \multimap s \\
 \hline
 \mathbf{who} \\
 \forall X. [(w \multimap X) \multimap X] \\
 \hline
 s
 \end{array}
 \quad
 \begin{array}{c}
 \hline
 w \multimap s \\
 [s/X]
 \end{array}
 \quad
 \begin{array}{c}
 \mathbf{him} \\
 w \multimap (w \otimes p)
 \end{array}$$

$$s \otimes (w \multimap (w \otimes p))$$

Consequences of Resource Sensitivity

- Apparent cases of **resource deficit** (not enough to go around) and apparent cases of **resource surplus** (too much to go around) must somehow be resolved if the target interpretation is well-formed.
- Resumptive pronouns are a case of resource surplus.
 - There must be something that gets rid of the pronoun, thereby licensing it: **manager resource**
 - Manager resources are lexically specified.
 - Irish: ***aN***

Manager Resources

- A manager resource:
 1. Identifies a pronoun through the anaphoric binding relation between the pronoun and its antecedent.
 2. Removes the pronoun from composition (discharges resource surplus)
- The composition (apart from pronoun removal) is just as if the pronoun had not been there.

Irish

Irish Complementizers

aL C (\uparrow UDF) = (\uparrow CF* GF)

(\rightarrow UDF) = (\uparrow UDF)

‘Successive-cyclic’ marking

goN C ...
 \neg (\uparrow UDF)

goN C ...
Ulster

aN C **Resumptive binding**
(Manager resource)

Role of Irish C in Unbounded Dependencies

	Role Relative to Position		Method	Cyclic?
	Not bottom	Bottom		
<i>aL</i>	Passing	Grounding	Functional equality	Yes
<i>aN</i>	Passing	Grounding Resumptive licensing	Anaphoric binding	No

Note:

This is not an ‘agreement-based’ theory of Irish C-marking

The unbounded dependency complementizers ‘do something’.

Resumptive Fake Indexicals

- The fact that indexicals can be bound indicates simply that indexical reference is not intrinsically built into lexical entries for 1st and 2nd person pronouns.
- Rather, such pronouns have two possible meaningful components:
 1. A pronominal function on an antecedent (bound reading)
 2. A contribution of an indexical reference
 - ➔ Indexicals are exceptional in having intrinsic reference/ antecedent.
- I furthermore make the standard assumption that the pronoun must agree with its antecedent.

Pronouns

sé ('he') $\lambda z.z \times z : antecedent \multimap (antecedent \otimes pronoun)$

Bindable only (incl. discourse)

sinne ('we') $\{ sum(speaker, others) : s \mid$
 $\lambda z.z \times z : antecedent \multimap (antecedent \otimes pronoun) \}$

Bindable or
can provide intrinsic reference

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‘Hey, Alec — you that know(s) English’

Conclusion

- Irish resumptives are bound pronouns ('bound variables').
- Irish resumptives occur in 1st and 2nd person.
- Therefore, Irish has resumptive fake indexicals.
- Resumptive fake indexicals have the ordinary form of indexical pronouns: suggests a unified underlying form (lexical entry), contra Kratzer (2006).
- Resumptive fake indexicals are not clearly subject to locality constraints.
- Kratzer's theory of Minimal Pronouns must be adjusted if it is to account for non-locality-sensitive resumptive fake indexicals.

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