Questions about the Theory of Passives

I. *Where is the rest of the grammar?*

Lummi and Picurís have synthetic passive verbs, but English has an analytic passive consisting of an auxiliary and verbal participle . . .

Answer. There are further lexical, morphosyntactic, and syntactico-semantic optimizations, for which we must choose a specific representational basis.

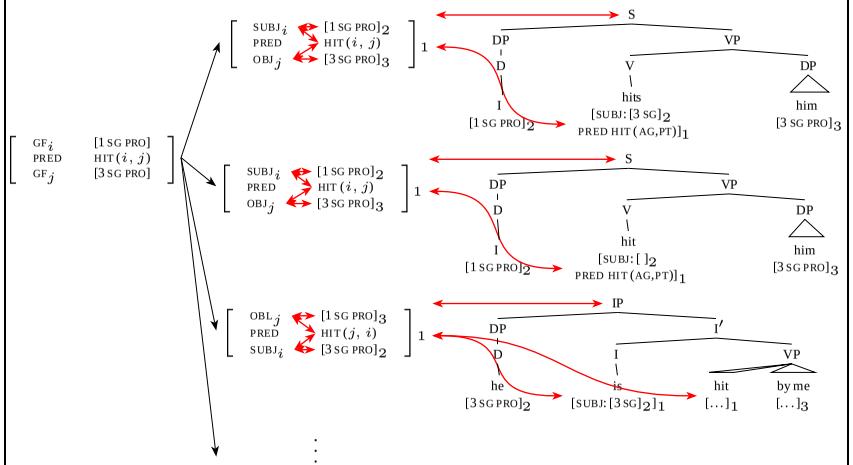
In the OT-LFG formalization (using LFG as the representational basis for OT syntax), these can be computed in parallel. Examples: verbal agreement choices, the selection of analytic or synthetic forms, and sentential word order patterns.[a]

Language-particular effects follow from anchoring general families of constraints to specific word classes, paradigms, or morphs.

[a] See Choi 1999, Bresnan 2000, 2001a,b,c, in press; Bresnan and Deo 2001; Kuhn 2001; Lee 2001, Clark 2002a,b, Sells 2001a,b, Koontz-Garboden 2002, and references.

1

Parallel Optimizations (OT-LFG):



2

II. *How can actives and passives be competing expressions of the same input when the constructions may differ in meaning?*

(a) Everyone likes someone.
(b) Someone is liked by everyone. (Chomsky 1957: 100–1)

(c) Reluctantly, Joan instructed Mary.
(d) Reluctantly, Mary was instructed by Joan. (McConnell-Ginet 1982)

Answer. Subject quantifers preferentially scope over nonsubject quantifiers. Since subject selection differs in the active and passive, the preferred interpretations with quantifiers also differs in (a)–(b).

Some manner adverbs modify either subjects or agents. Since subjects and agents coincide in actives and diverge in passives, the possible adverb interpretations also differ in (c)–(d).

In short, actives and passives differ in argument realization in the syntax, and these differences interact with the interpretation of quantifiers and adverbs.

3

The interactions of semantics with subject realization would be built into a more extensive optimization system. For example, if the input includes a specific semantic contrast in quantifier scope, the speaker could optimize the syntactic choice of active or passive to preserve the preferred correspondence between quantifier scope and linear precedence (or syntactic prominence), unless other constraints overrode it.

In simple sentences lacking such quantifiers and adverbs, actives and passives are often semantically equivalent, so that other factors such as information structure and person may occasionally determine the choice.

4

Evidence:

In colloquial spoken English, speakers often freely alternate actives and passives (Weiner and Labov 1981: 34) [italics added]:

> Cause we have boundaries in this school. Like out at like, the w — like you know, *Lower Merion's allowed to smoke in the halls* 'n' do all that crap, right? Over here, if th — I don't care if *they never allow you to smoke in the halls*.

In Lummi and Picurís, passives fill gaps in the active paradigm created by antiharmonic person combinations, and vice versa.

In Tzotzil and Chamorro, passives fill gaps in the active paradigm created by antiharmonic animacy combinations, and vice versa (Aissen 1999).

Conclusion: Use and meaning can be elaborated and differentiated by further constraints, but the sets of inputs for actives and passives in simple sentences overlap in English and some other languages.

5

The Stochastic Generalization
(Part I)

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[based on Bresnan, Dingare, and Manning (2001)]

[Optimality Theory and Typology, Summer School 2002]

6

Generalizing from Categorical to Frequentistic Phenomena

In a nutshell . . .

i) The generalization: The same categorical phenomena which are attributed to hard grammatical constraints in some languages continue to show up as statistical preferences in other languages, motivating a grammatical model that can account for soft constraints.

ii) A case study: The person hierarchy affects subject selection categorically in Lummi (Straits Salish, British Columbia), Picurís (Tanoan, New Mexico), and other languages. It also affects the frequency of subject selection in active/passive choices in English.

iii) A model: Stochastic optimality theory can account for the differences between Lummi and English by positing different strengths for constraints within the same typologically motivated constraint system.

7

Recall the Categorical Effects of Person on Voice

The effects of the person hierarchy on grammar are categorical in some languages, most famously in languages with inverse systems, but also in languages with person restrictions on passivization.

In Lummi, for example, the person of the subject argument cannot be lower than the person of a nonsubject argument. If this would happen in the active, passivization is obligatory; if it would happen in the passive, the active is obligatory (Jelinek and Demers 1983, 1994).

8

Lummi is a dialect of Coast Salish spoken in British Columbia.[a]

Lummi examples:

*__ ‘The man knows me/you’

ẋ̌či-t-ŋ=sən/=sx^{w} ə cə swəyʔqəʔ
know-TR-PASS=1/2.SG.NOM by the man
‘I am/you are known by the man’

ẋ̌či-t=sən/=sx^{w} cə swəyʔqəʔ
know-TR=1/2.SG.NOM the man
‘I/you know the man’

*__ ‘The man is known by me/you’

[a]Note: The ‘transitive’ stem suffix *-t*, glossed TR, is one of a set that marks degree of volitionality of control of the action; the passive suffix -ŋ, glossed PASS, also marks middles (Jelinek and Demers 1994: 706).

9

When both the agent and patient are third person, the passive is optional.[a]

Lummi examples:

ẋ̌či-t-s cə swəyʔqəʔ cə swiʔqoʔəɬ
know-TR-3.TR.SUBJ the man the boy
‘The man knows the boy’

ẋ̌či-t-ŋ cə swiʔqoʔəɬ ə cə swəyʔqəʔ
know-TR-PASS the boy by the man
‘The boy is known by the man’

[a]When both the agent and patient arguments are local persons (first or second), the active is obligatory. According to Jelinek and Demers (1994: 714), Lummi pronouns are clitics restricted to subject and object functions; the oblique function may be filled by third person deictic expressions designating speaker and hearer. The latter have determiners and behave syntactically like full nominals; they are not subject to the person-voice restrictions.

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Similar constraints appear in languages unrelated to Salish. An example is Picurís, a dialect of Northern Tewa spoken in New Mexico (Zaharlick 1982: 40–1; Mithun 1999: 226–8).

Picurís examples:[a]

*__ ‘The man saw me.’

Ta-mǫn-mia-ʔą̈n sənene-pa.
1SG SUBJ$_{intrans}$-see-PASS-PAST man-OBL
‘I was seen by the man.’

Sənene ti-mǫn-ʔą̈n.
man 1SG SUBJ.ANIM OBJ-see-PAST
‘I saw the man.’

*Sənene mǫn-mia-ʔą̈n ną̈-pa.
man see-PASS-PAST 1SG-OBL
‘The man was seen by me.’

[a]Third persons are zeros except as objects of a verb with local person subject.

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When both the agent and patient are third person, the passive is optional.

Picurís examples:

Sənene mǫn-ʔą̈n.
man see-PAST
‘The man saw him.’

Mǫn-mia-ʔą̈n sənene-pa.
see-PASS-PAST man-OBL
‘He was seen by the man.’

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Like Lummi and Picurís are Nootka (Southern Wakashan, British Columbia) (Klokeid 1969, Whistler 1985, Emanatian 1988) and Chamorro (Western Malayo-Polynesian, Guam and Northern Mariana Islands, Chung 1998, Cooreman 1987)—also unrelated.

Person-driven passives are sometimes viewed as inverses (cf. Klaiman 1991, Jacobs 1994, Forrest 1994, Jelinek and Demers 1983, 1994 on Salish and Klokeid 1969, Whistler 1985, Emanatian 1988 on Wakashan), but compare person-driven passives and the Algonquian-type inverse exemplified by Plains Cree (Dahlstrom 1984), from Mithun (1999: 222–228):

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Passive:	Inverse:
intransitive	transitive
patient Subject	patient Object
oblique case marking on agent	non-oblique agent
omissibility of indefinite agent	non-omissibility

Mithun (1999: 227) concludes of Picurís, "There is no question that these constructions are formally passive."

Recall Aissen's (1999) theory of passivization in Lummi . . .

14

Logical Entailment of Implicational Universals

15

The theory of harmonic alignment logically entails certain crosslinguistic generalizations, which follow from the constraint subhierarchies and the transitivity of constraint domination ($\gg$).

Comrie (1989: 128): *"...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."*

The intuition: markedness is least in the top right hand cell, and increases monotonically as you move away from it.

Agent ↓ Patient →	Local person	Third person
Local person	←	↓
Third person		

Disregarding other constraints, if passives are obligatory for any cell in this table, they are obligatory for the cells to its left and the cells below it (Dingare 2001: 16–17).

For example, in Lummi and Picurís, passive is obligatory for input from the lower left cell and optional for input from the lower right cell.

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Lummi, Picurís:

Agent ↓ Patient →	Local person	Third person
Local person	no	no
Third person	oblig	opt'l

Prediction: In no languages does the reverse hold.

Lushootseed:

Agent ↓ Patient →	Local person	Third person
Local person	no	no
Third person	opt'l	opt'l

English

Agent ↓ Patient →	Local person	Third person
Local person	opt'l	opt'l
Third person	opt'l	opt'l

The proof …

Are the predictions true? —Yes:

Some languages with person/voice interactions:

- Salishan (Western Canada and USA):
  Lushootseed (Coast Salish, Jelinek and Demers 1983)
  Lummi (Coast Salish, Jelinek and Demers 1983; cf. Klaiman 1991)
  Squamish (Coast Salish, Jacobs 1994)
  Bella Coola (isolate, Forrest 1994)
- Southern Wakashan (Western Canada, USA):
  Nootka (Klokeid 1969, Emanatian 1988)
  Makah (Jacobsen 1979: 156, 159)
  Nitinat (Klokeid 1978)
- Kiowa Tanoan (USA):
  Picurís (Tiwa-Tewa, Northern Tiwa, Zaharlick 1982)
  Southern Tiwa (Tiwa-Tewa, Allen and Frantz 1978, Rosen 1990)
  Arizona Tiwa (Tiwa-Tewa, Tewa, Kroskrity 1985)
  Towa (Tiwa-Tewa, Towa, Myers 1970, cited by Klaiman 1991: 292)
- Mayan (Mexico and Guatamala): K'iche' (Mondlach 1981, cited in Aissen 1999)
- Austronesian: Chamorro (Western Malayo-Polynesian, Guam and Northern Mariana Islands, Chung 1998, Cooreman 1987)

And no: e.g. Shuswap (Interior Salish, Northern, Kuipers 1974: 47).

	Object	*Subject*
1 sing.	-cm-, -cl/-cém-, -cél-	-n/-én
1 plur. incl.	-l-/-él-	
2 sing.	-c-/-cí-	-x/-éx
2 plur.	-lm-/-úlm-	-p/-ép
3	*zero*	-s/-és

> "The transitive paradigm comprises an (active) *Indicative* and *Imperative*, and a *Passive* (indicative). In the Indicative, passive forms are used for all cases with 1 pl. subject, i.e. *we see him, we see you* are expressed *he is seen, you are seen*, etc. …"

Here we have a defective paradigm in the plural category (not uncommon in marked categories—Greenberg 1966). Additional constraints on the morphological expression of number (and other categories) are needed independently. We assume these may in some languages override the constraints on harmonic alignment of person and syntactic function.

A Central Hypothesis

The same constraints are hypothesized to be present in all grammars, but are more or less active depending on their ranking relative to other constraints.

Lummi falls back on $*S_{newer}$ (or $*S_{nontopical}$, = Aissen's $*S_t$) with third person agent and patient:

	input: v(ag/3/new,pt/3)	$*S_3$	$*S_{newer}$ (or $*S_t$)	$*S_{pt}$	$*S_{ag}$
	active: S_{ag},O_{pt}	*	*!		*
☞	passive: S_{pt},Obl_{ag}	*		*	

In English the person-avoidance constraints are overridden by discourse constraints:

	input: v(ag/3, pt/1)	$*S_{newer}$ (or $*S_t$)	$*S_{pt}$	$*S_{ag}$	$*S_3$
☞	active: S_{ag},O_{pt}			*	*
	passive: S_{pt},Obl_{ag}		*!		

We know this because the disharmonic combinations are still grammatical in English, unlike Lummi and Picurís: *She met me, She'll be met by you*.

Why should we believe that the same constraints are present in every grammar?

The person hierarchy is rooted in cognitive and communicative tendencies which affect not just the formal properties of a few particular languages, but every language.

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Is it necessary to assume the constraints are innate?

No, universality does not imply innateness.

Some constraints may reflect innate biases, some may reflect common circumstances of the pragmatic environment.

Recall the Person Hierarchy

1st, 2nd $\succ$ 3rd (local outranks nonlocal)

The Person Hierarchy

— appears at the top of a hierarchy of nominal features: e.g. 'animacy', 'topicality' hierarchies:
1st, 2nd $\succ$ 3rd pronominal $\succ$ name $\succ$ human noun $\succ$ animate nonhuman noun $\succ$ inanimate noun

22

— ranks nominals according to their referents' "likelihood of participation in the speech event" (Smith-Stark 1974), their "inherent lexical content" (Silverstein 1976), their discourse-pragmatic topicality (Givón 1976, 1979, 1994), or their referents' accessibility during the psycholinguistic processing of language (Ariel 1990, Warren and Gibson 2001, cf. Gordon, Hendrick, and Johnson 2001)

Note: languages differ in whether first or second person dominates third (DeLancey 1981), but agree on the dominance of first and second over third person.

Two theories of how the person hierarchy influences voice

perspective-based: empathy or perspective-taking (Kuno and Kaburaki 1977; DeLancey 1981; Kuno 1987; MacWhinney in progress, ao) — grammar is designed to facilitate perspective shifting during communication; interlocutors share the perspectives of speech-act participants and of referents having causal roles. (These are paradigmatically the **subjects** of expressions.)

23

pragmatics-based: accessibility of referents in the pragmatic context (Givón 1976, 1979, 1994; Ariel 1991; Warren and Gibson 2001; cf. Gordon et al. 2001) — nominal expressions are most easily processed when their referents are contextually accessible and their expressions occur in perceptually salient positions (e.g., **subject**) in linguistic structures

Can we detect empirically the presence of subordinated person-alignment constraints in the grammar of English?

24

Bresnan, Dingare, and Manning (2001)
Dingare (2001)

Statistical Person/Voice Interactions in English

To see if there is an effect of person on the selection of active or passive in English, we need information about the systemic choices made for each input. Prior studies generally fail to provide the full joint distribution, from which we can reconstruct the conditional frequencies needed.[a] We have therefore examined the parsed SWITCHBOARD corpus, a database of spontaneous telephone conversations spoken by over 500 American English speakers, both male and female, from a great variety of speech communities (Godfrey et al. 1992). The conversations average 6 minutes in length, collectively amounting to 3 million words. We have used the parsed portion of this corpus (released as part of the Penn Treebank, Marcus et al. 1993), which contains 1 million words.

Although the frequency of passives is quite low in this corpus, the frequency of local pronouns is high.[b]

[a]Estival and Myhill (1988) provide exactly the kind of information needed for animacy and definiteness, but they provide person frequencies only for the patient role. Weiner and Labov (1981) study the frequency of choice between an agentless passive (*We're not allowed to smoke*) and an equivalent generalized-subject active (*They don't allow us to smoke"*), but do not study full passives.

[b]Francis, Gregory, and Michaelis (1999) show that 91% of subjects in the parsed SWITCHBOARD corpus are pronominal.

English person/role by voice (full passives):

action:			# Act:	# Pass:	% Act:	% Pass:
1,2	→	1,2	179	0	100.0	0.0
1,2	→	3	6246	0	100.0	0.0
3	→	3	3110	39	98.8	1.2
3	→	1,2	472	14	97.1	2.9

The leftmost column gives the four types of inputs (local person acting on local, local acting on nonlocal, etc.). We estimate the number of times each input was evaluated as the number of actives plus passives with that person/structure association. We then calculate the rate of passivization as the number of times that input was realized as passive.

The person/voice interaction is highly significant (2-sided Fisher's exact test, $p < 0.0001$; or $\chi^2_3 = 115.8, p < 0.001$). Similar significance levels result if short passives are included, but we omit them because the person of the agent is not always clear.[a]

[a]See Dingare (2001) for detailed analysis and methodological discussion.

Compared to the rate of passivization for inputs of third persons acting on third persons (1.2%), the rate of passivization for first or second person acting on third is substantially depressed (0%) while that for third acting on first or second (2.9%) is substantially elevated.

Harmonic alignment[a] gave us two particular hypotheses which are supported by these data: that the rate of passivization of 3 → 1,2 should be higher than for 3 → 3 (1-sided Fisher exact, $p < 0.008$); and that the rate of passivization of 1,2 → 3 should be lower than for 3 → 3 (1-sided Fisher exact, $p < 0.0001$).

Rate of Passivization

Agent ↓ Patient →	Local person	Third person
Local person	0.0%	0.0%
Third person	2.9%	1.2%

[a]in the stochastic version to be described

The same disharmonic person/argument associations which are avoided categorically in languages like Lummi by making passives either impossible or obligatory, are avoided in the SWITCHBOARD *corpus of spoken English by either depressing or elevating the frequency of passives relative to actives.*

In sum, the 'hard' grammatical constraints on person/voice interactions seen in languages like Lummi and Picurís continue to show up as statistical preferences in English.

This generalization—over categorical and frequestistic phenomena, or 'hard' and 'soft' constraints—follows from a stochastic generalization of Optimality Theory.

A Stochastic Generalization of the Theory

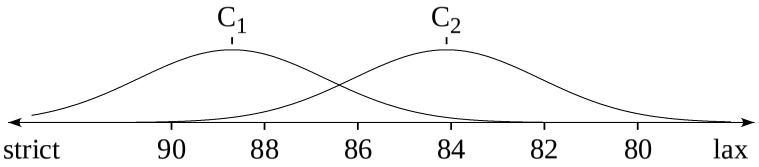
Stochastic OT[a] (Boersma 1998, 2000, Boersma and Hayes 2001) differs from standard OT in two essential ways:

(i) **ranking on a continuous scale:** Constraints are not simply ranked on a discrete ordinal scale; rather, they have a value on the continuous scale of real numbers. Thus constraints not only dominate other constraints, but are specific distances apart, and these distances are relevant to what the theory predicts.

(ii) **stochastic evaluation**: At each evaluation the real value of each constraint is perturbed by temporarily adding to its ranking value a random value drawn from a normal distribution. For example, a constraint with the mean rank of 99 could be evaluated at 98.12 or 100.3. It is the constraint ranking that results from these new disharmonic values that is used in evaluation.

[a]—one of a family of new optimization-based theories of grammar that can provide a unified account of categorical, variable, and gradient data (see Anttila 2002, Manning to appear, and references).

Constraint ranking on a continuous scale with stochastic evaluation:[a]



An OT grammar with stochastic evaluation can generate both categorical and variable outputs.

Categorical outputs arise when crucially ranked constraints are distant. As the distance between constraints increases, interactions become vanishingly rare. (A distance of five standard deviations ensures an error rate of less than 0.02% (Boersma and Hayes 2001: 50).)[b]

Variable outputs arise when crucially ranked constraints are closer together.

[a]Note the numerical scale is reversed to show stricter constraints to left as in OT tableaux.

[b]Units of measurement are arbitrary. With standard deviation = 2.0, a ranking distance of 10 units between constraints is taken to be effectively categorical.

Predictions of Relative Frequency

A constraint subhierarchy is maintained in stochastic OT as a hierarchy of the *means* of the normally distributed ranking values of the constraints. When the constraints are sufficiently spread out, effectively categorical predictions are made as with non-stochastic OT. When the constraints are closer together, frequentistic predictions above the margins of error are made.

Disregarding other constraints, it follows from the stochastic theory of harmonic alignment that there should be progressively higher rates of passivization going right to left across each row in the table and top to bottom in each column (Dingare 2001: 18):

Agent ↓ Patient →	Local person	Third person
Local person		
Third person		

Summary:

a. The person hierarchy is rooted in cognitive and communicative tendencies which affect not just the formal properties of a few particular languages, but every language.

b. The detailed effects of these tendencies on grammar can be captured in Optimality Theory (OT). The universal tendencies are modelled as violable constraints which have variable strengths (rankings) across languages. Given a language-particular ranking, an optimization function determines possible grammatical structures by minimizing the worst violations.

c. Frequentistic variation follows when these same constraints are ranked on a continuous scale with stochastic evaluation (Boersma 1998, 2000, Boersma and Hayes 2001). The resulting model defines a continuum of conventionalization which connects frequentistic preferences in usage to categorical grammatical rules.

Cf. Givón on definiteness

> "What we are dealing with is apparently the very same *communicative tendency*—to reserve the subject position in the sentence for the *topic*, the old-information argument, the "continuity marker." In some languages (Krio, etc.), this communicative tendency is expressed at the *categorial* level of 100%. In other languages (English, etc.) the very same communicative tendency is expressed "only" at the *noncategorial* level of 90%. And a tranformational-generative linguist will then be forced to count this fact as competence in Krio and performance in English."
>
> — Givón (1979: 26–31)

References

More details can be found in the following readings (in the reading list for this course):

Bresnan, Joan, Shipra Dingare and Christopher Manning. 2001. Soft constraints mirror hard constraints: Voice and person in English and Lummi. In M. Butt and T. H. King (eds.), *Proceedings of the LFG 01 Conference, University of Hong Kong*. On-line, CSLI Publications: http://csli-publications.stanford.edu/.

Dingare, Shipra. 2001. *The effect of feature hierarchies on frequencies of passivization in English*. Master's thesis, Stanford University, Stanford, CA. On-line, Rutgers Optimality Archive: http://ruccs.rutgers.edu/roa.html. ROA-467-0901.