

Scalarity as a meaning atom in *wohl*-type particles¹

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Abstract: German *wohl* ‘well’, Norwegian *vel* ‘well’ and French *bien* ‘well’ are all known to have a modal particle reading that roughly amounts to ‘surely, probably, I guess’ (see Zimmermann 2008, Fretheim 1991, Detges & Waltereit 2009). This paper addresses the question of how such a reading could have arisen from the source meaning of these elements (i.e. ‘well’). I propose an analysis of *wohl*-type (i.e. ‘well’-type) modal particles as scalar operators, which is based on the observation that each of them appears to have diachronically gone through an intermediate stage in which it was clearly a scalar modifier (namely *wohl* ‘approximately’, *vel* ‘approximately, more than’, and *bien* ‘very’). The core idea of my contribution is that the modal particle variant is still a scalar operator in nature, but has emerged through a shift in the type of scale that the particle operates on (in line with Beltrama’s 2015 approach to English *totally*). *Scalarity* thus emerges as a common meaning atom (or meaning molecule), in the spirit of von Stechow & Matthewson (2008:154,172), which serves as a building block in the semantic makeup of *wohl*-type particles.

1. Background

Deo (2015) proposes a view on grammaticalization where humans share a finite, universal inventory of functional meanings. Over time, languages realize, or fail to realize, a given functional meaning by means of a particular lexical item; grammaticalization encompasses the processes that contribute towards the overt expression of functional meanings in a given language (e.g., by recruiting a lexical/non-grammatical element as an expression of some grammatical function).

From such a perspective, so-called *modal particles* or *discourse particles* (cf. Zimmermann 2011, Grosz 2021) pose a particular challenge; these particles are elements that contribute non-at-issue meaning and are often deemed “untranslatable”. To give a concrete example, consider Norwegian *vel* and German *wohl* in (1a-b). Both particles roughly convey a reduced commitment on part of the speaker to the modified proposition (cf. Zimmermann 2011), which by and large corresponds to English *apparently*, *I suppose*, *I guess*, or *probably* (as in (1c));² *vel* and *wohl* have received a good amount of attention in the theoretical literature, based on refined introspective intuitions (see Fretheim 1991, 2018 for a discussion of Norwegian *vel*, and Eckardt & Beltrama 2019 for the most recent discussion of German *wohl* that I am aware of).

- (1) a. Det var **vel** han som hadde skrevet boka.
it was VEL he who had written book.the
(Norwegian original: Herbjørg Wassmo. 1992. *Dinas bok*.)
- b. Er hatte dieses Buch **wohl** geschrieben.
he had this book WOHL written
(German translation, published in 1992)
- c. That was **probably** the author of the book. (English translation, published in 1996)

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² Haugen (1982:167) and Fretheim (1991:182) both freely translate Norwegian *vel* by means of a sentence-final tag, ‘I suppose’, whereas Eckardt & Beltrama (2019:2) freely translate German *wohl* as ‘I assume’.

While German has approximately seventeen modal particles (Thurmair 1989) and Mainland Scandinavian languages have approximately six (Andvik 1992; see also Haugen 1982:166), English is widely assumed not to have any. This is evident from the examples in (1a-c), which are taken from the Oslo Multilingual Corpus, a translation corpus that mainly contains literary texts and their translations into different languages. While German *wohl* and Norwegian *vel* can often be used in the same context, English does not have a comparable element. That being said, it is evident from the English translation in (1c) that *vel* and *wohl* have a modal component that can be captured by the English sentence adverb *probably*. Meanwhile, native speaker’s intuitions show that there is only a partial overlap between *vel/wohl* and *probably*, and – more importantly – even the overlap between *vel* and *wohl* is not perfect – a fact that we will come back to later in this paper.

Turning back to Deo’s (2015) view of grammaticalization, we observe that modal particles in German and Norwegian are closed class items, and many authors, such as Diewald (2011), have argued that their emergence is, in fact, an instance of grammaticalization. If Deo’s conjecture is correct – that there is a finite, universal inventory of functional meanings –, then this raises the question of how this is reflected by the highly idiosyncratic meanings of modal particles; as we will see, even the cognates *vel* and *wohl* are not perfect counterparts of one another, in that certain contexts clearly permit one of them, but not the other.

The core theoretical idea that I pursue (much in line with Matthewson & Davis 2018) is that what is universal in the sense of Deo’s (2015) universal functional meanings are, in fact, “common semantic building blocks” (von Fintel & Matthewson 2008:154, 172). As argued by von Fintel & Matthewson (2008), what is universal is presumably not a semantic category such as (in other domains of grammar) PERFECTIVE or ACCOMPLISHMENT, but rather a smaller meaning component – so-called *atoms of meaning* (see Matthewson & Davis 2018); these atoms of meaning aggregate into larger categories, starting with *meaning molecules*. A useful strategy for detecting both the atoms of meaning and their degree of variation, following Matthewson & Davis (2018:7), is to study “similar-but-not-identical elements”, which is a core aim of this contribution. In this context, Matthewson & Davis (2018:7) also coin the notion of “micro-parameters of variation”. To cite a concrete example, they compare the St’át’imcets discourse particle *séna7* (Davis & Matthewson 2016) to the German modal particle *doch* (see Lindner 1991, among many others). Both elements have an interpretation that can be paraphrased as ‘counter to expectation’; nevertheless, labels such as ‘frustrative’ and ‘adversative’, which have been discussed in connection with particles of this type, are generally too imprecise to serve as an umbrella that would capture the commonalities and/or differences between them. In other words, it is unlikely that there is a universal semantic category FRUSTRATIVE or ADVERSATIVE that subsumes St’át’imcets *séna7* and German *doch* in an explanatory fashion. Matthewson & Davis (2018) show that, amongst other meaning components, *séna7* and *doch* share the property of referring to a contextually given proposition *q*, but differ in whether *q* is necessarily true (in the case of *séna7*) or not (in the case of *doch*); this difference qualifies as ‘micro-parametric’ variation. *Atoms of meaning* for a given particle Π might draw on such generalizations and thus include ‘ Π refers to a salient proposition *q*’ (contained in both *séna7* and *doch*) and ‘ Π requires $q(w)=1$ ’ (contained in *séna7*, but not *doch*).

Methodologically, the aim of this paper is not to provide an in-depth synchronic investigation of the elements at hand (such as German *wohl*) (a reader may wish to consult Fretheim 1991 and Eckart & Beltrama 2019 for this). The goal is more

programmatic (and exploratory) in that I present a small cross-linguistic study using data from a translation corpus. An approach that uses translations in cross-linguistic investigation is explicitly defended by Aijmer (2015:176), who, in her investigation of Swedish *väl* (a cognate of Norwegian *vel* and German *wohl*) states: “If *väl* is translated in a particular way, *väl* and the translation share one or several semantic features.” The working hypothesis is, then, that these *semantic features* that Aijmer aims to identify may put us on track for determining semantic atoms or molecules of meaning. To be clear, the present paper does not advocate an approach that solely relies on translation data; eventually, corpus examples must always be introspectively or experimentally evaluated and supplemented with other evidence where possible.

2. A Modal Particle Puzzle

In what follows, this paper aims to contribute towards an explanation of why elements that have a source meaning equivalent to English *well* are particularly prone to develop modal readings (roughly equivalent to *surely*, *apparently*, *presumably*, or *really*). Examples (2) and (3) provide further illustration of the phenomenon (in addition to example (1) above); these examples, too, are taken from the Oslo Multilingual Corpus (henceforth: *OMC*)³. The Norwegian originals, (2a)/(3a), contain the modal particle *vel*, which corresponds to *wohl* in the German translations, (2b)/(3b). Since English lacks a modal-particle counterpart, English translators tend to translate the respective elements by means of a tag question, (2d), or a modal adverb (e.g. *probably*), (3d), which are understood in the given contexts to have a similar function (see Aijmer 2015 on Swedish *väl*).

While Norwegian *vel* and German *wohl* are by no means synonymous or interchangeable (and I do not aim to provide a uniform lexical entry for them), (2a-b) and (3a-b) further show that their distribution overlaps in that both can be used to express a modal flavor in the above sense. Notably, both *vel* and *wohl* are cognates of English *well* and can be assumed to have originated from the adverbial counterpart of *good*. As shown in (2c)/(3c), we make a parallel observation for French, where the adverb *bien* ‘well’ has also acquired a modal particle use (Detges & Waltereit 2009).

- | | | |
|--------|---|-------------------|
| (2) a. | Det var vel kong Fredriks drøm? | (HW2N.2.10.s448) |
| | it was VEL king Fredrik’s dream | |
| b. | Es war wohl König Frederiks Traum? | (HW2TD.2.10.s439) |
| | it was WOHL king Fredrik’s dream | |
| c. | C’était bien là le rêve du roi Fredrik? | (HW2TF.2.10.s448) |
| | it=was BIEN there the dream of.the king Fredrik | |
| d. | But this was King Frederick’s dream, wasn’t it ? | (HW2TE.2.10.s452) |
| | | |
| (3) a. | Dersom Dina mente hun kunne bo i kårstua , | |
| | if Dina thought she could live in the.cottage | |
| | så var det vel en mening med det . | |
| | then was it VEL a reason with that | (HW2N.3.4.s58) |
| b. | Wenn Dina meinte, daß sie im Ausgedinge wohnen könnte, | |
| | if Dina thought that she in.the cottage live could | |

³ The token IDs are included with each example that is quoted from the OMC.

dann habe das **wohl** einen Sinn .
 then has this WOHL a reason (HW2TD.3.4.s58)

c. Si Dina pensait pouvoir habiter l'annexe,
 if Dina thought to.be.able to.inhabit the=cottage
 il devait **bien** y avoir une raison à cela.
 it must BIEN there have a reason for this (HW2TF.3.4.s58)

d. If Dina wanted to live in the cottage,
 there was **probably** a reason for it. (HW2TE.3.4.s59)

As already pointed out in section 1, each of these modal particles has been explored in some depth within the respective language: Aijmer's (1977, 1996, 2015) description of Swedish *väl* largely carries over to Norwegian *vel*. Similarly, Zimmermann (2008, 2011), deVeugh-Geiss (2014), Göbel (2016), and Eckardt & Beltrama (2019) present formal semantic analyses of German *wohl*. Finally, Waltereit & Detges (2007) and Detges & Waltereit (2009) trace the grammaticalization of French *bien* into the modal particle that we see in (2c) and (3c).

In spite of the cross-linguistic orientation of many descriptive accounts (including the above), formal analyses of individual modal particles have mostly taken an (in the scope of these publications well-justified) 'isolationist' stance, aiming to analyze a given particle (such as *wohl*) within a single language. This is motivated by the fact that the overlap between related particles (such as German *wohl* and Norwegian *vel*) is always limited. For instance, Norwegian *vel* cannot occur in *yes/no*-questions (or is marginal at best), while German *wohl* can. As an illustration, Fretheim (2018:7,14,16) points out that 41 out of 65 speakers reject *vel* in *yes-no* questions such as (4) altogether. The remaining 24 speakers only permit a rhetorical interpretation, and no other interpretation. (The question 'Is it VEL necessary to make a reservation?' thus only admits the *rhetorical reading* 'It is **not** necessary to make a reservation.')

(4) % Er det **vel** nødvendig å forhåndsbestille?
 is it VEL necessary to make.a.reservation
 'It is **not** necessary to make a reservation.'
 (*lit.* 'Is it VEL necessary to ...?')

By contrast, non-rhetorical *yes/no*-questions with German *wohl* are perfectly well-formed and are typically (though not exclusively) deliberative:

(5) Manchmal denke ich: Ist es **wohl** Zeit für ein Comeback?
 Sometimes think I is it WOHL time for a comeback
 'Sometimes, I think: Is it time for a comeback, **I wonder / what do you think?**
 (*lit.* 'Sometimes, I think: Is that WOHL time for a comeback?')
 (DeReKo: Süddeutsche Zeitung, 15.12.2012)

Moreover, in *wh*-questions, Norwegian *vel* triggers a rhetorical-question interpretation, (6c), which *schon* marks in German, (6b), while German *wohl* would trigger a deliberative-question interpretation. The German counterpart of (6c) with *wohl*, given in (7), lacks the rhetorical question reading that *vel* marks in Norwegian.

(6) a. Psychiatrists! What do they know?
 (English original: Anita Brookner. 1988. *Latecomers.*)

- b. Psychiater! Was wissen die **schon**?
 psychiatrists what know they SCHON (German translation, 1991)
- c. Psykiatere! Hva vet **vel** de?
 psychiatrists what know VEL they (Norwegian translation, 1990)

(7) (#) Psychiater! Was wissen die **wohl**?
 psychiatrists what know they WOHL
intended reading as rhetorical question: ‘Psychiatrists! What do they know?’
available deliberative reading: ‘Psychiatrists! I wonder what they know.’

In spite of the fact that *vel* and *wohl* are not perfect counterparts of one another, a cross-linguistic puzzle arises from patterns like (2) and (3): a semantically related modal particle use of ‘well’ has diachronically emerged and established itself in different languages (Norwegian, German, and French). This gives rise to the following question: which component of the meaning of *well*-type elements lends itself to their grammaticalization into elements with a modal meaning?

Before proceeding to the core proposal, it is worth flagging a potential confound with regards to Norwegian and German. Haugen (1982:166-167) claims that the Norwegian modal particles *da, jo, nok, nå* and *vel* are loans from Low German, based on the observation that Icelandic only has one modal particle (*þó*) and Old Scandinavian had no modal particles at all. Haugen’s argumentation is weakened by the fact that Burkhart (1994:140) argues that even Old High German only had two modal particles (*denn* and *doch*), with the majority of German modal particles (including *wohl*) emerging in the 16th century or later. It remains to be seen whether Low German differs in these respects, but there is *a priori* no reason to assume that it was different, and the most intense contact between Low German and the Mainland Scandinavian languages appears to have already been subsiding in the 16th century (see Berg 2016). Nevertheless, a reader should bear in mind that Norwegian *vel* may not have developed in complete independence from German *wohl*.⁴

3. The core proposal

My overarching goal is to probe for the *atoms of meaning* that are shared by elements such as German *wohl*, Norwegian *vel* and French *bien*, though I will focus on German *wohl* in the remainder (with some discussion of Norwegian *vel*). In this vein, I propose the following: what the source lexemes and the modal derivatives of such elements share is a scalar component. I propose that *wohl/vel*-type modal particles are scalar modal operators. In the spirit of Beltrama (2015), I propose that their grammaticalization involved a shift in their scale, while they have remained scalar in their very nature. My core proposal is captured by the hypothesis in (8).

(8) *The scalar hypothesis of well-type modal particles*

- [i.] Particles with a function similar to that of German *wohl* originate from scalar modifiers with a meaning that grammatically encodes the surpassing of a contextually given threshold on a scale (i.e. ‘x exceeds a threshold θ ’).

⁴ Note, in this connection, that the *Norwegian Academy Dictionary (Det Norske Akademis Ordbok / NAOB)*, which generally documents Low German origins, does not indicate a non-Scandinavian origin in its entry on *vel* (where reading 2 is the modal particle reading): https://naob.no/ordbok/vel_1

- [ii.] Their grammaticalization involves a shift of the type of expression that they modify (before: a proposition, afterwards: the commitment to a proposition)

To be specific, my idea is that German *wohl* (and Norwegian *vel*) grammaticalized from a scalar element roughly meaning ‘approximately’, i.e. we can trace the diachronic trajectory in (9); see section 4 for details.

- (9) a. MANNER *wohl* ‘in a good way’
 b. > SCALAR *wohl* ‘approximately’
 c. > MODAL *wohl* ‘surely’

The core purpose of this paper is to motivate the hypothesis in (8), rather than argue for a specific implementation. However, for concreteness’ sake, the source meaning, (9b), of the modal particle *wohl* is sketched in (10), inspired by Penka’s (2006:279) analysis of *almost*.

- (10) $wohl_0 p$ (\approx *approximately p*) is true in w ,
 for any contextually restricted set of propositions C , iff

$$\exists q [q \in g(C) \ \& \ \text{CLOSENESS}(p,q) \geq \theta_P \ \& \ q(w)]$$

 where: θ_P is a high threshold of *closeness* between propositions; the degree of *closeness* between p and q reflects the similarity between p -worlds and q -worlds

In words, *approximately p* means that a proposition q holds true, which is very close to the prejacent p , leaving open whether q is identical to p , or slightly distinct.

For the German modal particle *wohl*, (9c), I assume that it makes a contribution parallel to the English auxiliary *must* and adverb *surely*. However, while *must* makes a truth-conditional contribution, *wohl* operates on a non-truth-conditional level. To be concrete, we may apply Swanson’s (2006) scalar analysis of *must*, which I adapt in (11) from Lassiter (2016:150). Note that (11) is a simplification that only captures the modal particle *wohl* in declaratives (see Thurmair 1989:143-145 for *wohl* in interrogatives; see Zimmermann 2008 for an analysis of *wohl* in interrogatives).

- (11) $wohl_M p$ (\approx *surely p*) is felicitous iff, in view of the speaker’s beliefs, $P(p) \geq \theta$
 where θ is a high probability threshold.

In words, the modal particle $wohl_M$ conveys (at a level of felicity conditions) that the probability P of the modified proposition p exceeds a high threshold. A slightly more formal rendering of (11) is given in (12), which may make the parallelism between $wohl_0$ (in (10)) and $wohl_M$ (in (12)) more evident in that both involve a closeness measure between two values, which is conveyed to exceed a contextual threshold θ .

- (12) $wohl_M p$ (\approx *surely p*) is felicitous in w iff

$$\forall w' [w' \in \text{Dox}_{\text{speaker}}(w) \rightarrow \text{PROB-CLOSENESS}_{w'}(P(p,w), 1) \geq \theta_{\text{prob}}]$$

 where: θ_{prob} is a high threshold of *closeness* between probabilities,
 $P(p,w)$ is the probability that p holds in the evaluation world w ,
 and $\text{prob-closeness}_{w'}$ is a scalar ‘close by’ relation that compares, in w' , two probability values n ($0 \leq n \leq 1$).

An analysis that models the semantics of the modal particle *wohl* on the basis of English *must* is independently justified: German *wohl* (and Norwegian *vel*) tend to have a strong modal flavor, equivalent to English *must*, as witnessed by the translation via English *must* in (13c) (see also Aijmer 2015). Observe that neither the Norwegian original, (13a), nor the German translation, (13b), contain the corresponding modal auxiliaries (*må* ‘must’ or *muss* ‘must’, respectively). It is thus the insertion of *vel/wohl* into (13a-b) that has the same effect as the insertion of *must* into (13c).

- (13) a. Æ ser at du e sloppen laus. (HW2N.2.10.s32)
 Så er jeg **vel** Barabbas, sa han og rakte henne hånden.
 then am I VEL Barabbas said he and reached her the.hand
- b. "Ich sehe, daß sie dich freigelassen haben." (HW2TD.2.10.s31)
 "Dann bin ich **wohl** Barabbas", sagte er und gab ihr die Hand.
 then am I WOHL Barabbas said he and gave her the hand
- c. "I see you've been released." (HW2TE.2.10.s32)
 "Then I **must** be Barabbas," he said, and extended his hand.

Bearing in mind the usual caveats that apply to free translations (and thus to translation corpora), we also observe that translations of English *must* by means of German *wohl*, (14), occur just as much as translations of German *wohl* by means of English *must*, (15).

- (14) a. Lord have mercy, I **must** be improving in his sight!
 (English original, Gloria Naylor, *The Women of Brewster Place* 1980 [OMC])
- b. Barmherziger Gott, ich hab mich **wohl** in seinen Augen gebessert!
 merciful God I have me WOHL in his eyes improved
 (German translation, 1996 [OMC])
- (15) a. In seinen Augen bin ich **wohl** der letzte Wilde.
 in his eyes am I WOHL the last savage
 (German original, Günther Wallraff, *Ganz unten*, 1985 [OMC])
- b. In his eyes, I **must** be a complete savage. (English translation, 1988 [OMC])

Concluding this brief outline of a formal implementation, I wish to emphasize that this analysis is not designed to compete with Zimmermann’s (2008), deVeugh-Geiss’ (2014), Göbel’s (2016), or Eckardt & Beltrama’s (2019); instead, my analysis is meant to complement one of these analyses, by adding a scalar operator component. As far as I can see, this would be a relatively straightforward modification, and I believe that it would also be in the spirit of Zimmermann’s (2018) approach to German *schon* (compare section 5).

4. Evidence for a scalar source lexeme

Recall the core idea, laid out in examples (8)-(11), i.e. that the German modal particle *wohl_M* ‘surely, probably’ has grammaticalized from a scalar particle *wohl₀* ‘approximately’. This idea is well-motivated by the scholarly analysis in Jacob and Wilhelm Grimm’s *Deutsches Wörterbuch* (henceforth: *DWB*), which explicitly

proposes that the modal particle *wohl* derived from an affirmative particle with the meaning ‘truly, certainly, definitely, indeed’, as summarized by the quote in (16).⁵

(16) *aus bekräftigendem, betuerndem wohl entwickelt sich die bedeutung ‘vielleicht, vermutlich’ [...]*

translation: ‘From an affirmative, assuring *wohl*, the meaning *vielleicht* ‘maybe’, *vermutlich* ‘presumably’ emerges [...].’

To illustrate the affirmative use of *wohl*, the DWB cites the Middle High German (17), from Hartmann von Aue’s *Iwein* (approx. 1203 CE).

(17) sô bistû **wol** ein vrum man:
 then are.you WOHL a valiant man
 ‘Then you are **truly** (= *wohl*) a valiant man.’

Moreover, the DWB observes the following: in combination with numerical phrases and measurements, affirmative *wohl* ends up having a meaning that is equivalent to the meanings of *annähernd* ‘approximately’, *ungefähr* ‘roughly’, or *reichlich* ‘plentifully’.⁶ The DWB shows that this scalar reading is evident in examples that date back to 1402, as illustrated by (18). From a synchronic (present day) perspective, *wol* in (18) seems ambiguous between ‘probably’ and ‘approximately’. For speakers of Present Day German, the two readings are intuitively indistinguishable in (18), which suggests that examples like (18) may have constituted the critical context (see Diewald 2011) for the reanalysis from *wohl*₀ ‘approximately’ to *wohl*_M ‘surely’.

(18) [...] 5m. [...] zwen bretsnydern, die den somer
 5mark for.two board.cutters who during.the summer
wol 8 wochen zu Ragnith delen und bret gesneten haben:
 WOHL 8 weeks at Ragnit planks and board cut have
 ‘[...] 5 marks [...] for two board cutters who during the summer have cut planks and boards in the town of Ragnit (Neman, Russia) for **approximately** 8 weeks.’
 (E. Joachim [ed.], 1402, *Das Marienburger Tresslerbuch der Jahre 1399-1409*)⁷

Note, moreover, that the modal particle *wohl* is generally assumed to have emerged in the 16th century (Burkhardt 1994:140), i.e. later than the ‘approximately’ reading. Example (19) is a representative early occurrence of modal particle *wohl* from the DWB.

(19) Pariß [...] das der arm Primaso biß auff mittags zeit zu essen **wol**
 Paris that the poor P. until to lunch time to eat WOHL
 erreichen meinet
 reach meant
 ‘Paris [...] which the poor Primaso **probably** thought to reach before having his lunch time meal.’
 (G. Boccacio, *Centum Novella*, translation from 1557, by Arigo [pseudonym])⁸

⁵ <http://www.woerterbuchnetz.de/DWB?bookref=30,1025,1> (Section II.B, [Bd. 30, Sp. 1062])

⁶ See also http://www.duden.de/rechtschreibung/wohl_gut_besser_durchaus#Bedeutung4

⁷ <http://digi.ub.uni-heidelberg.de/diglit/joachim1896/0211>

We can thus conclude that it is well-documented for German that the modal variant of *wohl* originated from its scalar modifier variant, presumably via a process of ‘subjectification’ (Traugott 1989), as formalized by Beltrama (2015).

Importantly, the scalar variant is preserved in Present Day German, allowing us to isolate it as a separate reading of *wohl*. In fact, both German *wohl* and Norwegian *vel* have such a scalar homonym, and the idea that I pursue is that Norwegian *vel* has undergone a development much in line with (16)-(19) (*pace* Haugen’s 1982:166-167 claim, which I discussed in section 2). For Present Day German *wohl*, the relevant meaning is illustrated in (20) and (21). As indicated by brackets, *wohl* ‘approximately’ seems to form a syntactic constituent with the numerical / measurement phrase that it operates on.⁹

- (20) [**Wohl** ein Drittel aller Fahrzeuge] biegt auf die Nebenstrecke ab:
 WOHL a third of.all vehicles turns onto the ancillary.road V.PRT
 ‘**Approximately** a third of all vehicles turns onto the ancillary road.’
 (*DeReKo*: Süddeutsche Zeitung, 09.09.2000)

- (21) [**Wohl** ein Drittel der FDP-Wahlmänner, die für Heinemann
 WOHL a third of.the FDP-electoral.delegates who for Heinemann
 stimmten,] taten dies nicht aus Überzeugung, sondern aus Parteiräson.
 voted did this not from conviction but from party.reason
 ‘**Approximately** a third of all FDP delegates who voted for Heinemann didn’t
 do it out of conviction, but out of solidarity with their party.’
 (*DeReKo*: Die Zeit, 05.09.1969)

Parallel evidence for a scalar meaning of Norwegian *vel* is provided by (22) and (23) (though there are complications that I will not go into here, such as a preference to stress *vel* in this scalar reading). Note that scalar *vel* is ambiguous between an ‘approximately *x*’ reading, as shown by the translation in (22b), and a ‘more than *x*, over *x*’ reading, as in (23b). For native speakers, the ‘more than *x*, over *x*’ reading seems to be more prominent.

- (22) a. [**Vel** en tredjedel av all olje som ble fraktet fra USA til
 VEL a third of all oil that was shipped from USA to
 Storbritannia] gikk på norsk kjø, [...]
 Great.Britain went on Norwegian keel
 (OMC, ID of Norwegian original: ABJH1N.2.7.s21)

⁸ <https://books.google.no/books?id=hBZLAAAACAAJ&pg=RA1-PT17>
<http://digitale.bibliothek.uni-halle.de/vd16/content/titleinfo/997341>

The identity of the translator, who went by the pseudonym *Arigo*, is unknown.

⁹ An attentive reader may take this to question the analysis in (5), in which *wohl* ‘approximately’ operates on propositions, but the syntactic behavior of *wohl* in such examples closely mirrors that of the focus particle *nur* ‘only’, for which Buring & Hartmann (2001) show that it should nevertheless be treated as a propositional modifier. Compare also example (i.), where an uncontroversial sentence adverb, *wahrscheinlich* forms a constituent with the DP *alle Schülerinnen und Schüler*.

- i. [**Wahrscheinlich** alle Schülerinnen und Schüler] haben sich [...]
 probably all female.pupils and male.pupils have self
 den Tag herbeigesehnt [...]
 the day yearned.for
 ‘**Probably** all pupils] were longing for the day [...]
 (*DeReKo*: Mannheimer Morgen, 23.06.2000)

- b. [**Approximately** one third of all the oil which was shipped from the USA to Great Britain] was on Norwegian ships.
(OMC, ID of English translation: ABJH1TE.2.7.s21, ABJH1TE.2.7.s22)
- (23) a. [**Vel** en tredjedel av stipendiatene] var kvinner, men
VEL a third of the fellows was women but
kvinneandelen varierer mye med ulike stipendtyper.
the percentage of women varies much with different fellowship types
(OMC, ID of Norwegian original: NFRA1N.4.s17)
- b. [**More than** a third] were women, but the female share varies widely in relation to the various types of scholarships.
(OMC, ID of English translation: NFRA1TE.4.s17)

Turning to the French pattern, Detges & Waltereit (2009:57) also propose that the French modal particle *bien* originated from a scalar operator. Citing an example from 1200 C.E., Detges & Waltereit (2009:55) state that “it is very unlikely that the [manner] adverbial *bien* ‘well’ is the direct diachronic predecessor of the homophonous modal particle. Rather, the latter must go back to an intermediate stage, namely the degree adverb *bien* ‘at lot [sic], very much, to a large extent’”. They propose a grammaticalization trajectory, which I render in (24), parallel to my (9).

- (24) a. MANNER *bien* ‘in a good way’
b. > SCALAR *bien* ‘very, to a large extent’
c. > MODAL *bien* ‘really’

An example of scalar *bien* ‘very, to a large extent’ in Present Day French is found in the Oslo Multilingual Corpus, as shown in (25b); note that the translations into other languages systematically translate *bien* as ‘very’, (25acd).

- (25) a. at det han i virkeligheten lette etter var **svært** enkelt.
that it he in reality searched after was very simple
(OMC, ID of Norwegian original: NF1N.3.s287)
- b. que ce qu’il cherchait était **bien** particulier.
that it that=he searched was very particular
(OMC, ID of French translation: NF1TF.3.s268)
- c. daß das, wonach er in Wirklichkeit suchte, **sehr** konkret war.
that that which after he in reality searched very concrete was
(OMC, ID of German translation: NF1TD.3.s223)
- d. that what he was really searching for was **very** simple.
(OMC, ID of English translation: NF1TE.3.s256)

We can thus tentatively conclude that the trajectory in (26) is well-supported by diachronic and synchronic data, thus motivating the scalar hypothesis in (8).

- (26) a. MANNER *wohl* / *vel* / *bien* ‘in a good way’
b. > SCALAR *wohl* ‘approximately’, *vel* ‘approximately, over’, *bien* ‘very’
c. > MODAL *wohl* ‘surely’, *vel* ‘surely’, *bien* ‘really’

Having presented the idea of a two-step trajectory for the emergence of *wohl*-type modal particles, in (26), a natural question is, of course, why the first step (from (26a)

to (26b)) occurs and how it is motivated. Since the focus of this paper is on the second step (from (26b) to (26c)), I refer the reader to relevant literature such as Gehrke & Castroviejo (2016) (and references therein), who discuss adverbially used *gut* ‘good, well’ in Present Day German, rather than *wohl* ‘well’. Crucially, *gut* productively (synchronically) gives rise to degree readings not unlike the ones that we see in (26b), as illustrated by Gehrke & Castroviejo’s example (27).¹⁰

- (27) Der Lastwagen ist **gut** beladen.
 the truck is GOOD loaded
 ‘The truck is **well** loaded.’ (≈ ‘The truck is loaded **to a good/high degree.**’)

The synchronic properties of German *gut* ‘good, well’ may also shed light on an interesting puzzle inherent in (26b): while *wohl*, *vel* and *bien* all go back to a word that means ‘in a good way’, their dominant scalar readings (‘approximately’, ‘very’, ‘over’) are quite varied in that counterparts of the English degree modifiers *approximately* and *very* have a fundamentally different semantics. As flagged by an anonymous reviewer, *approximately* signals that the standard is approximated, whereas *very* signals that it is clearly exceeded; the divergence in (26b) thus constitutes a puzzle. However, this ambiguity also seems to be present in the degree readings that synchronically arise from *gut* ‘good, well’ in German. While (27) conveys that the standard for what counts as loaded is clearly exceeded (corresponding to a ‘very’ reading), *gut* ‘good, well’ also has a use as an approximator when it combines with numerals, as illustrated in (28b). The German translators of (28a) (Georg Auerbach & Gisela Stege) chose to translate English *about two miles* with German *gut zwei Kilometer* (lit. ‘well two kilometers’). In other words, the ambiguity that gives rise to diverging meanings (‘approximately’ vs. ‘very’) must already be present in degree uses of the source lexeme (as in *gut* ‘well’). Note that this is also quite parallel to the documented historical development of *wohl*, in (17)-(18).

- (28) a. Though he had never seen their cottage he seemed to remember that his aunt had told him that it lay **about two miles** to the south.
 (English original, P.D. James, *Devices and Desires*, 1980 [OMC])
- b. Er kannte ihr Cottage nicht, erinnerte sich aber, daß seine
 he knew her cottage not remembered self however that his
 Tante ihm erzählt hatte, es läge **gut zwei Kilometer** weiter südlich.
 aunt him told had it lay GOOD two kilometers further south
 (German translation, 1990 [OMC])

¹⁰ An anonymous reviewer raises the question whether the first step (from (26a) to (26b)) is necessary to begin with, outlining an alternative where evaluative *wohl* ‘well’, (26a), developed into epistemic *wohl* ‘surely’, (26c), directly. This reviewer suggests that contexts where evaluative *wohl* co-occurred with overt modal operators may have served as critical contexts for reanalysis, as illustrated in (i).

- i. Das **kann gut** sein.
 that can GOOD be
 ‘That **may (very) well** be the case.’

This possibility could be addressed by investigating whether relevant combinations of *wohl* and modal operators were abundant in the period in which the discourse particle reading of *wohl* emerged. Crucially, even in (i.), the reading of *gut* ‘good, well’ seems to be a ‘degree reading’ of the type that Gehrke & Castroviejo (2016) discuss (akin to *absolutely/totally* in the sentence *That may absolutely/totally be the case.*), so this is compatible with a view where discourse particle readings of *wohl* emerge from a scalar modifier use of *wohl*.

A thorough exploration of the two degree readings of *gut* ‘good, well’ in (27) and (28), and how they may give rise to the divergence in (26b) is beyond the scope of this paper; however, we can observe that English *well* does not have the reading illustrated in (28b), i.e., the sentence *#it lay well two miles to the south* does not have the same interpretation (but compare *it lay a good two miles to the south*). This suggests that German *gut* ‘good, well’ has started to shift, in its degree reading, from an element that means ‘very’ to an element that can also mean ‘approximately’.

A related issue pertains to the very set of elements that are subject to undergoing the shift in (26a) to (26b); an anonymous reviewer points out that Italian *bella/bello* ‘beautiful’ has also undergone the shift from (26a) to (26b), but not (yet) the shift from (26b) to (26c). Interestingly, as discussed by Beltrama (2016), *bella* ‘beautiful’ in its degree modifier reading, has a positive evaluation component, which has also been proposed for the German modal particle *schon* (see sections 5 and 7), a cognate of *schön* ‘beautiful(ly)’.

- (29) Abbiamo fatto una camminata **bella** lunga!
 have.1PL made a hike BEAUTIFUL long
 ‘We went for a **very** long hike.’
 (Beltrama 2016)

We can now turn, in section 5, to a type of circumstantial evidence that I propose to call ‘evidence from overlap’, since it involves looking at two German particles (*wohl* and *schon*) and two Norwegian particles (*vel* and *nok*) in order to determine the common denominator in their meanings. Once again, it can be shown that a notion of *being a scalar operator* seems to be shared by all of these elements.

5. Evidence from overlap

Having already pointed out that German *wohl* and Norwegian *vel* are no true synonyms, the plot thickens when we include German *schon* and Norwegian *nok*¹¹ (also in their modal particle readings). In brief, we observe an overlap in the usage of these four particles that is summarized in (30a): German *wohl* partially overlaps in its meaning and distribution not only with Norwegian *vel*, but also with Norwegian *nok*; conversely, German *schon* also partially overlaps with *vel* and with *nok*. We can thus pursue the working hypothesis that there is a meaning atom *A* that all four elements share, namely the notion of ‘being a scalar operator that conveys the exceedance of a scalar threshold’, which I outlined in (8). The corresponding idea is, then, that each of these particles realizes a meaning molecule $A+Z_n$, where it is the *A* component that sets them apart from modal particles / discourse particles that are non-scalar and/or non-threshold-oriented in their semantics.

- (30) a.

| | | | |
|---------------------|-----|------------|-----------|
| <i>wohl</i> | ↘ ↙ | <i>vel</i> | Norwegian |
| German <i>schon</i> | ↙ ↘ | <i>nok</i> | |

b. 

¹¹ A potential caveat concerns, once again, the very origin of *nok*. For *nok* (more so than *vel*), it is well-established that it originated as a loan from Middle Low German *nōch* (in line with Haugen 1982:166-167), as witnessed by the entry in the *Norwegian Academy Dictionary*: https://naob.no/ordbok/nok_2 A comparative study of High German, Norwegian, and Middle Low German may shed more light on the diachronic consequences of this fact, but such a study goes beyond the scope of this paper.

We have already seen that German *wohl* and Norwegian *vel* overlap in examples like (31), repeated from (2).

- (31) a. Es war **wohl** König Frederiks Traum? (HW2TD.2.10.s439)
 it was WOHL king Fredrik's dream
 b. Det var **vel** kong Fredriks drøm? (HW2N.2.10.s448)
 it was VEL king Fredrik's dream
 c. But this was King Frederick's dream, **wasn't it?** (HW2TE.2.10.s452)

Looking at a wider range of examples, we observe that German *wohl* also overlaps with the Norwegian modal particle *nok*, as given in (32b); in Norwegian, *nok* and *vel* (together with *visst*, which I do not discuss here) are generally discussed as particles that have an epistemic flavor, as in Fretheim (1991:180-184) and Andvik (1992:2-4).

- (32) a. Sie mochte es **wohl** nicht, daß die Kinder zusahen. (HW1TD.5.s26)
 she liked it WOHL not that the children watched
 b. Den likte **nok** ikke at de sto og så på. (HW1N.5.s27)
 it liked NOK not that they stood and saw at
 c. She **surely** didn't like them all standing there and staring. (HW1TE.5.s26)



Moreover, both *vel* and *nok* can be shown to overlap with the German modal particle *schon* (see Egg 2012 and Zimmermann 2018 for a recent formalization of the semantics of *schon*). On the one hand, (33) and (34) illustrate this for *schon* and *vel* (and see (6) for a similar function of *schon* and *vel* in rhetorical questions).

- (33) a. Doch, Herr Staatsanwalt, das kann **schon** sein. (BHH1TD.4.5.s91)
 indeed Mr. district.attorney that can SCHON be
 b. Åjo, herr dommer, det kan **vel** være. (BHH1N.4.5.s89)
 oh.yes Mr. judge this can VEL be
 c. Oh yes, Your Honour, that may **very well** be. (BHH1TE.4.5.s89)
- (34) a. "[...] Es ist viel Arbeit..." "Das stimmt **schon**." (HW2TD.3.1.s38)
 it is much work this is.correct SCHON
 b. [...] Det e mykkje å gjør. – Det e **vel** så. (HW2N.3.1.s38)
 it is much to do it is VEL so
 c. "[...] There's a lot to do ..." "I'm sure." (HW2TE.3.1.s42)

On the other hand, example (35) shows that the German modal particle *schon* also overlaps with the Norwegian modal particle *nok*. Native speakers report that *nok* has the 'reassuring, comforting' effect that is often ascribed to *schon* (cf. Egg 2012), while *vel* (e.g. in (33) and (34)) lacks this effect.

- (35) a. "Wir schaffen das **schon**", sagte Alice. (DL1TD.1.s861)
 we manage this SCHON said Alice
 b. «Vi klarer det **nok**," sa Alice. (DL1TN.1.s879)
 we manage it NOK said Alice
 c. "We can manage," said Alice. (DL1E.1.s794)

Looking at the entire quadruplet of modal particles, we observe that, in fact, all four particles may be of scalar origin. Their proposed source meanings are included in the partial correspondences in (36).

| | | | | |
|-----------------------------|--------------|---|------------|----------------------------|
| (36) Source lexeme | MP | | MP | Source lexeme |
| <i>wohl</i> ‘approximately’ | <i>wohl</i> |  | <i>vel</i> | <i>vel</i> ‘approximately’ |
| <i>schon</i> ‘already’ | <i>schon</i> |  | <i>nok</i> | <i>nok</i> ‘enough’ |

To be explicit, the German modal particle *schon* is generally assumed to have emerged from the temporal/scalar particle *schon* ‘already’, which still exists in Present Day German, as in (37a) (compare Zimmermann 2018).

- (37) a. Ehe die Leute in Messina begriffen, (ABR1TD.1.1.s748)
before the people in Messina realized
was eigentlich los war, war es **schon** zu spät.
what actually loose was was it already too late
- b. When the people of Messina realized (ABR1E.1.1.s747)
what was going on, it was **already** too late.

Similarly, the Norwegian modal particle *nok* has emerged from the scalar modifier *nok* ‘enough’,¹² which still exists in Present Day Norwegian, as in (38a) (see also Andvik 1992:4-6).

- (38) a. Hadde jeg **nok** tro på det? (ABR1TN.1.1.s265)
had I enough faith for it
- b. Did I have **enough** faith for it? (ABR1E.1.1.s266)

Both *schon* ‘already’ and *nok* ‘enough’ are uncontroversially scalar in their semantics. I take this to further corroborate my scalar hypothesis in (8), repeated in (39), since the common denominator of the quadruplet in (36) seems to be an abstract notion of *scalarity*.

(39) *The scalar hypothesis of well-type modal particles*

- [i.] Particles with a function similar to that of German *wohl* originate from scalar modifiers with a meaning that grammatically encodes the surpassing of a contextually given threshold on a scale (i.e. ‘x exceeds a threshold θ ’).
- [ii.] Their grammaticalization involves a shift of the type of expression that they modify (before: a proposition, afterwards: the commitment to a proposition)

On a big-picture level, I propose to divide functional meanings into a CORE (*A* in (30b)) and a PERIPHERY (*Z_n* in (30b)). For *wohl/schon/vel/nok*, in (36), I propose that the CORE consists of a scalar operator meaning that involves the exceeding of a threshold; by contrast, the PERIPHERY consists of additional shades of meaning that the elements have acquired due to their individual diachronic origins. For instance, while scalar *wohl* in German largely corresponds to ‘approximately’ (and not ‘more

¹² In connection with footnote 11, it is worth pointing out that *nok* was loaned ‘wholesale’ from Middle Low German, including its ‘enough’ reading, as outlined in the Norwegian Academy Dictionary.

than, over’), native speakers of Norwegian report that scalar *vel* predominantly means ‘more than, over’ (and only marginally admits an ‘approximately’ reading).

6. Support from dialectal variation

A final piece of evidence for a scalar origin of *wohl*-type elements stems from dialectal variation, which also emulates developments such as the ones of *nok* ‘enough’ and *schon* ‘already’ (in section 5). As a baseline, the South German lexeme *schier* has previously been discussed in Eckardt (2011).¹³ Its original meaning was that of the temporal adverb *soon* (Middle High German *schiere* ‘soon’), from which it has developed the approximator reading *schier* ‘almost, virtually’, as illustrated in (40).

- (40) Der Beifall wollte **schier** nicht enden.
 the applause wanted SCHIER not to.end
 ‘The applause **almost** (= *schier*) was not going to end.’
 (DeReKo: Niederösterreichische Nachrichten, 26.11.2008)

An attentive reader will already have noticed the parallel between *schier* ‘almost, virtually’ and *wohl* ‘approximately’. Again, there is no doubt concerning the scalarity of *schier* ‘almost, virtually’.

Crucially, for our purposes, there is a side of *schier* that has gone unnoticed in recent discussions (including Eckardt 2011), and which was first discussed in Grosz (2017). The DWB observes that *schier* acquired an additional reading as a *wohl*-type modal particle, which derived from its ‘almost, virtually’ reading. The relevant quote is given in (41).

- (41) *das mit **schier** verbundene [bezeichnet] eine steigerung gegenüber dem, was beschrieben werden soll. das mag der anlass gewesen sein zur herausbildung des gebrauchs im sinne von ‘gar, vollends’, von dem aus das wort dann zu der bedeutung ‘wol’ im weiteren sinne und zum bloszen füllwort herabsinkt.*¹⁴

translation: ‘What is combined with **schier** conveys an increase with respect to what is being described. This may have been the reason for why *schier* acquired a reading in the sense of *gar* ‘even’ and *vollends* ‘completely’, from where *schier* developed a meaning equivalent to **wohl** in the broadest sense, and becomes a mere filler.’

This ‘*wohl* reading’ is documented for (colloquial) Viennese German in a dictionary by Hügel (1873:136), who identifies its meaning with that of *wahrscheinlich* ‘probably’ and provides the examples (42a-b).

- (42) a. Er wird **schier** heirat’n. b. Du wirst **schier** a Fiab’r krieg’n.
 he will SCHIER get.married you will SCHIER a fever get
 ‘He will **probably** get married.’ ‘You will **probably** get a fever.’

¹³ Note that *schier* has a North German homophone (illustrated by *schieres Hechtfleisch* ‘pure pike meat’) that has a different diachronic trajectory (related to Middle High German *schir* ‘pure’); while it is unclear if their diachronic origin is distinct, I will adopt the standard view of treating them as separate lexemes and I focus exclusively on the South German version.

¹⁴ <http://www.woerterbuchnetz.de/DWB?bookref=15,19,29> (Section II.3, [Bd. 15, Sp. 26])

While the *wohl* reading of *schier* has largely disappeared from present day German (including most varieties of Austrian German, such as Viennese German), it is still preserved as an archaism in Burgenland varieties of East Austrian German. So far, I have been able to confirm this for the districts of Mattersburg, Oberpullendorf, and Neusiedl am See. For instance, example (43) (where the spelling emulates dialectal speech) is from a public Facebook discussion, found via *Google*.

- (43) na des wiad **schia** nix wean!
 well this will SCHIER nothing become
 ‘Well, this **probably** (=schier) won’t go well!’

Moreover, examples (44) and (45) are from a local newspaper in Burgenland. An interpretation as ‘almost, virtually’ is not possible in these examples. In fact, native speakers of non-Burgenland varieties of German (such as speakers from Southern Germany or Western Austria) judge (44)-(45) as deviant, not to say gibberish.

- (44) Youngster Patrick Pasterniak hatte **schier** etwas dagegen.
 youngster Patrick Pasterniak had SCHIER something against.it
 ‘**Apparently** (=schier), youngster P. Pasterniak was against [*his team losing*].’
 (DeReKo: Burgenländische Volkszeitung, 11.06.2008)

- (45) Währendder Saison denKlub zu wechseln, ist **schier** nicht das Einfachste.
 during the season the club to change is SCHIER not the easiest
 ‘To change one’s club during the season is **probably** (=schier) not the easiest.’
 (DeReKo: Burgenländische Volkszeitung, 05.09.2013)

Given its uncontroversially scalar origin (in the form of *schier* ‘almost, virtually’), the modal particle *schier* ‘probably, apparently’ in Burgenland German (which seems to have been more wide-spread in the 19th century, according to the observations in Hügel 1873 and the DWB) thus provides further evidence for the scalar hypothesis of *well*-type modal particles in (8) (as repeated in (39)).

7. Future Directions / Micro-Parameters

In the spirit of Matthewson & Davis (2018:7), we can now start looking for the micro-parameters in variation between the different modal particles that we have discussed. To give one concrete example, German *schon* is tendentially accompanied with a positive evaluative component (i.e., ‘*p* is good’, cf. Egg 2012), while *schier* in Present Day East Austrian German has a negative evaluative component (i.e., ‘*p* is bad’); *wohl*, by contrast, is neutral. The contrast is very sharply illustrated by (46B₁) vs. (46B₂). To the extent that *schon* can be used in (46B₁), or *schier* in (46B₂), it can only be understood to be ironic. A question for future research is whether this difference derives from their different source meanings, *schier* ‘almost’ vs. *schon* ‘already’.

- (46) A: Schau mal, wie dumm sich der da anstellt!
 look PRT how stupid self he there behaves
 ‘Look at how incompetently he is acting there!’
 B₁: Das wird **schier** / **#schon daneben** gehen. (*schon* only ironic)
 this will SCHIER #SCHON wrong go
 ‘This will go wrong, I suppose.’

B2: Das wird **schon** / #**schier** **gut** gehen. (*schier* only ironic)
 this will schon #schier good go
 ‘It’ll be OK, I’m sure.’

Another possible micro-parameter might be the presence or lack of inferential evidentiality in the meaning of such modal particles. Göbel (2017) and Eckardt & Beltrama (2019) argue that German *wohl* is an evidential particle, which shares more properties with the evidential adverb *obviously* than with the purely epistemic adverb *probably*. Similarly, Zimmermann (2018) argues that German *schon* operates on evidence for *p* (vs. against *p*), and Fretheim (1991:180) proposes that Norwegian *vel* and *nok* draw on the speaker’s reasoning, indicating an inferential component. By contrast, Fretheim (1991:180) argues that the Norwegian modal particle *visst*, which is also treated as a quasi-synonym of *vel* and *nok*, lacks this connection to speaker reasoning.¹⁵ While *visst* is ascribed an evidential component by Fretheim (1991:181), it can only draw on sensory (visual/auditory) experience.

A third parameter may be the presence or lack of a discourse-managing component. Fretheim (1991:181) observes that Norwegian *vel*, but not *nok*, prompts the addressee to offer their opinion; this intuition is captured by his free translations of the Norwegian examples in (47B₁) and (47B₂) (from Fretheim 1991:182).

(47) A: Jeg føler meg ikke bra.
 I feel myself not good
 ‘I don’t feel well.’

B₁: Nei, men du har **nok** ikke feber.
 no but you have NOK no temperature
 ‘No, but you **probably** don’t have a temperature.’

B₂: Nei, men du har **vel** ikke feber.
 no but you have VEL no temperature
 ‘No, but **you don’t think** you have a temperature, **I suppose?**’

Intuitively, German *wohl* patterns more like *nok* in this case (rather than *vel*), in that (48B) seems to convey the same finality that Fretheim (1991:182) intuitively feels for (47B₁).

(48) A: Ich fühle mich nicht gut
 I feel myself not good
 ‘I don’t feel well.’

B: Nein, aber du hast **wohl** kein Fieber.
 no but you have WOHL no temperature
 ‘No, but you **probably** don’t have a temperature.’

A fourth micro-parameter may be the presence or lack of an uncertainty inference. Zimmermann (2018:724) argues that *wohl* can convey speaker uncertainty, which *schon* does not (as shown in (49A), slightly adapted from Zimmermann 2018:724).

(49)Q: What do you think about St. Pauli?

A: St. Pauli ist **wohl** / #**schon** ein gutes TEAM, aber vielleicht auch nicht.
 St. Pauli is WOHL #SCHON a good team but possibly also not

¹⁵ Note that Norwegian *visst* is a cognate of German *gewiss* ‘surely’, according to Fretheim (1991:177).

‘St. Pauli {would be a good team/#is a good team alright}, put possibly not.’

Finally, it is a defining factor of German *wohl* that it is anchored to the speaker in declaratives, (50a), but to the hearer in interrogatives, (50b).

- (50) a. Der Schlüssel ist **wohl** in der Küche.
the key is WOHL in the kitchen
‘The key is in the kitchen **I assume.**’
- b. Wo ist **wohl** der Schlüssel?
where is WOHL the key
‘Where, **do you assume**, is the key?’
(quoted from Eckardt & Beltrama 2019, emphasis added)

The type of hearer-anchoring that we see in (50b) seems to be completely impossible for Norwegian *vel*. Norwegian *wh*-questions with *vel* only have a rhetorical interpretation (see Fretheim 2018); in addition, as shown in (51) (repeated from (4)), yes/no-questions with *vel* are marginal to begin with, and – for speakers who accept them – only have a rhetorical interpretation as well.

- (51) % Er det **vel** nødvendig å forhåndsbestille?
is it VEL necessary to make.a.reservation
‘It is **not** necessary to make a reservation.’
(*lit.* ‘Is it VEL necessary to ...?’)

By contrast, a German *yes/no*-question with *wohl* that is clearly addressee-oriented is cited in (52).

- (52) Es gibt die fragenden Blicke: Ist das **wohl** auch einer von denen?
it gives the questioning looks is this WOHL also one of those
‘There are those questioning looks: He **must** be one of them, **don’t you think?**’
(*lit.* ‘There are those questioning looks: Is that WOHL also one of them?’)
(DeReKo: Tages-Anzeiger, 31.10.2002)

To summarize, micro-parameters along which *wohl*-type particles differ include: [i.] presence of positive (*schon*) or negative (*schier*) evaluation, [ii.] inferential evidentiality (present in *wohl/schon/vel/nok*, but not in Norwegian *visst*), [iii.] a discourse-managing component that prompts the hearer for an opinion (present in Norwegian *vel*, but not in Norwegian *nok* or German *wohl*), [iv.] an uncertainty inference (in *wohl* but not in *schon*), and [v.] addressee-orientation in questions (with Norwegian *vel*, but not with German *wohl*).

It is crucial for future research on such particles to revisit each of these micro-parameters in turn, especially from a cross-linguistically comparative perspective (as in Matthewson & Davis 2018). One overarching question is whether a given micro-parameter corresponds to a meaning atom in its own right, such that it can be freely combined with other meaning atoms to ‘assemble’ the semantics of different modal particles. To determine if this is the case, a first step will consist of splitting the set of micro-parameters into those that are intimately connected to the notions of scales and gradability *vs.* those that are orthogonal to scalarity. As of now, it appears as if evaluativity (i.), discourse-managing (iii.), uncertainty (iv.), and addressee-orientation

(v.) cannot be tied too closely to scalarity, as the various particles do not pattern together on these four properties in spite of sharing a common scalar core. At the same time, inferential evidentiality, (ii.), may be intricately linked to scalarity, as it seems to span all four of the main elements (*wohl/schon/vel/nok*) discussed in this paper. From this vantage point, the study of such modal particles may thus shed new light on the role of scales and degree modification in the semantics of inferential evidentiality.

8. Conclusion

In this article, I have proposed that *wohl*-type modal particles have a scalar meaning component, which explains why they cross-linguistically emerge from scalar operators (such as *wohl* ‘approximately’, *vel* ‘approximately, more than’, *bien* ‘very’, *schon* ‘already’, *nok* ‘enough’, and *schier* ‘almost, virtually’). In line with Beltrama’s (2015) formal approach to subjectification, their grammaticalization can be assumed to involve a shift in the element that they operate on: while their source lexeme (such as ‘approximately’) may operate on propositions, the modal particle variants (‘surely’) operate on the speaker’s commitment to the proposition. These insights can now be used as the basis for future investigations into the semantics of *wohl*-type modal particles, complementing the work that has already been done by authors such as Zimmermann (2008, 2011) or Eckardt & Beltrama (2019). It also opens new lines of investigation into how *wohl*-type modal particles fit into a broader, more general understanding of modality as a gradable/scalar notion (see Lassiter 2016). Finally, in section 7, I outlined a range of micro-parameters along which *wohl*-type particles seem to differ. Mapping out the exact nature of such micro-parameters and how they derive from the source lexemes is one of the future tasks that emerge from the study presented in this paper.

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