

# Diachronic evidence for a unified semantics of the German modal verb *sollen*

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# Introduction

Well-known that the German modal verb *sollen* has both a quasi-deontic/bouletic and an evidential interpretation:

(1) a. Tim soll für Mia einen Kuchen backen.

*Tim is supposed to bake a cake for Mia.*

*≈ There is someone who wants Tim who bake a cake for Mia.*

b. Tim soll für Mia einen Kuchen gebacken haben.

*Tim is said to have baked a cake for Mia.*

*≈ There is someone who said that Tim baked a cake for Mia.*

# Introduction

On its bouletic interpretation, *sollen* is in complementary distribution with the imperative (Bech 1951, Glas 1984, Dieward 1999, Hinterwimmer, Matthewson & Truckenbrodt 2019):

(2) Paula and her daughter Clare are attending a concert together and Clare keeps talking loudly after the concert has started.

a. Paula: # Du sollst jetzt still sein!

*Paula: # You are supposed to be quiet now!*

b. Paula: Sei jetzt still!

*Paula: Be quiet now!*

# Introduction

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- Hinterwimmer (2013) (see also Bochnak & Csipak 2018 and Maché 2019 for related proposals): Unified account of bouletic and evidential *sollen*, based on anti-performativity of bouletic *sollen*.
- Hinterwimmer, Matthewson & Truckenbrodt (2019): Distinct lexical entries for bouletic and evidential *sollen*, with the anti-performativity of bouletic *sollen* directly encoded in its lexical entry.

# Introduction

- In this talk, I will argue that diachronic evidence from Old, Middle and Early New High German favours a unified analysis of *sollen*.
- While evidential uses of *sollen* only became common in Early New High German, we already find instances of such uses in Old and Middle High German.
- This makes it more plausible that *sollen* has a rather abstract and unspecified core denotation that is flexible enough to allow for the evidential interpretation in principle than that there is a distinct evidential interpretation derived from the original deontic/bouletic interpretation.

# The analysis of Hinterwimmer (2013)

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- Hinterwimmer (2013) proposes a unified account of both uses (cf. Gärtner 2012 on quotative modal *wollen*).
- In both cases prejaacent proposition related to prior intentional act (Vanderveken 2005) whose author is distinct from (individual denoted by) the subject of the prejaacent clause.
- On the bouletic interpretation, intentional act is a command/advice etc., on the evidential interpretation it is an assertion.
- Crucially, intentional act need not be a speech act.

# The analysis of Hinterwimmer (2013)

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- In both cases, *sollen* contributes the same information: There is an intentional act  $\alpha$  whose agent  $x$  is distinct from the subject of the prejacent clause, and in all worlds where the intended result of  $\alpha$  obtains, the prejacent proposition is true.
- Difference in meaning results from differences between intentional acts (assertions vs. commands, advices etc.).
- The anti-performativity of *sollen* is a crucial argument in favour of this unified account.

# The analysis of Hinterwimmer (2013)

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While (the German equivalents of) modal verbs like *must* or *should* have performative uses (Ninan 2005, Portner 2007, Schwager 2006), this is not true of *sollen* in many cases:

(3) Geh jetzt!/Du mußt/solltest/#sollst      jetzt      gehen.  
Go now/ You must/should/shall      now      go

(4) Iss etwas!/Du mußt/solltest/#sollst      etwas      essen.  
Eat something/You must/should/shall something      eat

(5) Anna: What is the fastest way to Bremen?

B: Nimm die A7!/Du mußt/solltest/#sollst      die A7 nehmen.  
Take the You must/should/shall      the take



# The analysis of Hinterwimmer (2013)

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In the following cases, however, using *sollen* is perfectly fine.

(6) a. Ich soll die A7 nehmen. (Katja said so)

I shall the take

b. Katja hat gesagt, ich soll die A7 nehmen.

has said I shall the take

(7) a. Ich soll sofort gehen. (Maria said so).

I shall immediately go

b. Maria hat gesagt, ich soll sofort gehen.

has said I shall immediately go

Crucially, in all cases actual sentence uttered one of the variants in (3) and (5), i.e. *sollen* not present.

# The analysis of Hinterwimmer (2013)

Use of *sollen* also felicitous if speaker repeats himself, while the respective sentences would be odd if uttered out of the blue.

(8) Hör auf zu pfeifen! (no reaction) Du sollst aufhören zu  
Stop to whistle You shall stop to  
pfeifen  
whistle

(9) Nimm die nächste Ausfahrt! (no reaction) Du sollst die  
Take the next exit You shall the  
nächste Ausfahrt nehmen.  
next exit take

# The analysis of Hinterwimmer (2013)

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If sentence like (10a) is uttered, hearer automatically assumes speaker to have received corresponding command/advice, while (10b) may well be a conclusion reached by speaker on her own.

(10) a. Ich soll aufhören zu rauchen.

I shall stop to smoke

b. Ich muss/sollte aufhören zu rauchen.

I must/should stop to smoke

Most natural reaction to (10a) thus *Who said so?*, while most natural reaction to (10b) *Why?*

# The analysis of Hinterwimmer (2013)

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Other clear difference between *must* and *should* (and their German variants), on the one hand, and *sollen*, on the other: While the domains of quantification for the former can be influenced by the contribution of preceding imperatives (Portner 2007), this is not possible with *sollen*.

(11) Anna: Take the book back to the library before ten!

Bert: Dann muss/sollte/#soll ich den Bus nehmen.

Then must/should/shall I the bus take

Reason: *sollen* is forced to directly pick up a preceding intentional act.

# The analysis of Hinterwimmer (2013)

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This intentional act need not be a speech act, though:

(12) (Bert is singing *Yesterday* to his baby daughter).

Anna: Why are you doing that?

Bert: Das soll das Baby beruhigen.

This shall the baby calm.down

# The analysis of Hinterwimmer (2013)

Also in cases where an imperative would be infelicitous because the verb is stative (13a), the clause is embedded (13b), or there is no addressee (15c), uttering a sentence with *sollen* that does not pick up a preceding command/advice (or some other intentional act) is perfectly fine.

- (13) a. Du sollst wissen, dass ich Dich immer respektiert habe.  
You shall know that I you always respected have
- b. Sag ihr, sie soll pünktlich sein.  
Tell her she shall on.time be
- c. Es soll aufhören zu regnen!  
It shall stop to rain

# The analysis of Hinterwimmer (2013)

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- Based on the observation that on its bouletic uses, too, *sollen* is at least in the majority of cases related to a prior utterance, a unified analysis of both bouletic and evidential *sollen* is proposed in Hinterwimmer (2013).
- Idea: Proposition denoted by sentence containing *sollen* asserts
  - (a) the existence of an intentional act *e* whose agent *y* is distinct from the (individual denoted by the) subject of the sentence and
  - (b) that the prejacent proposition is true in all worlds where the intended result of *e* obtains.

# The analysis of Hinterwimmer (2013)

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$$(14) \quad \llbracket \text{soll} \rrbracket = \lambda P \lambda x \lambda w. [\exists e \leq_{\text{part}} w \exists y [\text{Agent}(y)(e) \wedge y \neq x \\ \wedge \forall w' [w' \in \cap \text{GOAL}(y)(e) \rightarrow \exists e' [\neg \tau(e') < \text{NOW} \wedge P(x)(e')]]]]]$$

In cases like (10a), repeated here as (15a),  $e$  is most likely taken to be command or advice to stop smoking: In all worlds where intended result of command/advice obtains, there is a (future) event of the speaker stopping to smoke.

- (15) a. Ich soll aufhören zu rauchen.  
I shall stop to smoke
- b.  $\lambda w. [\exists e \leq_{\text{part}} w \exists y [\text{Agent}(y)(e) \wedge y \neq \text{speaker} \\ \wedge \forall w' [w' \in \cap \text{GOAL}(y)(e) \rightarrow \exists e' [\neg \tau(e') < \text{NOW} \\ \wedge \text{stop\_smoking}(e') \wedge \text{Agent}(\text{speaker})(e')]]]]]$



# The analysis of Hinterwimmer (2013)

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- In cases like (1a), repeated here as (16a),  $e$  is most likely taken to be one or several assertions of the proposition that Tim baked a cake for Tina.
- Intended result of an assertion that asserted proposition is added to the CG.
- Since (in standard cases) a proposition is added to the CG (Stalnaker 1978) because it is taken to be true, the asserted proposition is true in all worlds where the intended result of the assertion obtains, i.e. in all worlds where the intended result of  $e$  obtains, there is a state of Tim having baked a cake for Tina.

(16) a. Tim soll einen Kuchen für Tina gebacken haben.

shall a cake for baked have

b.  $\lambda w. [\exists e \leq_{\text{part}} w \exists y [\text{Agent}(y)(e) \wedge y \neq \text{tim} \wedge$   
 $\forall w' [w' \in \cap \text{GOAL}(y)(e) \rightarrow \exists e' [\neg \tau(e') < \text{NOW} \wedge$   
 $\text{has\_baked\_cake}(e') \wedge \text{Agent}(\text{tim})(e')]]]]]$

# The analysis of Hinterwimmer (2013)

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- What goes wrong in the variants of (3-5), repeated here as (17a-c), is that there are no preceding intentional acts of the right type available.
- Therefore, the sentences have to be interpreted in a more indirect way.
- Intentional act taken to be a mental event: an intention to bring it about that the addressee makes the adjacent proposition true via telling her about the intention.

(17) a. Geh jetzt!/Du mußt/solltest/#sollst      jetzt      gehen.  
Go now/You must/should/shall      now      go.

b. Iß etwas!/Du mußt/solltest/#sollst      etwas      essen.  
Eat something/ You must/should/shall something eat

c. A: What is the fastest way to Bremen?

B: Nimm die A7!/Du mußt/solltest/#sollst die A7 nehmen.  
Take the A7/ You must/should/shall the take.

# The analysis of Hinterwimmer (2013)

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- Since in these cases there is no independent reason for adopting such an indirect strategy instead of the direct one (via performing the respective act of commanding/advising directly), the sentences sound odd.

# The analysis of Hinterwimmer (2013)

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As soon as such acts are contextually available, however (even if the speaker herself is the agent), everything is fine again.

(18) a. Ich soll sofort gehen. (Maria said so.)

I shall immediately go

b. Ich soll etwas essen. (Maria said so.)

I shall something eat

c. Ich soll die A7 nehmen. (Maria said so.)

I shall the take

d. Hör auf zu pfeifen! (no reaction) Du sollst aufhören zu pfeifen.

Stop to whistle You shall stop to whistle

e. Nimm die nächste Ausfahrt! (no reaction) Du sollst die nächste

Take the next exit You shall the next

Ausfahrt nehmen.

exit take

# The analysis of Hinterwimmer (2013)

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In cases where the appropriate speech act cannot be performed, there is an independent reason for applying the indirect strategy, and the sentences with *sollen* are accordingly fine.

(19) a. Du sollst wissen, dass ich Dich immer respektiert habe.

You shall know that I you always respected have

b. Sag ihr, sie soll pünktlich sein.

Tell her she shall on\_time be

c. Es soll aufhören zu regnen!

It shall stop to rain

# The analysis of Bochnak and Csipak (2018)

- *sollen*, in both epistemic and root uses, is purely reportative.

$$(20) \llbracket \text{sollen} \rrbracket^{c,w,t} = \lambda P \lambda x [\forall m \in t [\forall w' \in \max_{g_m}(w) (\cap f_m(w)) : P(x)(w') = 1]]$$

defined only if the context  $c$  provides a circumstantial modal base  $f_m$  and reportative informational ordering source  $g_{\alpha,m}$

- In root as well as epistemic uses, *sollen* relies on a prior report (which must be accommodated if its existence isn't part of the common ground at utterance time).

# The analysis of Bochnak and Csipak (2018)

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Problem with that analysis (see Hinterwimer, Matthewson & Truckenbrodt 2019): It does not capture cases such as those in (21-23):

(21) Es        soll        aufhören        zu        regnen!  
      It        shall     stop                to        rain

(22) (Nobody has said anything so far about what people should bring to the party. I ask you: What should everyone bring?)

Peter    soll        Brötchen        mitbringen.

Peter    shall     bread.rolls     bring.with

(23) (You live in a closed community of 25 people. Your bakery, Filou, is scheduled to close. The other 24 people have all said they agree with Filou closing. You alone want it to stay open. So far, you haven't told anybody your preference, but you write a protest sign that says:)

Filou    soll        bleiben.

Filou    shall     stay

# Hinterwimmer, Matthewson & Truckenbrodt (2019)

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- Bouletic *sollen* assumed assume to have a denotation that only differs from that of the imperative insofar as it has an anti-origo presupposition.
- Imperative, in contrast, has an origo presupposition.
- Evidential *sollen* has the related, but clearly distinct denotation in (22).

$$(24) \llbracket \text{IMP}_j \rrbracket^{c,g,t,w} = \lambda P \lambda x: \underline{\langle g(j), x, t, w \rangle = c} . [g(j) \text{ wants } P(x) \text{ at } t \text{ in } w]$$

$$(25) \llbracket \text{root-sollen}_j \rrbracket^{c,g,t,w} = \lambda P \lambda x: \underline{\langle g(j), x, t, w \rangle \neq c} . [g(j) \text{ wants } P(x) \text{ at } t \text{ in } w]$$

$$(26) \llbracket \text{epist-sollen}_j \rrbracket^{c,g,t,w} = \lambda P \lambda x: g(j) \neq \underline{c_{Sp}} . [g(j) \text{ said that } P(x) \text{ before } t \text{ in } w]$$

where  $c$  is the context of utterance consisting of the parameters  $\langle c_{Sp}, c_{Ad}, c_T, c_W \rangle$ ,  $g$  is the assignment function,  $t$  is the time of evaluation and  $w$  is the world of evaluation.



# Diachronic Data

Diachronic evidence on the spectrum of readings available to *sollen* (or rather, its predecessors *sculan* and *soln*) therefore crucial in deciding which account is more plausible: A unified one or one according to which the evidential reading is a distinct reading derived from the bouletic one.

# Diachronic Data

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*sculan*, the predecessor of *sollen*, originally used as a transitive verb denoting *to owe (somebody) something* in Old High German (OHG):

- (27) Zuene    culdigon uuarun    sihuuelihemo    inlihere:    ein    **solta**  
two    debtor    were    anybody-dat    lender-dat    one    shall-pst  
finfhunt    pfenningo, ander **solta**    finfzug.  
five.hundred    pennies    other shall\_IND\_PST    fifty

*A money lender had two debtors: one of them owed him five hundred pennies, the other one fifty.*

(Tatian138,9(830), cited after Maché 2019)

# Diachronic Data

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Already used as a modal verb in OHG with quasi-deontic/bouletic meaning that is plausibly derived from the original meaning (cf. Maché 2019 and the references therein) and a future meaning (cf. Fritz 1997 and the references therein).

(28) Lért        er        sie        mit        wórtan wio        thaz firdrágan  
taught he        them with words how        that bear  
**scoltun.**

shall\_IND\_PAST

*He taught them with his words how they were supposed to bear that.*

(Otfrid Ev. 4.15, edition 485-495)

(<https://korpling.org/annis3/?id=785086c6-0a1a-4991-92f1-cc4e035cc8d3>)

# Diachronic Data

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- (29) Ob ih vvuosc iuuuere fuozzi, herro inti meistar, inti ir  
If I washed your feet lord and master also you  
**sulut** ander anderes fuozzi uuasgan.  
shall\_IND\_PRES the.one the.other's feet wash  
*If I, your lord an master, washed your feet, you shall wash  
each other's feet, too.*  
Tatian 156, edition 49-59)

(<https://korpling.org/annis3/?id=833714f2-16c8-4ff1-b08b-30b40519f923>)

# Diachronic Data

*sculan* (as well as *soln* in Middle High German, MHG) not always in complementary distribution to the imperative:

- (30) Ther engil            spráh    imo        zúa:  
the angel            spoke   him        to  
“thu        **scalt**                            thih        héffen   filu        frúa;    fliuh  
you        shall\_IND\_PRES   you\_ACC raise    very    early    flee\_IMP  
in ántheraz lánt,                            bimíd                            ouh        thesan    fiant!”  
in another country                            avoid\_IMP                            also        this        enemy  
*The angel spoke to him: You shall get up very early, flee into another  
country, avoid this enemy, too.*

(Otfrid Ev., 1.19, edition 32-42)

(<https://korpling.org/annis3/?id=8b88b3ec-214b-4a87-9689-17d255527f67>)

# Diachronic Data

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- *sculan* in OHG often used not to express the intentions of an individual distinct from the subject of the prejacet clause, but to express an obligation resulting from a law or norm:

(31) Tho      antlingitun              imo      thie      ludei:  
then      answered              him      the      Jews  
uuir habemes euua,              inti      after              euu  
we have      law              and      according.to      law  
**sal**              her sterban, uuanta      her sih      gotes sun teta.  
shall\_IND\_PRES he die              because he himself God's. son made  
*Then the Jews answered him: We have our law, and according to the law  
he shall die, because he declared himself God's son.*

(Tatian 197, edition 121-131)

(<https://korpling.org/annis3/?id=5c37336a-a07c-47c6-b02f-885167dbd30f>)

# Diachronic Data

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- Concerning evidential interpretations, Fritz (1997) claims that first instance of evidential uses of *sculan's* successor *sol* are found in MHG (around 1200) and that they became more common in the 15<sup>th</sup> and 16<sup>th</sup> century.

(32) dannoch                vor        naht        do        wart        der        schal,  
         afterwards        before    night        there    become    the        message  
         in        dem        lande        vliegend über al,                daz        der  
         in        the        country    flying        everywhere        that        the  
         stolze    Kaedin    uz            geriten    solde                sin  
         proud    Kaedin    out            ridden    shall\_IND\_PAST    be

*Afterwards, before the night, the message spread very quickly, that the proud Kaedin went out for a ride.*

(Gottfried, Tristan, 18833-37)

# Diachronic Data

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- Concerning evidential interpretations, Fritz (1997) claims that first instance of evidential uses of *sculan's* successor *sol* are found in MHG (around 1200) and that they became more common in the 15<sup>th</sup> and 16<sup>th</sup> century.

(33) Ih        han        lang        vergessen, das    ich        nit        mit  
         I        have        long        forgotten that    I        not        with  
         dir        rett        umb        ainen        barfüßen,        der        haiset  
         you        talk        abou        a        barefooter        who        is.called  
         Ebner,    und        **soll**                    bischoff worden sein        ...  
         Ebner    and        shall\_IND\_PREs    bishop    become be

*I have long forgotten to tell you of a barefooter who is called Ebner  
and who is said to have become bishop.*

(private letters, (1335), Steinhausen 11.12)



# Diachronic Data

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## Introduction – Previous Analyses – Diachronic Data – Conclusion

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- Pfeifer (2021) points out, however, that there is at least one clear instance of an evidential use of *sculan* in OHG already:

(34) Waz      quít      fon mir ther líutstam? thaz gizéllet mir nu      frám;  
What    say      of me the people    that tell      me now    completely  
wer      quédent sie      theih      **sculi**      sín ... ?  
who    say      they      that      shall\_SUBJ\_PRES be

(Otfrid, Ev. 3.12, edition 89-99)

*What do the people say about me? Tell me everything now. Who do they say I am?*

(<https://korpling.org/annis3/?id=d8a7a7ff-d71c-4260-89bf-a97db76ccd7a>)

# Diachronic Data

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- Upon closer inspection, more examples of evidential uses of *sculan* can be found in OHG:

(35) »Druhtin                      saghida                      dhazs                      chiscrip                      dhero  
         lord                      proclaimed                      the                      holy.scripture                      of.the  
         folcho                      dhese    ist                      dhar                      chiboran«                      .  
         people                      this.one is                      there                      born  
         Huuer ist                      dhanne dhese    man,                      dher                      dhar  
         who    is                      then                      this                      man                      who                      there  
         **scoldii**                                      chiboran                      uuerdan?  
         shall\_SUBJ\_PRES                      born                      become

*‘The lord proclaimed the holy scripture of the people that this one is born there’. Who, then is this man who is claimed to be born there?*

(Isidor 1.1, edition 547-577))

# Diachronic Data

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- Upon closer inspection, more examples of evidential uses of *sculan* can be found in OHG:

(36) Thie      Júdeon   ágaleizo   súahtun                      nan      thar      héizo,  
The      Jews      searched eagerly                      him      there      fervently  
sie      warun      éisconti war      er                      wésan      **scolti**.  
they      were      asking where he                      be      shall\_SUBJ\_PAST

(Otfrid Ev. 3.15, edition 240-270)

*The Jews searched him there eagerly and fervently. They were asking where he was supposed to be.*

(<https://korpling.org/annis3/?id=bf1da0a3-f411-4d32-b1b3-1da9dc3e399e>)

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- Upon closer inspection, more examples of evidential uses of *sculan* can be found in OHG:

(37) (Illic iouem regnare certissimus.)

*It is certain that Jupiter is reigning there.*

Târ      **sól**                      guísso    iouis                      stûol    sîn.

There   shall\_IND-PRES   certainly Jupiter's                      throne   be

*Jupiter's throne is said to be there.*

(Notker, Martianus, Capella 1.1, 128-132).

(<https://korpling.org/annis3/?id=1e9b6e09-e83d-4857-a273-19a126cce838>)

# Conclusion

- First, evidence that *sculan* could already be used as an evidential modal verb in the earliest stages of its existence as a modal verb, although that use was clearly less frequent than the deontic/bouletic one.
- Second, evidence that *sculan* on its deontic/bouletic uses was not necessarily in complementary distribution with the imperative in OHG.
- Taken together, these observations favour a unified analysis of *sollen* along the lines of Hinterwimmer over the analysis of Hinterwimmer, Matthewson & Truckenbrodt (2019), which assumes two distinct lexical entries for *sollen*.

# Conclusion

$$\begin{aligned} \llbracket \text{solI} \rrbracket = & \lambda P \lambda x \lambda w. [\exists e \leq_{\text{part}} w \exists y [\text{Agent}(y)(e) \wedge y \neq x \\ & \wedge \forall w' [w' \in \cap \text{GOAL}(y)(e) \rightarrow \exists e' [\neg \tau(e') < \text{NOW} \wedge P(x)(e')]]]] \end{aligned}$$

(Hinterwimmer 2013)

$$\llbracket \text{IMPj} \rrbracket^{c,g,t,w} = \lambda P \lambda x: \langle g(j), x, t, w \rangle = c . [g(j) \text{ wants } P(x) \text{ at } t \text{ in } w]$$

$$\llbracket \text{root-sollenj} \rrbracket^{c,g,t,w} = \lambda P \lambda x: \langle g(j), x, t, w \rangle \neq c . [g(j) \text{ wants } P(x) \text{ at } t \text{ in } w]$$

$$\llbracket \text{epist-sollenj} \rrbracket^{c,g,t,w} = \lambda P \lambda x: g(j) \neq c_{\text{Sp}} . [g(j) \text{ said that } P(x) \text{ before } t \text{ in } w]$$

where  $c$  is the context of utterance consisting of the parameters  $\langle c_{\text{Sp}}, c_{\text{Ad}}, c_T, c_W \rangle$ ,  $g$  is the assignment function,  $t$  is the time of evaluation and  $w$  is the world of evaluation.

(Hinterwimmer, Matthewson & Truckenbrodt 2019)

# Conclusion

- First, on HMT's (2019) account, the non-origo-restriction is hard-wired into the meaning of root *sollen*.
- Therefore, a different denotation would have to be assumed for deontic/bouletic uses of *sculan* than for deontic/bouletic uses of *sollen*.
- On the analysis proposed in Hinterwimmer (2013), in contrast, the non-origo-restriction results from competition with the imperative.
- One could thus assume that this competition did not apply as strictly in earlier stages of German as it does in contemporary German.

# Conclusion

- Secondly, on the account of HMT, it has to be assumed that a second lexical entry for the evidential interpretation of *sculan* already exists in OHG, which, for some reason is used less frequently than the deontic/bouletic one.
- On Hinterwimmer's (2013) account, in contrast, it can be assumed that *sculan* has the same denotation as *sollen*, which is flexible enough to allow both uses in principle.
- That evidential uses are less frequent than deontic/bouletic ones in older stages of German can be explained by their being less directly connected to the respective intentional act than the deontic/bouletic uses.



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