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If only means must ...: Analyzing the modal meanings of the Hausa exclusive particle sai and its use in conditionals

poster presentation in session: 6A Semantics-pragmatics interfaces (Kai von Stechow & David Beaver)

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Modal readings of *sai*

► In Hausa (West Chadic), combining the exclusive operator *sai* (= ‘only’) and the prospective aspect yields a **future-oriented necessity modal reading**

(1) DEONTIC NECESSITY: According to the Nigerian law,
... *sai* Audù yà tafi fuřsunà.
SAI Audu 3SG.M.PROSP go prison
“Audu must go to jail.”

► No possibility modal readings (2), nor present-oriented epistemic readings (3):

(2) DEONTIC POSSIBILITY: According to Nigerian law,
#...*sai* mùsùlmī yà aurē mātā huɗu
SAI muslims 3SG.M.PROSP marry women four
(INTENDED:) “Muslim men can marry 4 women.”
(Comment: With “*sai*”, it is mandatory: they have to marry 4 wives!)

(3) EPISTEMIC NECESSITY: I was told they were sick, why are they at work?
#*Sai* sù (yi) lāfiyā yāu
SAI 3PL.PROSP do health now
(INTENDED:) “They must be well now”
(Comment: They are not in the office yet, but you think they should come)

► SUMMARY:

	Epistemic	Deontic	Circumstantial	Weak necessity
necessity	X	✓	✓	✓
possibility	X	X	X	n.a.

Sai in conditionals

► In addition, *sai* + *prospective* occurs in the consequent of indicative or counterfactual conditionals (4), but not in biscuit conditionals (5).

(4) Andreas asks Audu if he can drive him to the mountain, Audu says...
a. Ìdan àkwai hanyà, *sai* ìn tūkà kà.
if.IND exist road, SAI 1SG.PROSP drive 2SG.M.DO
“If there is a road, I will drive you.”
b. Dà dà hanyà, *sai* ìn tūkà kà.
if.CF exist road, SAI 1SG.PROSP drive 2SG.M.DO
“If there were a road, I would drive you”

(5) You are visiting Hussain, his mother tells you...
#Ìdan kanà nēman Hussain nē, *sai* yanà kantinsa
if.IND 2SG.M.PROG search Hussain PRT SAI 3SG.M.PROG kitchen
(INTENDED:) If you are looking for Hussain, he is in the kitchen

Main claims

- Unified analysis of *sai* as a focus-sensitive operator
- In modals and conditionals, *sai* associates with full clauses, excluding all other future possibilities.

Sai as a focus-sensitive operator

► *Sai* associates with a focus-fronted constituent, excluding all alternatives to this constituent (Zimmermann 2006)

(6) DIRECT OBJECT FOCUS:
Sai tuwō mātā sukà girkà.
SAI fufu women 3PL.PFV.REL cook
“The women only cooked FUFU (nothing else).”

► In canonical SVO word order, *sai* associates with the whole sentence:

(7) SENTENCE FOCUS: Did something happen?
Ā’ā, *sai* mātā sun girkà tuwō.
no SAI women 3PL.PFV cook fufu
“No, except that the women cooked fufu.”

► The prospective aspect disallows narrow focus (Tuller 1986:69):

(8) DIRECT OBJECT FOCUS, SUBJUNCTIVE:
*Tuwō mātā sù girkà.
fufu women 3PL.PROSP cook
(INTENDED:) “The women should cook FUFU”

→ *sai* + *prospective*: association with the whole sentence!

The meaning of *sai*

► We adopt Beaver & Clark’s (2008) analysis of *only* for *sai*:

(9) $[[\text{sai}(p)]] = \lambda w. \forall q \in \text{ALT} [q(w) \rightarrow p \geq q]$,
defined iff $\lambda w. \forall q \in \text{ALT} [q(w) \rightarrow q \geq p]$,
where \geq is an entailment or lumping relation (Kratzer 1989)

► *sai* thus presupposes that its complement *p* is the *weakest* true alternative, and asserts that it is the *strongest* true alternative.

References

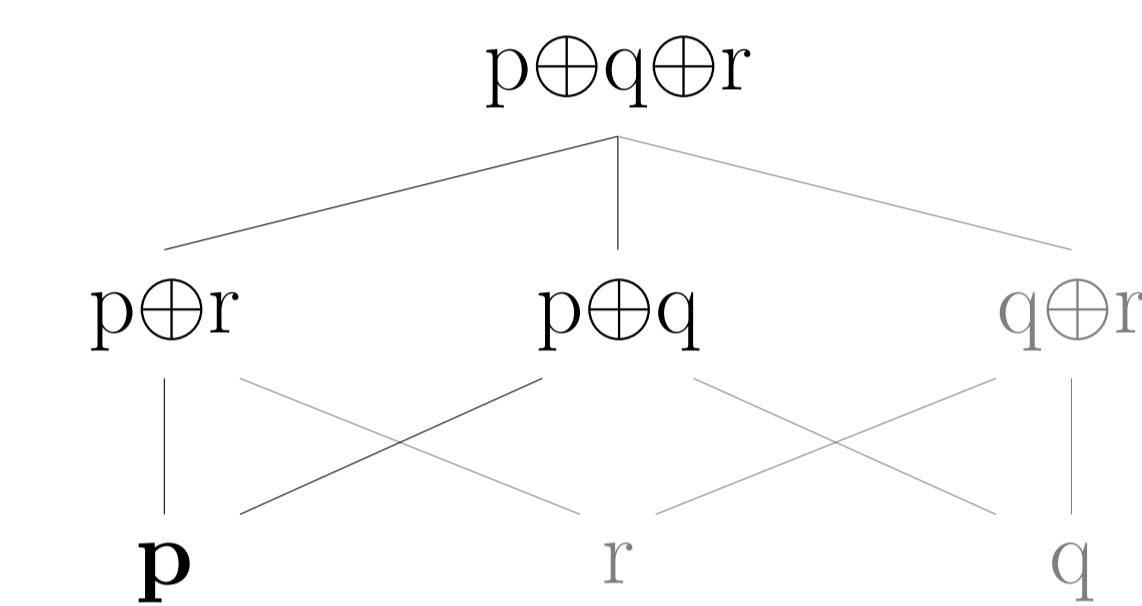
Beaver, D. & Clark, B.Z. (2008). Sense and sensitivity: How focus determines meaning. Oxford: Wiley-Blackwell., Grubic, M. (2012). Kapa as an end-of-scale marker in Bole and Ngizim (West-Chadic). Proceedings of Sinn und Bedeutung 16, 293-306. Kraft, C.H. (1970). Hausa *sai* and *dà*, a couple of overworked particles. Journal of African Languages 9: 92-109., Kratzer (1989). An Investigation of the Lumps of Thought. Linguistics and Philosophy 12, 607-653., Mucha (2012). Temporal Reference in a Genuinely Tenseless Language: The Case of Hausa. Proceedings of SALT 22, 188-207., Tuller, L.A. (1986). Bijective Relations in Universal Grammar and the Syntax of Hausa. PhD thesis, University of California, Los Angeles., Zimmermann, M. (2006). Adverbial Quantification and Focus in Hausa. Proceedings of Sinn und Bedeutung 10, 453-467.

Analysis

A) SAI AS ‘ONLY’ Because *sai* associates with whole sentences in modals and conditionals, we compare it with the non-modal sentence focus in (7):

SAI [the women cooked fufu]_F, where *p* = the women cooked fufu
ALT = e.g. {*p*, *q*, *r*, *p*⊕*q*, *p*⊕*r*, *q*⊕*r*, *p*⊕*q*⊕*r*}

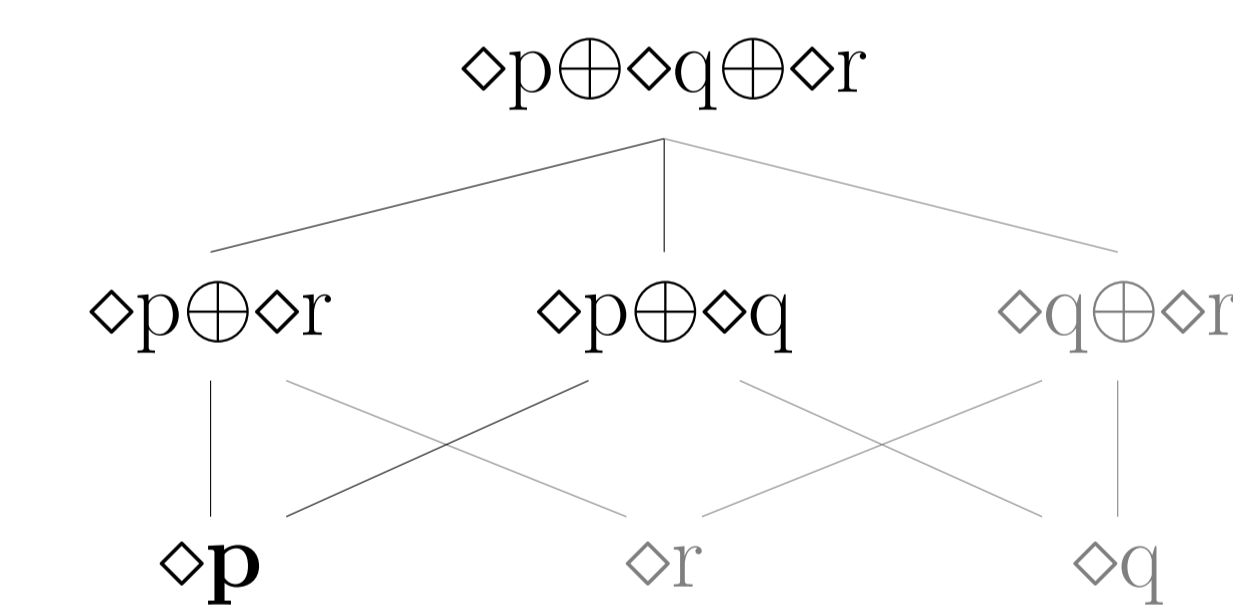
► The focus alternatives are ordered on an *entailment scale*



- Due to (7)’s presupposition, only alternatives entailing *p* are considered.
- The assertion of (7) establishes *p* as the strongest true alternative.

B) MODAL READINGS In e.g. (1), *sai* also associates with the whole sentence. Since the prospective aspect is defective, i.e. it needs an embedding modal (Mucha 2012), a covert possibility operator is assumed.

SAI [\diamond Audu will go to jail]_F.



- The ranking of alternatives and the effect of the presupposition are the same as in (7) above.
- In (1), *sai* has the effect of excluding all possible future options except the option of Audu going to jail.

C) CONDITIONALS like (4) are analyzed just like the modals above. The set of worlds quantified over by the possibility operator is restricted by the antecedent of the conditional.

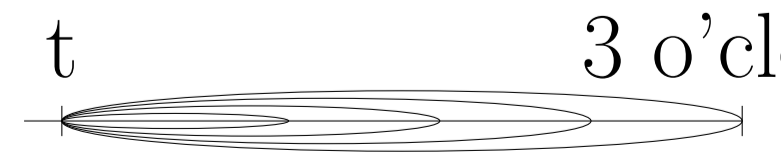
[If there is a road] SAI [\diamond I’ll drive you]_F.

Sai as *not...until*

► This analysis also captures the interpretation of *sai* as *not...until*

(10) Bàn dāwō ba, *sai* ƙarfè ukù (Kraft 1970)
NEG.1SG.PFV return NEG SAI hour three
“I didn’t return until three o’clock.”

► The set of alternatives contains time intervals with the same implicit startpoint as the preagent of *sai*



► Shorter intervals, which are informationally stronger than longer intervals, are excluded by *sai* (cf. Grubic 2012)

If *only* means *must* additional data *

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1 Data

1.1 The Hausa language

- Hausa is a West Chadic language of the ‘A’ sub-branch by about 25 million speakers in Nigeria, Niger, Benin, Sudan, Cameroon, Burkina Faso, and Ghana (Lewis, 2009).
- The dialect spoken in Kano State in Northern Nigeria is considered to be the most standard (Newman, 2000).
- Hausa is a tone language: high, low, and falling tones¹. Canonical word order: **SVO**

(1) Q: What happened yesterday?
A: Mātā sun girkà tuwō.
women 3PL.PFV cook fufu
“The women cooked fufu.”

- Hausa encodes aspect but no tense, e.g. Tuller (1986)².

(2) Sunà wàsà dà piano.
3PL.PROG play with piano
“They are/were playing the piano”

- Aspect is indicated by a so-called ‘person-aspect complex’, consisting of a subject pronoun and an aspect marker (Newman, 2000), e.g. *sunà* in (2).
- Negation is indicated by the discontinuous marker *bà... ba*, except in the progressive (*bā*) and subjunctive (*kadà*).

(3) Q: Did the women cook fufu?
A: Ā’ā, bà sù girkà tuwō ba.
no NEG 3PL.NEG.PFV cook fufu NEG
“No they didn’t cook fufu.”

1.2 Focus realization in Hausa

- FOCUS REALIZATION: either in-situ or ex-situ (fronted)³.
- In some aspects, ex-situ focus requires a special form of the person-aspect-complex, the *relative* form.

(4) Q: What did the women cook?
A: Mātā sun girkà tuwō.
women 3PL.PFV cook fufu
“The women cooked FUFU.”

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¹High tone vowels remain unmarked, a low tone is marked by an accute accent (à), a falling tone by a circumflex (â). Long vowels are marked (ā).

²Example elicited by A. with a Hausa speaker from Kaugama

³Subject/non-subject asymmetry: focused subjects **must** be ex-situ.

- (5) Q: What did the women cook?
 A: Tuwō mātā sukà / *sun girkà.
 fufu women 3PL.REL.PFV / 3PL.PFV cook
 “The women cooked FUFU.”

- Hartmann and Zimmermann (2007): no semantic difference (e.g. in exhaustivity) between ex-situ and in-situ focus; instead, ex-situ focus might indicate greater noteworthiness.
- The ex-situ focus marking strategy is possible for all aspects except for the subjunctive (Tuller, 1986, 69)⁴

- (6) Q: What should the women cook?
 A: Mātā sù girkà tuwō.
 women 3PL.SUBJ cook fufu
 “The women should cook FUFU”
 A: *Tuwō mātā sù girkà.
 fufu women 3PL.SUBJ cook
 “The women should cook FUFU”
 (Comment: “It should be
 ‘Tuwō mātā **za** sù girkà’ - it is future
 tense but it means ‘should’ here.”)

In the following section, we will see that in exactly those cases in which the sentence is in the subjunctive, *sai* gets a modal reading.

1.3 The association behaviour of *sai*

1.3.1 *Sai* meaning ‘only’

- *Sai* is an exclusive focus-sensitive particle. It does not have a so-called ‘scalar’, or ‘evaluative’, reading
- (7) *Audu is a student, and works in a copy shop to support his studies. Jummai thinks that he is a professor, because of his age, but Laraba corrects her:*

#Audù sai dālibtà.
 Audu SAI student
 “Audu is only a student”
 (Comment: He doesn’t have any other profession.)

- (8) *Audu is a professor - he doesn’t have any other job besides that. Jummai thinks that he is a student, because he is young, but Laraba corrects her:*
 #Audù bà sai dālibtà ba.
 Audu NEG SAI student NEG
 “Audu isn’t just a student”
 (Comment: He’s a student and another thing.)

- *Sai* can only associate with an ex-situ focused constituent (Zimmermann, 2006). We assume that the reason is syntactic rather than semantic: *sai* is preferably initial

- (9) *The women wanted to cook fufu and pepper soup, but they don’t have enough money, so they aren’t cooking any pepper soup.*
 (a) (*Sai) mātā (*sai) sunà girkà (*sai) tuwō.
 SAI women SAI 3PL.PROG cook SAI fufu
 (intended:) “The women only cooked FUFU”
 (b) Sai tuwō mātā sukè girkà.
 SAI fufu women 3PL.REL.PROG cook
 “The women only cooked FUFU”

- SAI can associate with whole sentences in all aspects.

- (10) *Hassana is cooking something in the kitchen. The TV is in the living room, so she cannot see properly what is happening in her favourite TV show. She shouts ‘Did something happen?’ - Husseina answers:*
 Ā’à, sai mātā sun girkà tuwō.
 no SAI women 3PL.PFV cook fufu
 “No, except that the women cooked tuwo.”

⁴The comments following the examples are comments by the language consultant.

1.3.2 Modal reading of *sai*

- When combined with the Subjunctive, *sai* yields a modal reading: It indicates (**strong or weak**) necessity
- This can be root necessity, but not present-oriented epistemic necessity.

(11) EPISTEMIC NECESSITY: Your colleague says: I have just seen Peter and Mary in their offices. I was told they were sick, so why are they at work?

#Sai sù (yi) lāfiyà yāu
SAI 3PL.SUBJ do health now
(intended:) “They must be well now”
(Comment: They are not in the office yet, but you think they should come to the office)

(12) DEONTIC NECESSITY: Audu has stolen Musa’s money! The police will arrest him as soon as they find him. According to the Nigerian law, ...

... *sai* Audù yà tàfi fuřsùnà.
SAI Audu 3SG.M.SUBJ go prison
“Audu must go to jail.”

(13) CIRCUMSTANTIAL NECESSITY: The harmattan weather is bothering Binta. It is cold, and sand is coming into her nose and eyes. She cannot help sneezing!

Sai Binta tà yi atishāwà.
SAI Binta 3SG.F.SUBJ do sneezing
“Binta has to sneeze.”

(14) WEAK NECESSITY: Ladi put up a sign in the bathroom of her restaurant, saying:

Màsu cin àbinci sai sù wankè hannuwànsù,
people eating food SAI 3PL.SUBJ wash hands.3PL.POSS
àmmā dōlè ma’àikàtà sù wankè
but necessarily workers 3PL.SUBJ wash
hannuwànsù.
hands.3PL.POSS

“Customers ought to wash their hands, but waiters have to wash their hands.”

- *Sai* is **not** possible as a possibility modal.

(15) DEONTIC POSSIBILITY: Sabine is being introduced to Halimas co-wife Asabe. Sabine is surprised that Halima has a co-wife. Halima explains: “According to Nigerian law, ...

#sai mùsùlmī yà aurē mātā huđu
SAI muslims 3SG.M.SUBJ marry women four
“muslim men can marry 4 women.”
(Comment: ‘With “sai”, it becomes mandatory: they have to marry 4 wives!’)

(16) CIRCUMSTANTIAL POSSIBILITY: Danjuma has imported a new car from Europe. It has never been driven before. He is very proud, and announces that the car has a very powerful engine:

#Sai ìn yi tūkì na mīl 150 à awò dà motār
SAI 1SG.SUBJ do drive of miles 150 per hour with car
nân.
DEM

“I can drive 150 miles per hour in this car.”

(Comment: with “sai” it is like a command, but nobody is commanding me!)

- SUMMARY: When combined with the subjunctive, exclusive *sai* yields a **future-oriented necessity modal** reading!

- We will suggest that this shift in meaning is due to the properties of the subjunctive: (i) due to the fact that there is no ex-situ focus in subjunctive sentences, so that *sai* must associate with the whole sentence, and (ii) due to the future-oriented meaning of the subjunctive, to which we shall turn now

1.4 The subjunctive

- According to Schuh (2003), the subjunctive encodes “dependent subsequent inception”: (i) it receives a (modal) interpretation from a superordinate operator⁵.

(17) DEPENDENCE ON SUPERORDINATE OPERATOR:

- a. **Dōlè** mātā sù girkā tuwō
Necessarily women 3PL.SUBJ cook fufu
“The women must cook fufu.”
- b. **Kīlā** sù bùyè à cikin wancàn àkwàtì.
Possibly 3PL.SUBJ hide at in DEM.F box
“They could hide in that box.”

(ii) It has a future-shifting (‘subsequent inception’) meaning.

- The future shift of the subjunctive can be seen in examples like (18), with the possibility modal *kīlā*⁶:

(18) EPISTEMIC POSSIBILITY The police is looking for John and Sue, and are discussing where they might be hiding.



- a. **Kīlā sunā** bùyè à cikin wancàn àkwàtì.
perhaps 3PL.PROG hide at in DEM box
“They could be hiding in that box.”
- b. #**Kīlā sù** bùyè à cikin wancàn àkwàtì.
perhaps 3PL.SUBJ hide at in DEM.F box
(intended:) “They could be hiding in that box.”
(Comment: This is possible in a context in which they are not in the box yet, but could get inside
→ FUTURE-ORIENTED ROOT MODAL!)

- We reanalyze the subjunctive as carrying *prospective* aspectual meaning (Mucha, 2013). It is however defective: it is dependent on a superordinate (modal) operator which we model by an open event variable in the lexical entry of the prospective (cf. Mucha 2013)

(19) $[[\text{prospective}]]^g = \lambda P_{\langle l(st) \rangle} . \lambda e . \lambda t . \lambda w . [P(e)(w) \& \tau(e) > t]$

- SUGGESTION: When *sai* combines with a sentence in the subjunctive, it is the focus-sensitive operator *sai* that contributes universal modal force

⁵According to Schuh, it can also receive a temporal interpretation from the preceding context, but we believe that the contexts which he cites can be reanalyzed as modal, e.g. the habitual and potential in (i).

- (i) a. **Sukàn** tāshì sù gudù
3PL.HAB arise 3PL.SUBJ run
“They arise and run”
- b. **Sā** tāshì sù gudù
3PL.POT arise 3PL.SUBJ run
“They will surely arise and run”

⁶Context story & image by the Totem Field Storyboard Working Group, <http://totemfieldstoryboards.org/>

1.5 *sai* in conditionals

- *sai* frequently occurs in the consequent of indicative (20) and counterfactual (21) conditionals

- (20) Peter wanted to drive to Kano. Asabe asks Asabe whether Peter has already arrived in Kano. Asabe doesn't know, and tells him to call Ibrahim in order to find out: If Peter arrived in Kano, he is staying at Ibrahim's house.

Idan Peter yā isa Kano, sai ya zauna (a)
 if Peter 3SG.M.PFV arrive Kano, SAI 3SG.M.PROSP stay at
 gidan Ibrahim.
 house-of Ibrahim

“If Peter already arrived in Kano, he will stay at Ibrahim's house.”

- (21) Andreas asks Danjuma if he can drive him to the mountain. Danjuma knows that there is no road, and no other possibility to get to the mountain apart from walking. Danjuma says: If there were a road, I would drive you.

Da da hanya, sai in tuka ka.
 if exist.CF road, SAI 1SG.PROSP drive youDO

“If there were a road, I would drive you.”

- *sai* does not occur in biscuit conditionals

- (22) Audu is visiting Hussain's home. Hussain's mother greets him and says: If you're looking for Hussain, he's in his bedroom.

Idan kanà neman Hussain ne, yanà kantinsa.
 if 2SG.M.PROG search Hussain PRT 3SG.M.PROG kitchen

“If you are looking for Hussain, he is in the kitchen.”

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