Depictive manner complements

1 Introduction

Complement clauses introduced by manner question words like English *how* and German *wie* describe the manner in which an event takes place, e.g. the manner of repairing a bike. Like other subordinate clauses introduced by question words, they may occur as interrogatives or free relative clauses. The former denote questions, as in (1). The latter usually denote manners, as made explicit in the *namely* continuations in (2). However, they may also be used in a non-standard way that is close to declarative *that*-clauses, compare (3) and (4). This usage is supported by adding manner adverbials like *skillfully*.

(1) a. Frieda asked how George had repaired the bike.
     b. Frieda fragte, wie Georg das Fahrrad repariert hat.

(2) a. Frieda sah, wie Georg das Fahrrad reparierte [… nämlich mit einem Spezialschlüssel].
     b. Frieda saw how George repaired the bike [… namely with a special wrench].

(3) a. Frieda sah, wie Georg das Fahrrad geschickt reparierte.[1]
     b. Frieda told me how George skillfully repaired the bike.

(4) a. Frieda sah, dass Georg das Fahrrad geschickt reparierte.
     b. Frieda told me that George skillfully repaired the bike.

This chapter focuses on non-standard uses of manner complements as shown in (3). We will call them *depictive manner complements* for reasons to be explained below. In contrast, regular uses as in (2) will be called *descriptive manner complements.* Depictive complements are attested in a large number of languages including, in addition to German and English, also Dutch, Russian, Italian, and Basque (investigated in this volume by Corver, Grønn, Hinterhölzl, Irurtzun and Liefke). For a more detailed overview across languages see the introduction to this volume by Jedrzejowski and Umbach.

The broad range of languages exhibiting depictive manner complements is strong evidence against the assumption of random homonymy – it seems no coincidence that manner question words may take the role of (near) neutral complementizers. But if it is not homonymy, why do manner wh-words take this role – what is special about the concept of manner supporting this role?

In English as well as German, depictive *how/wie* clauses at first sight appear equivalent to declarative *that/dass* clauses, compare (3) and (4). For English, Huddleston & Pullum (2002) in their grammar of the English language state:

> "In very informal style *how* can be used without any trace of its usual manner (or degree) meaning, and in such cases it is arguable that it is no longer an interrogative word but has been reanalysed as a declarative subordinator, a variant of *that:* […] *He thought of the time he had ridden to Gavin and told him how his cattle were being rustled at the far end of the valley.*
> In the salient interpretation *how* here is simply equivalent to *that."* (Huddleston & Pullum 2002: 954)

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[1] We use a perception verb (*sehen* 'see') in the German example and a report verb (*tell*) in the English example because these are the contexts in which declarative-like usages are predominantly found in the two languages, see section 2.4.

For German, research articles by Vater (1975) and Falkenberg (1989) as well as standard grammars (Duden 2006, Zifonun et al. 1997) report that depictive uses of *wie*-complements mainly occur embedded under perception verbs and that, unlike declarative *dass*-clauses, they convey the impression of witnessing the event "from within", as an ongoing process or scene. If you ask German native speakers about (5a), they will report a scene or process in which Alec kills one of his bodyguards. Likewise, for English, recent research papers report a special interpretive effect which is absent in *that* clauses. Nye (2013) suggests that it is due to *narrativity* (which has also been suggested for French *comment* clauses by Defrancq 2009). McCormick (2018) argues that *how*, in contrast to *that*, "personalizes the message, inviting the interlocutor into the speaker's subjective perspective". In (5b), for example, the addressee is invited to witness Boehner's encounter with the pope.

(5) a. Sie änderte ihre Meinung über Alec, als sie sah, wie er kurzerhand einen seiner Bodyguards tötete, weil er ihn des Verrats verdächtigte. (Umbach et al. 2021)
'She changed her mind when she witnessed Alec killing one of his body guards because he suspected him of betrayal.'

   b. John Boehner […] got quite emotional earlier this afternoon when he said how the Pope pulled him aside and asked him to pray for him. (McCormick 2018, p.23)

So for both German and English, speakers attest that depictive *how/wie* clauses are not fully equivalent to declarative *that/dass* clauses – there is some additional pictorial meaning component that is absent in the corresponding declaratives. The nature of the pictorial add-on is such that recipients are invited to experience a scene or process depicting the complement's content. This is why we call these *how/wie* complements *depictive.*[2]

When it comes to the embedding matrix verbs, there is, however, a clear difference between the two languages. The examples in (3) demonstrate depictive uses with a perception verb in German (*sehen* 'see') and an utterance verb in English (*tell*). While in English perception verbs are also possible, in German utterance verbs are blocked from embedding depictive complements. In general, the range of matrix verbs and the type of complement denotation is more limited in German than in English. As a consequence, there are English examples that resist translation by a depictive manner complement into German, e.g. (6).

(6) a. They told me how the tooth fairy doesn't really exist.   (Legate 2010)
   b. * Sie sagten mir / erzählten mir, wie die Zahnfee nicht wirklich existiert.

The present paper is about the interpretation of depictive *how/wie* complements in English and German. The paper aims at an explanation of what these complements express beyond plain declarative clauses and why manner words are used for this purpose. This implies that we will assume neither homonymy of manner words nor reanalysis as declarative complementizers.

We propose a semantic analysis of depictive manner complements in which the pictorial add-on effect is traced back to the interaction of two components which are, first, the special syntactic position of

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[2] This term subsumes what we called *eventive* in the analysis of German *wie*-complements in Umbach, Hinterwimmer & Gust (2021). The reason for choosing a different name is that, in English, depictive manner complements are not restricted to events, see sect. 2.2. Semantically, we suggest that eventive manner complements are a special case of depictives.

the manner wh-word and, secondly, the reconstruction of manner by similarity classes. Firstly, due to its position in the left periphery the manner wh-word can only modify the situation described in the complement clause in an appositive way. Secondly, by virtue of similarity interpretation, appositive modification of the situation leads to it being wrapped in a "cloud" of similar situations. But since the modifier is a wh-word, specification of the cloud is left to the addressee. We claim that the similarity cloud serves as a cue for the addressee to think of ways picturing the content of the complement clause – ways how it could have been – that is, the pictorial add-on effect is invoked by similarity clouds.

While the paper by Umbach, Hinterwimmer and Gust (2021) is focused on German manner complements, the present paper is aimed at contrasting German and English. In German, depictive complements mostly denote dynamic situations/events. It turned out that, in English, depictive complements may also denote stative situations, which is rare in German, and also utterances, which is impossible in German. This finding indicates that in English, but not in German, manner wh-words may take the role of quotation marking. The quotational capacity of manner wh-words , which is also found in Basque (Irurtzun this volume), points to a more general connection between similarity, depiction and quotation already indicated by Clark & Gerrig (1990), Davidson (2015) and Clark (2016).

These are the key points of the analysis:
(i)   While descriptive manner complements denote manners, depictive complements in English denote either situations or utterances. In German utterances are blocked and situations are restricted to dynamic ones, i.e. events.
(ii)   As for syntax, we follow Legate (2010) in assuming that, while in regular manner complements the *wh*-word *how*/*wie* is base-generated within the VP, in declarative-like complements it is base-generated in the left periphery.
(iii)   Regardless of whether base-generated in a low or a high position, the wh-words are manner modifiers. If base-generated in a low position, the manner modifier combines with an event type. If base-generated in the left periphery, the modifier combines with the token in an appositive way.
(iv)   The manner wh-words *how* and *wie* have the same meaning across the different uses of the complements: They express similarity (with respect to relevant features). Manners are reconstructed as similarity classes.
(v)   While manner modifiers and event types are combined intersectively – this is regular restrictive manner modification – modification of tokens is necessarily appositive/non-restrictive. On the assumption that manner modifiers constitute similarity classes, modified tokens are embedded in classes of similar elements, which we call similarity clouds and ascribe the observed pictorial add-on to.

There are three more recent analyses of declarative-like manner complements that focus on semantics: Nye (2013), Liefke (in this volume) and Jarvis (2022). Neither of these address the semantic nature of the pictorial add-on. We will refer to these approaches in the relevant sections.

As for terminology: we will speak of descriptive, i.e. regular manner complements in contrast to depictive, i.e. declarative-like ones. The latter subsume eventive *wie*-complements in German (as discussed in Umbach, Hinterwimmer & Gust 2021). To avoid confusion, we will be using this terminology, even when we report on approaches what use different terms. Furthermore, subscripts referring to syntactic positions will be attached to manner words indicating the intended reading of

the complement: *wie*low / *how*low for descriptive readings and *wie*high / *how*high for depictive readings. This is not to be mistaken as indicating ambiguity of the wh-words.

In section 2 we present data of various type. Section 3 briefly goes into syntax. Section 4 is about semantics, starting with a brief look at the notion of similarity we make use of, then explaining the idea and role of similarity clouds and, finally, presenting the semantic analyses of descriptive and of depictive manner complements.

2   Data

In this section, we present the data the analysis in this paper is based on. We start with criteria distinguishing descriptive readings of manner complements from depictive readings. We continue by considering the matrix verbs licensing depictive manner complements, the different types of complement denotations and the question of factivity. Finally, we examine the pictorial effect described for depictives, which will be the core of the semantic analysis in section 4.

2.1   How to separate descriptive and depictive readings?

When considered in isolation, it may be difficult to decide whether a manner complement has a descriptive or a depictive reading. We present criteria for German as well as English which are helpful in separating the two readings, including clarification questions, continuations, accenting, and the insertion of overt manner adverbs.

Clarification questions, continuations, accenting

One way of distinguishing between the two readings is by clarification questions and continuations. Consider (7a,b) and assume a descriptive reading (marked by *wie/how*low). This reading corresponds to clarification questions asking for the manner in which the bike was repaired, as in (7c,d). Answers may refer to pure manner or instruments or methods, as in (7e,f). A descriptive reading is, moreover, compatible with *namely* continuations mentioning a manner, as in (8). Finally, in a descriptive reading the wh-pronoun can be accented, see (9).

(7)   a.   Frieda sah, wielow Georg das Fahrrad reparierte.
      b.   Frieda saw howlow George repaired the bike.

      c.   … und wie hat er das gemacht?
      d.   … and how did he do it?

      e.   Geduldig und geschickt / mit einem Spezialschlüssel / indem er die Pedale abgeschraubt und das Tretlager ausgewechselt hat.
      f.   Patiently and skillfully / with a special wrench / by unscrewing the pedals and replacing the bottom bracket.

(8)   a.   Frieda sah, wielow Georg das Fahrrad reparierte, nämlich mit einem Spezialschlüssel.
      b.   Frieda saw howlow George repaired the bike, namely with a special wrench.

(9) a. Frieda sah, WIE_low Georg das Fahrrad reparierte [nämlich mit einem Spezialschlüssel].
    b. Frieda saw HOW_low George repaired the bike [namely with a special wrench].

In contrast to descriptive readings, in the case of depictive readings (marked by *wie/how*_high), as in (10a,b), clarification questions cannot address the way of repairing the bike but only inquire information about the entire event, for example an explanation or a subsequent event, (10c,d). Possible answers are shown in (10e,f). Accordingly, depictive readings are compatible with continuations naming a subsequent event, (11a,b), but not with *namely* continuations and/or an accent on the wh-word, (12a,b).

(10) a. Frieda sah, wie_high Georg das Fahrrad reparierte.
    b. Frieda saw how_high George repaired her bike.

    c. … und warum hat er das gemacht? / was ist danach passiert?
    d. … and why did he do that? / what happened next?

    e. Weil es so nicht mehr benutzt werden konnte. / Er ist weggefahren.
    f. Because it could no longer be used as it was. / He drove away.

(11) a. Frieda sah, wie_high Georg das Fahrrad reparierte und dann wegfuhr.
    b. Frieda saw how_high George repaired her bike and then went away.

(12) a. # Frieda sah, WIE_high Georg das Fahrrad reparierte [nämlich mit einem Spezialschlüssel] und dann wegfuhr.
    b. # Frieda saw HOW_high George repaired her bike [namely with a special wrench] and then went away.

Manner adverb position

Next, descriptive readings of manner complements differ from depictive readings in blocking manner adverbs in their manner base position (see Frey & Pittner 1998 for German and Ernst 2004 for English). If this position is filled by a manner adverb, the complement must have a depictive reading. In (13a,b) the adverbs *geschickt* / *skillfully* are in manner base position. Therefore, the complement only allows for a depictive reading. A descriptive reading, as enforced by accenting the wh-word, is blocked, see (13c,d).[3]

(13) a. Frieda sah, wie_high Georg das Fahrrad geschickt reparierte.
    b. Frieda saw how_high George skillfully repaired the bike.
    c. ?? Frieda sah, wie_low/WIE_low Georg das Fahrrad geschickt reparierte.
    d. ?? Frieda saw how_high / HOW_high George skillfully repaired the bike.

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[3] It has been argued that the manner *wh*-element might relate to the verb plus adverb, e.g., in (13b) expressing a way of skillfully repairing the bike. This interpretation is logically possible but clearly disapproved by speakers of the language.

The role of the adverb in manner base position is explained by the syntactic analysis in Legate (2010): In the descriptive reading, manner wh-words are base-generated in a low position within the VP and are moved to the front, whereas in the depictive reading (Legate calls it *declarative*) there is no evidence of wh-movement and hence the wh-word must be base-generated in a high position in the left periphery. This entails that in the descriptive reading the low position is filled by the wh-word whereas in the depictive reading it is still available. We use this observation as a test: if a manner adverb can be inserted without (otherwise) affecting the meaning, the complement must have a depictive reading.

There is also a degree reading of *wie-* and *how*-complements, see (14), which is mentioned here to avoid misunderstandings. In this reading the manner *wh*-word modifies a gradable adjective and is fronted together with the adjective. Apart from expressing a degree instead of a manner, this reading shares the characteristics of a regular manner, i.e. descriptive reading outlined above and is set aside in this paper.

(14)   a.   Frieda sah, wie geschickt Georg das Fahrrad reparierte.
       b.   Frieda saw how skillfully George repaired the bike.

2.2   Matrix verbs

The characteristics of depictive manner complements discussed in the preceding section – continuations, accenting, and the role of the manner adverb position – suggest that German and English pattern very much alike. However, when considering eligible matrix verbs and the type of content denoted by the complement, German and English differ substantially.

Before going into details let us set aside verbs selecting for propositions like *glauben / believe*, which block descriptive as well as depictive readings of manner complements, in German as well as English, see (15). Let us also set aside verbs selecting for questions like *fragen /ask*, since they license interrogative/descriptive manner readings but block depictive readings, in German as well as English, see (16).

(15)   a.   *Frieda glaubte / behauptete, *wie*$_{low}$/ *wie*$_{high}$ Georg das Fahrrad reparierte.
       b.   *Frieda believed / claimed how$_{low}$/ how$_{high}$ George repaired the bike.

(16)   a.   Frieda fragte, wie$_{low}$ Georg das Fahrrad reparierte.
       b.   Frieda asked how$_{low}$ Georg repaired the bike.
       c.   *Frieda fragte, wie$_{high}$ Georg das Fahrrad (geschickt) reparierte.
       d.   *Frieda asked how$_{high}$ Georg (skillfully) repaired the bike.

The difference between the two languages is evident when considering translation. For all German manner complements – descriptive as well as depictive ones – there are corresponding English complements. But there are depictive cases in English for which there is no corresponding depictive complement in German. These include, on the one hand, cases with experiential verbs where there is no German equivalent licensing depictives and, on the other hand, cases expressing utterances.

Experiential verbs

The list in (17) shows the German matrix verbs licensing depictive complements together with their most prominent English counterparts. It includes perception verbs, cognition verbs and a limited number of communication verbs and is near equivalent to that in Umbach et al. (2021). Liefke (this volume) subsumes the perception and the cognition category under *experiential*, which is the term we will use below.

(17)   German verbs embedding depictive *wie*-complements (plus English counterparts)

Perception: sehen – see, beobachten – observe,   hören – hear,
                   fühlen / (be)merken – feel / observe, erleben – experience

Cognition: sich erinnern – remember, daran denken – keep in mind, vergessen –
                   forget, träumen – dream, sich vorstellen – imagine,

                   (noch) wissen – know/remember

Communication: erzählen – tell, berichten – report, beschreiben – describe, schildern –
                   portray

In English, all of the verbs listed in (17) embed depictive *how*-complements.[4] But there are additional verbs licensing depictive readings though their German counterparts do not. These are either experiential verbs or verbs associated with utterances. Experiential verbs of this type frequently relate to mental attitudes, see (18)-(21).

(18)   I hate how$_{HIGH}$ she claims to be a New Yorker. She is not a native New Yorker! (=24f, Legate 2010)

(19)   The truth of the matter is that Justin (of Chromogenic) was very hurt by how$_{HIGH}$ you copied his design with "Chromasia," and how$_{HIGH}$ you named your site similarly to his. (=3e, Legate 2010)

(20)   Chuck Baldwin is outraged by how$_{HIGH}$ his "conservative" comrades are eagerly granting omnipotent status to politicians, of all people—the very breed whom the Founders warned the citizenry to watch with vigilance. (=24g, Legate 2010)

(21)   I'm embarrassed of how$_{HIGH}$ I changed seats because he appeared while sleeping to be dangerous, hectic. (=6d, Legate 2010)

Moreover, while in German depictive *wie*-complements mostly denote dynamic events (see Umbach et al. 2021), there are frequent examples in English in which depictive complements denote genuine states, for example (22)/(23), which more or less resist translation into German. One of the rare stative examples with a fully acceptable German translation is given in (24).

(22)   a.   It makes you realize how$_{HIGH}$ the rest of the animal kingdom regards us with tremendous fear. (=12c, Liefke, this volume)
          b.   ? Es lässt uns erkennen, wie$_{HIGH}$ der Rest des Tierreichs uns mit großer Furcht betrachtet.

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[4] One exception is English *imagine* which seems to exclude depictive uses (Nye 2013, table 11, p.239)

(23) a. This constituents a chance to see how_HIGH Greens at the European Parliament have made a real difference since they were first elected in 1999.

b. ?? Dies ist eine Chance zu sehen/erkennen, wie_HIGH die Grünen tatsächlich etwas erreicht haben [....].

(24) a. Remember how_HIGH whites were too racist to vote Obama? (=24d, Legate 2010)

b. Erinnern Sie sich daran, wie_HIGH die Weißen zu rassistisch waren, um Obama zu wählen?

Finally, let us briefly mention cases in English that appear to be depictive at first sight but more plausibly express a degree, as in (25a,b) (which are subsumed under descriptives in section 2.1). German translations would add a degree modifier, e.g., *sehr* 'very'.

(25) a. And Red can't hide from me how he likes it, too. (=24c, Legate 2010)

b. It's amazing how he struggled with even the simplest of tasks. (=63, chap 5, Nye 2013)

Verbs associated with utterances

Surprisingly, from the perspective of German, many of the untranslatable cases refer to utterances. First there is the plain utterance verb *say* licensing depictive manner complements while its German counterpart *sagen* does not, (26). Next, there are verbs of sound emission, like *whisper* and *shout about* that may embed an utterance and license a depictive reading, while their German counterparts do not, see (27) and (28).

(26) a. One young man said how_HIGH he was literally blown off his feet as a result of the explosion. (=35, McCormick 2018)

b. *Ein junger Mann sagte, wie_HIGH er durch die Explosion buchstäblich von den Füßen gerissen wurde.

(27) a. [He] whispered how_HIGH we would be together forever.   (=24j, Legate 2010)

b. *Er flüsterte, wie_HIGH wir für immer zusammen sein würden.

(28) a. The point for your average voter is that if they see the EDL marching through their streets shouting about how_HIGH the neighbourhood is about to be swamped by Muslims or how_HIGH the UK is going to be Islamified by 2040, they are also receiving these cues from other sections of British society. (=53, chap.4, Nye 2013)

b. * […] wenn sie sehen, dass die EDL durch die Straßen marschieren und rumschreien, wie_HIGH die Nachbarschaft von Muslimen überschwemmt wird, […]

Furthermore, following Bondarenko (2021), there are verbs which are ambiguous between a *content of theme* reading and a *content of utterance* reading. On the former reading the content of the embedded clause provides the theme of the matrix event, while on the latter the content of the embedded clause provides an utterance. Bondarenko gives for English the verb *explain* as an example: *Lena explained that there's no bread.* On the content-of-theme reading the sentence says that Lena explained the fact that there's no bread, e.g., by saying that Katya made sandwiches last night. In contrast, on the content-of-utterance reading Lena said "there's no bread" as an explanation for some other fact, e.g., for the fact that she sent Petya to the grocery store. In English these verbs license

depictive *how*-complements on their content of utterance reading. We propose that the English matrix verbs in (29a) – (33a) exhibit content-of-utterance readings.

(29) a. An enthusiastic staff member explained how$_{\text{HIGH}}$ the 1830s redbrick building had been an outmoded remand center. (=1c, chap.4, Nye 2013)

b. * Ein begeisterter Mitarbeiter erklärte, wie$_{\text{HIGH}}$ das rote Backsteingebäude aus den 1830er Jahren ein veraltetes Untersuchungsgefängnis gewesen war.

(30) a. And don't you start in on how$_{\text{HIGH}}$ I really ought to be in law enforcement, or something proper. (=3a, Legate 2010)

b. * Und fangen Sie nicht damit an, wie$_{\text{HIGH}}$ ich eigentlich in der Strafverfolgung tätig sein sollte […].

(31) a. He boasted about how$_{\text{HIGH}}$ he'd never be caught, it says, because he "moved so often." Apparently, "so often" wasnt enough. (=3b, Legate 2010)

b. *Er prahlte damit, wie$_{\text{HIGH}}$ er nie erwischt werden würde, weil er "so oft umzog". […]

(32) a. I've always complained about how$_{\text{HIGH}}$ I'm not made for this world and how$_{\text{HIGH}}$ they stop making things that I really appreciate like the certs mints, ice cream, etc. (=6g, Legate 2010)

b. *Ich habe mich immer darüber beschwert, wie$_{\text{HIGH}}$ ich nicht für diese Welt gemacht bin und wie$_{\text{HIGH}}$ keiner mehr Dinge herstellt, die ich wirklich schätze, wie z. B. Minzbonbons, Eiscreme usw.

(33) a. Tony LaRussa is the same turkey that allowed steroids to run rampant in his clubhouse for decades and stood by as McGwire lied about how$_{\text{HIGH}}$ he never used. (=55, chap.4, Nye 2013)

b. *Tony LaRussa ist derselbe Mistkerl, der jahrzehntelang zuließ, dass Steroide in seinem Clubhaus grassierten, und zusah, als McGwire log, wie$_{\text{HIGH}}$ er nie Drogen nahm.

That these cases do in fact denote utterances (at least in one reading) is supported by the fact that they may be labelled as an utterance, which would be inadequate in the case of states or events. For example, (31a) can be continued by *His utterance/statement was immediately brought to the attention of the judge*. Another indication of an utterance-like status is that indexical expressions may, at least in some contexts, be shifted. In (34) *the year before* can easily be understood as the year before the utterance of the staff member, and in (35) *Christmas* can be understood as the next Christmas seen from the perspective of the agent of the matrix clause. Finally, it has to be noted that, since for utterances there is no restriction to particular contents, there may be English examples in which the complements appear like genuine propositions but in fact express utterances. This includes Legate's tooth fairy example repeated in (36), where the complement of *tell* may denote an utterance rather than a fact.

(34) An enthusiastic staff member explained how$_{\text{HIGH}}$ the year before the building had been renovated from scratch.

(35) He boasted (about) how$_{\text{HIGH}}$ he'd not be caught before Christmas.

(36) They told me how$_{\text{HIGH}}$ the tooth fairy doesn't really exist.   (=1, Legate 2010)

In German, the list of verbs licensing depictive complements also includes some verbs of communication: *erzählen*, *berichten*, *beschreiben*, *schildern* ('tell', 'report', 'describe', 'portray'), see (17). This raises the question of whether the complements of these verbs may also denote utterances. Testing nominal labels provides evidence against this idea. It seems inadequate to refer to the event in (37a) as an utterance or statement instead of a narration or an event, see (37b). Moreover, although German *erklären* ('explain') is also ambiguous between a content-of-theme and a content-of-utterance reading, the utterance reading cannot embed depictive manner complements, as is evidenced by the contrast between (38) and (39).

(37) a. Sie erzählten, wie$_{HIGH}$ die Zahnfee den Kindern Geschenke brachte.
          'They told me how the tooth fairy brings presents to the children.'
      b. An *diese Aussage /*diese Behauptung /diese Geschichte / diese Begebenheit erinnerten sich die Kinder noch lange.
          'The children remembered this statement /this assertion /this story / this event for a long time.'

(38) a. […] He explained how$_{HIGH}$, like Wanda, he tries very hard not to counter rudeness with rudeness. (=24a, Legate 2010)
      b. … but his statement/utterance was drowned out by the sound of a passing freight train.

(39) Er erklärte mit leiser Stimme, *wie$_{HIGH}$ er sich Mühe gab Grobheit nicht mit Grobheit zu beantworten.
      'He explained in a low voice that / how he tried not to counter rudeness with rudeness.'

The approaches found in the literature characterize the embedding matrix verbs and the type of depictive manner complements in different ways. Legate (2010), for English, lists a selection of fine grained predicate classes from Levin (1993). Nye (2013) characterizes the class of English matrix verbs as containing cognitive factives (*know, remember, admit, see,* …), emotive factives (*regret,* …) and communication verbs (*tell, say, report,* …). For German, we presented in Umbach et al. (2021) the list in (17) and argued that depictive manner complements generally denote events. Liefke (in this volume) focusses on experiential attitude verbs, while distinguishing between eventive (in German) and eventive or factive (English) complement denotation. Finally, Jarvis (2022) claims for English that embedding predicates are generally *responsive*, denoting interrogative-like clauses. All authors mention verbs of communication without, however, considering the possibility that depictive complements may denote utterances.

The difference concerning the extent to which experiential verbs in English license depictive complements as compared to German ones is obvious. We think, however, that the major division line between English and German is the one between experiential verbs on the one hand and verbs denoting utterances on the other. Semantically, we will interpret English depictive complements of experiential verbs as denoting situations (including states), while German depictives are restricted to events, i.e. dynamic situations.[5] But moreover, English depictive complements may also denote utterances, which is not possible in German.

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[5] We are aware that this classification is overly strict – there are cases in German denoting states, see (24b). This is no problem for the semantic approach in section 4, but it leaves the question open of what the reason

Interestingly, the difference in distribution is matched by a significant difference in frequency: While in German the majority of depictive uses is found with perceptions verbs, the majority of depictive uses in English is found with utterance and cognitive verbs – speech and thought.[6]

Even more interesting is the observation that Basque subordinated *nola* 'how' clauses in their depictive reading also occur with utterance verbs. Some authors, e.g. Ortiz de Urbina (1999), in fact claim that non-manner *nola* clauses are restricted to "*de dicto* readings", that is, denote utterances. Irurtzun (this volume) shows that while these clauses naturally occur with utterance verbs – he gives *esan* 'say' and *azaldu* 'explain' as examples – they can also be introduced by experiential verbs like *ikusi* 'see', *gorroto* 'hate' and *ohartu* 'realize'. This supports the ide that depictive manner complements in English may denote utterances and suggests that their distribution in English and Basque may be similar. We consider this topic to be an exciting one for future research, see the conclusion, section 5.

2.3   Factivity

One important aspect in the analysis of depictive manner complements is factivity. According to Legate (2010), the content of depictive complements is presupposed. Nye (2013) even argues that factivity is the defining characteristic of depictive uses; even for predicates which do not impose factivity on *that* clauses, like *tell*, the corresponding depictive uses are factive according to Nye, for example, Legate's tooth fairy example in (6). Nye concedes, however, that there are cases which are clearly not factive, see her example in (40). This is explained by assuming that factivity is suspended in some contexts.

(40)   She's always telling me how she's never been abroad, but I know it's a lie.
        (footnote p. 165, Nye 2013)

Liefke's approach (in this volume) is based on the idea that complement clauses introduced by *how* are three-way ambiguous: in addition to their regular manner reading there is an eventive reading as well as a factive one. Factive readings, in Liefke's analysis, are brought about by verbs that are presuppositional in the sense of Kastner (2015)[7], and also by communication verbs. Furthermore, while manner as well as eventive readings in Liefke's analysis receive a question denotation, factive readings denote *minimal exemplifiers* in the sense of Kratzer (2020), and are assumed to be true at the default evaluation point (roughly, the actual world).

Umbach et al. (2021) started their analysis of depictive uses in German by considering the criteria for perception in Barwise (1989): direct perception, epistemic neutrality, and veridicality. We found that *sehen* /*see* entails direct perception when embedding depictive (eventive) uses, which is not the case in declarative complements, compare (41a,b). While in (41b) indirect evidence would be sufficient – Anna may, e.g., see clothing scattered across the room – (41a) as well as the bare infinitive in (c) entail that Anna actually saw Berta.

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for the observed difference is. Liefke (in this volume) assumes that German *wie* does not have an interpretation involving an informational minimalizer (which is the core of her factive interpretation of declarative-like *how*). But there is no explanation why this is the case.

One explanation would be that in German the progressive is very restricted, and since eventive *wie* has the semantic effect of a progressive (see Umbach, Hinterwimmer & Gust 2021), it might have specialized on the role of the progressive.

[6] This is the reason why the corpus study by McCormick (2018) on the use of *how* instead of *that* is based on *say, tell, report* and *think*.

[7] More precisely: positive presuppositional verbs, excluding verbs like *deny.*

(41) a. Anna sah, *wie*_{high} Berta ihre Tasche packte.
          'Anna saw how Berta was packing her bag.'

      b. Anna sah, dass Berta ihre Tasche packte.
          'Anna saw that Berta packed her bag.'

      c. Anna sah Berta ihre Tasche packen.
          'Anna saw Berta pack her bag.'

Barwise's second feature is epistemic neutrality: Does the agent know what she is seeing? Bare infinitives are epistemically neutral, since (41c) will be true even if Anna does not realize that Berta is packing her bag. In contrast, neither depictives nor declarative clauses are epistemically neutral, because (41a) and (b) entail that Anna recognizes Berta's activity as packing a bag. Finally, veridicality applies if the sentence entails the truth of the complement. When embedded under perception verbs, depictive uses (as well as declarative complements and bare infinitives) are veridical: (41a-c) entail that Berta was packing her bag. Note, however, that for depictives, as in (41a), there is no entailment to the completion of the bag-packing – Berta might later change her mind and leave her bag half-packed.

　　　The entailment pattern of veridicality is close to factivity but it lacks the negative part. This is obvious in the case of declarative clauses, but in the case of depictives judgments are blurry. One can easily think of a context that does not entail that Berta's bag-packing actually happened, simply because Berta changed her mind and the event is incomplete, (42).

(42) Anna sah nicht, wie_{high} Berta ihre Tasche packte.
      'Anna did not see how Berta was packing her bag.'

Beyond perception verbs, depictive complements in German occur with cognitive verbs (*sich erinnern* 'remember', *vergessen* 'forget', *daran denken* 'think about') and are mostly factive (though with *sich vorstellen* 'imagine' neither declaratives nor depictives are factive). For German communication verbs embedding depictive complements, like *erzählen*, judgments are again blurry – compared to *dass*-complements *wie*-complements appear factive, but even then the speaker need not commit to the truth of the narration, see (43).

(43) Anna erzählte den Kindern, wie_{high} der Weihnachtsmann mit seinem Schlitten auf die Erde kommt und den Kindern Geschenke bringt.
      'Anna told the kids how Santa Claus comes to earth with his sleigh and brings presents to the children.'

Summing up, we do not follow Nye in considering factivity as a defining characteristic of depictive uses, neither in German nor in English. Clear cases against factivity are verbs associated with utterances – *say, tell, explain* etc. (see section 2.2), and we find it unsatisfactory to refer to presupposition suspension (Nye 2013) in the case of utterances or to the loss of factivity due to a quotative environment (Jarvis 2022). At the same time, we assume that depictive uses constitute DP-like entities (see section 3). We thus follow Kastner (2015) in distinguishing presuppositionality and factivity in the strict sense. Complement clauses may constitute DPs instead of CPs, thereby presupposing the existence of a discourse referent specified by the complement. The corresponding proposition may, but need not be true. We will argue that depictive uses of manner complements constitute DPs, and thus the corresponding objects exist as discourse referents in the common ground, but need not be

true (or realized in the case of events). Accordingly, we assume that depictive uses are presuppositional, but not factive in the strict sense.

2.4   The depictive add-on

The last set of data presented in this paper relates to the pictorial effect induced by depictive manner complements: Speakers unanimously report – for English as well as German and independent of the matrix verb – that depictive manner complements invoke a scene picturing the content of the complement clause. This effect is absent in the case of declarative *that*-clauses. Below, the findings in the literature will be recapitulated. In the semantic analysis in section 4, the pictorial effect will be accounted for in formal terms.

It is rarely claimed that depictive manner complements are fully equivalent to *that*-complements (but see the quote from Huddleston & Pullum (2002) in the introduction). Most authors mention some subtle difference in interpretation, some additional interpretative effect as compared to *that* clauses without, however, specifying the nature of this effect and how it comes about. In her paper in (2010), Legate argues that *how* is not a simple alternate to *that* showing that depictive uses of *how* complements differ syntactically from *that* complements as well as embedded interrogatives. She concludes that *how* complements behave as definite DPs with presupposed content and leaves the question "why *how* is used in the *how*-clause" and the issue of "the semantic role, if any, played by *how* in the construction" to future exploration (p. 133).

Nye (2013) builds on Legate's work while suggesting a CP instead of a DP analysis. Concerning the semantics she argues that depictive manner complements, as compared to *that* clauses, contribute additional details: "Whilst (73a) [=(44a) below] involves the simple recollection of the fact of her blushing, (73b) [=(44b)] suggests that what is recalled is not only this simple fact, but also additional details or particular idiosyncrasies of this blushing." (Nye 2013, p.175).

(44)   a.   I remembered that she used to blush whenever I said "I love you".
          b.   I remembered how_{HIGH} she used to blush whenever I said "I love you".[8]

In analyzing the additional contribution of depictive complements, she makes use of findings in Warner (1982), which are about complementation in Middle English, the data being sermons. According to Warner, there are three contexts in which *how* is used instead of *that*: narration, summary of a statement or narrative, and interpretation.[9,] Nye generalizes Warner's idea of narrativity to cases in

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[8] Nye presents this example as a depictive use of a manner complement (her CHC clauses). The example might also be understood descriptively involving degree – *how much she used to blush* – in addition to the depictive interpretation.
[9] Examples (15), (18), (20) from Warner (1982, p.180/181) demonstrating
– Narration (note that the *how* clause is marked as a quotation):
      (a) Luk seiþ þat Crist tolde how, 'A man hadde two sones; and þe ȝonger of hem seide unto his fadir, …'
      'Lukas says that Christ told how 'A man had two sons; and the younger of them said to his father, …' '
– Summary of some statement or narrative:
      (b) þis gospel telliþ how þat Crist heendly reprovede Jewis, and tolde hem þer wickide wille,to make
          hem to sorowe for þer synne.
      ' This gospel tells how that Christ graciously reproached Jewis, and told him [of] his wicked will, to
          make him lament for his sin.'
– Interpretation
      (c) Moises in boke of Genesis was moved bi God to seie þus, þat even and morewen was maad o day;
          and bi þis ordre of þes wordis God techiþ how synne wente bifore.

which the matrix verb is different from a speech verb (like *remember* in (44) above) and suggests "that the specific interpretation of CHCs [=depictive manner complements] could be better construed in terms of 'reactivation' and 'elaboration' of the presupposed content [than in terms of narrativity]." (Nye 2013, p.178). For example, the *how* clauses in (45) are covertly elaborated through reactivation of contextually accessible information, and the *how* clause in (46) is overtly elaborated by the subsequent sentence.[10]

(45)   She relished his great sea-faring lies: how_HIGH, in the moonlight, he had mistaken sea cows for mermaids; how he and many of his crew had watched the sunset over the Pacific form into a vast crucifixion scene […]. (=82, chap. 4, Nye 2013)

(46)   Luke Tubbs told how_HIGH a witness ran to his house in shock and screaming for help: He just saw a big splash and then the shark roll over in the water with the guy and then [he saw] no body or anything… (=75, chap. 4, Nye 2013)

Another work highlighting the interpretive effect of using *how* instead of *that* is McCormick (2018). This paper includes a rich set of examples extracted from the COCA corpus of depictive complements embedded under four verbs: *say, tell, report, think* (these verbs were chosen because they appear to be the most frequent ones occurring with depictive uses). McCormick takes a socio-linguistic perspective arguing that, in general, "*how* is used to invite the reader/listener into the speaker's perspective, and to create a sense of personalization of the message." and, in particular, to introduce "vivid, sensory scenes" indicative of the speaker "having been present in the situation" (p.21). Examples are given below.

(47)   One young man said how_HIGH he was literally blown off his feet as a result of the explosion. There had been reports, of course, that there was a fire at the plant but then it was about ten minutes later witnesses say that there was this massive explosion. (=35, McCormick 2018)

(48)   John Boehner got quite emotional earlier this afternoon when he said how_HIGH the Pope pulled him aside and asked him to pray for him. Well, it's a very natural thing to do. (= 39, McCormick 2018)

(49)   This week, The Denver Post reported how_HIGH Colorado homeowners lose their homes to foreclosure investors and how_HIGH foreclosures predominate in minority neighborhoods where residents often rely on high interest lenders for home mortgages. (app. p.83, McCormick 2018)

(50)   The Toronto apartment building where Edna Hamilton lived was old and dingy. As we climbed the stairs to Edna Hamilton's apartment, my winded boss said how_HIGH he hated "these airless hallways." […] There was no air conditioning, and although it was early morning, Edna Hamilton already had the Venetian blinds closed and the burgundy and green floral curtains. (=37, McCormick 2018)

'Moses in the book of Genesis was moved by God to say thus, that evening and morning was made of day; and by this order of these words God teaches how sin went before.'
Many thanks to Lukasz Jedrzejowski, Andrew McCormick and George Walkden for helping me with translation.
[10] There is a paper by Defrancq (2009) on declarative-like complements in French introduced by *comment* ('how'). Defrancq observes that these clauses describe sequences of events which together constitute an episode, which is why he calls this usage "*comment* narratif".

In German, depictive complements bring a pictorial add-on to the interpretation which is more specific than in English. It has been observed in the literature that depictive uses of German *wie*-complements, unlike declarative *dass*-clauses, characterize an event as "an ongoing process" (Vater 1975), or convey the impression of witnessing an event from an inside perspective, similar to imperfective sentences (Falkenberg 1989).

Starting from these observations, Umbach, Hinterwimmer & Gust (2021) suggest an analysis of depictive (or *eventive*, as they were called in the paper) *wie*-complements according to which they induce an imperfective-like inside perspective: The event denoted by the complement is presented as "seen from within" and may still be "in progress" (that is, be a *stage* in terms of Landman 1992).[11] For example, Anna's perception in (51) is presented as a sequence of subevents such that Berta is engaged in an activity which, under normal circumstances, will lead to Berta having packed her bag.

(51) Anna sah, *wie*HIGH Berta ihre Tasche hastig packte.
      'Anna saw how Berta hastily packed her bag.'

Summing up, even though most authors mention some additional interpretative effect evoked by depictive manner complements, their characterization varies. While Nye describes the effect as an elaboration, McCormick speaks of sensory experience and personalized perspective, and Umbach, Hinterwimmer & Gust refer to imperfectivity. These ideas converge in assuming that the content given in the complement is detailed in some way: In the elaboration account it is detailed by reactivation of memories or subsequent statements. According to the sensory experience and personal perspective account, the addressee is invited to view the scene as if she had been present in the situation. Finally, the imperfectivity idea includes both, elaboration – the sequence of subevents – and perspective: the event is presented as seen "from within".[12]

2.5   Summary of the data

The data presented in this section illustrate, on the one hand, the contrast between the descriptive (regular manner) reading and the depictive (declarative-like) reading of manner complements and, on the other hand, the contrast between depictive manner complements and declarative clauses.

Four criteria were presented distinguishing descriptive and depictive readings: accenting, clarification questions, continuations and the position of the manner adverb. These criteria apply to German and English alike. Next, we considered the matrix verbs licensing depictive manner complements and the type of complement denotation. The range of licensing verbs in English is significantly broader than in German: While in German they are restricted to perception and cognition, in English they include, on the one hand, further experiential verbs (in addition to perception and cognition) and, on the other hand, verbs that (in at least one reading) denote utterances, which are excluded in German. Accordingly, while German complement clauses mostly denote dynamic situations / events, English complements may denote arbitrary situations (dynamic as well as stative) and also utterances.

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[11] This is not meant to say that *wie* in depictive uses is a progressive operator analogous to progressive morphology in English. Imperfectivity is grammatically unmarked in German, simple tenses are indeterminate between a progressive and non-progressive interpretation.

[12] The idea that depictive manner complements refer to a sequence of subevents is also found in Defrancq's (2009) paper on French *commen*t ('how'), see footnote 10.

Concerning factivity, we assume that depictive uses are presuppositional in the sense of Kastner (2015), presupposing a corresponding discourse referent in the common ground. But they are not necessarily factive. This corresponds to their analysis as DPs (see next section).

Finally, we considered the pictorial effect induced by depictive manner complements, in English as well as in German: Depictive manner complements invoke a scene picturing the content of the complement clause. This effect is absent in declarative *that*-clauses. It will be the core point in the formal semantic analysis presented in section 4.

3   Syntax

From a syntactic point of view, complement clauses headed by manner wh-words like German *wie* and English *how* are either interrogative clauses or free relative clauses. When embedded under interrogative verbs like *ask* and *fragen,* they are manner interrogatives clauses and thus allow only for a descriptive reading, see (16). Otherwise, they are free relative clauses and may have either a descriptive or a depictive reading.

We consider interrogative clauses as CPs hosting a feature Q; the manner wh-word is base-generated in a low (verb-adjacent) position and moved to the specifier of CP, see (54). In the rest of this paper, interrogative clauses will be ignored. Manner complements – descriptive as well as depictive ones – are analyzed as free relatives clauses (following Legate 2010, contra Nye 2013). If they are descriptive, the wh-word is base-generated in a verb-adjacent position and moves to the specifier of CP. This is the reason why descriptive free relatives do not normally include an overt verb-adjacent manner modifier, see (13c,d) in section 2.1,. For depictive free relative clauses, we follow Legate (2010) again in assuming that the wh-word is base-generated in situ as a specifier of CP. The verb-adjacent manner position can thus be filled by overt manner modifiers, which is what we use as a test for separating the two readings (section 2.1).

To account for their DP-like status, free relative clauses are standardly assumed to be headed by an empty determiner, and the ontological type of the DP is assumed to correlate with the meaning of the wh-word, see Caponigro (2004). In the descriptive case, this idea is straightforward: Free relative clauses in their descriptive use denote manners. In the depictive case, the correlation between the type of the DP and the meaning of the wh-word is lost since depictive complements denote either situations (including dynamic events) or utterances (section 2.2). This mismatch has been taken as indication of a reanalysis of the wh-word as a declarative complementizer which is a specifier of CP, see e.g. van Gelderen (2015). In contrast, Nye (2013) considers the wh-word in depictive uses to be base-generated in a C head position thereby stressing its complementizer-like role. She argues for a CP analysis of depictive complements (*complementizer how clause,* CHC, in her terminology), while admitting that "despite its complementiser(-like) function, *how* in CHCs remains a wh-expression in a syntactically relevant sense". (p. 180)

We do not concur with this view. Our key argument against an analysis of depictive uses as declarative-like CPs is their semantics – there is strong evidence that manner plays an important role even in the depictive reading (up to the point that the descriptive and the depictive reading are sometimes barely distinguishable). Moreover, as shown in section 2.3, depictive uses differ from plain declaratives in being presuppositional in the sense of Kastner (2015). Following Kastner, complements with a presuppositional status require a DP-like analysis even if they look like plain declarative CPs (Kastner considers only *that*-clauses). This is good reason to assume a DP-like analysis of depictives analogous

to descriptive free relative clauses, even though the former are not free relative clauses in the strict sense because there is no gap abstracted over and no correlation of wh-word meaning and the semantic object denoted by the complement clause. We will nevertheless subsume them under the notion of *free relatives.*

In (52) – (56), the syntactic variants of complement clauses headed by *wie / how* are shown. The interrogative use is analyzed as a CP. Descriptive and depictive complements are analyzed as DP-like structures and are nearly identical: In both structures the manner wh-words *wie / how* are in the specifier of CP. The only difference is that in the descriptive use, there is a trace of the wh-word in the manner base position adjacent to the verb while in the depictive use it is base-generated in the specifier of CP.

We mark descriptive and depictive free relatives by silent determiners Δ (following Kastner's proposal for presuppositional complements), indicating the reification of the free relative into an object. The silent determiner will be indexed by the semantic type of the DP object: In the descriptive case, the object is a manner, Δ_M; in the case of German depictives (i.e. eventives in the terminology in Umbach et al. 2021) the object is a dynamic situation/event, Δ_E; in the case of English it is either a situation (static or dynamic), Δ_S, or an utterance Δ_U.

(52) *wie/how* **interrogatives**
   a. (Frieda fragte,) wie$_{LOW}$ Georg das Fahrrad reparierte.
   b. Frieda asked how$_{LOW}$ George repaired the bike.
   c. [$_{CP}$ *wie*$_{LOW\_i}$ / *how*$_{LOW\_i}$ [$_{C'}$ Q [$_{VP}$ George t$_i$ the-bike-repaired]]]

(53) **descriptive manner complements**
   a. (Frieda sah,) wie$_{LOW}$ Georg das Fahrrad reparierte.
   b. (Frieda saw) how$_{LOW}$ George repaired the bike.
   c. [$_{DP}$ Δ_M [$_{CP}$ *wie*$_{LOW\_i}$ / *how*$_{LOW\_i}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George the-bike-repaired t$_i$]]]]

(54) **depictive manner complements in German: dynamic events**
   a. (Frieda sah,) wie$_{HIGH}$ Georg das Fahrrad reparierte.
   b. [$_{DP}$ Δ_E [$_{CP}$ *wie*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George the-bike-repaired]]]]

(55) **depictive manner complements in English: situations**
   a. (Frieda remembered) how$_{HIGH}$ George was a skilled mechanic.
   b. [$_{DP}$ Δ_S [$_{CP}$ *how*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George be-a-skilled-mechanic]]]]

(56) **depictive manner complements in English: utterances**
   a. (Frieda told me) how$_{HIGH}$ George repaired the bike.
   b. [$_{DP}$ Δ_U [$_{CP}$ *how*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George the-bike-repaired]]]]

4   Semantic analysis

The semantic analysis of descriptive and depictive manner complements proposed in this paper includes four key points:

(i)   As for syntax, we assume that, while in descriptive complements the wh-word *how*/*wie* is base-generated in a low position within the VP, in depictive complements it is base-generated in a high position in the left periphery (see sect. 3).

(ii)   The manner wh-words *how* and *wie* have the same meaning across the two uses of manner complements: They denote similarity with respect to relevant features. Manners are understood as similarity classes of events (see sect. 4.1 below).

(iii) Semantically, the wh-words introducing manner complements are manner modifiers, regardless of whether based generated in a low position (descriptive use) or a high position (depictive use). A low manner modifier combines with the event type, basically by intersection – this is regular restrictive manner modification. In the high position, the modifier combines with the token, which is necessarily non-restrictive (section 4.3).

(iv)   A high manner modifier invokes a *similarity cloud*: a set of situations or utterances similar to the modified token. Though this has no truth-conditional impact, it serves as a cue triggering the depictive add-on described in section 2.4.

In section 4.1 we will briefly introduce the notion of similarity reducing technical details to a minimum,[13] and explain the reconstruction of manner objects as similarity classes. In section 4.2, the idea of similarity clouds will be presented. Finally, in section 4.3, the semantic interpretation of manner complements – descriptive as well as depictive ones – will be shown in detail.

4.1   Manner via similarity

In cognitive science, similarity has long been recognized as fundamental in explaining cognitive skills like perception, classification and learning. Following Quine, "… there is nothing more basic to thought and language than our sense of similarity; our sorting of things into kinds." (Quine 1969, p. 116). Surprisingly, however, similarity has rarely been considered as a semantic notion. Umbach & Gust (2014) developed an approach putting similarity to use in semantics as a relation of indistinguishability with respect to contextually given features.[14] This relation is implemented with the help of multi-dimensional spaces in a "generalized degree semantic" fashion (see below).

Similarity is encoded in various linguistic expressions. Umbach & Gust (2014) started from demonstratives (German *so/solch*, English *so/such*). The analysis was extended to adjectives (*gleich* / *same* and *ähnlich* / *similar*) and to the use of *wie* / *like* in exemplification (*eine Stadt wie Berlin* / *a city like Berlin*) and manner comparison (*Anna tanzte so wie Berta* / *Anna danced like Berta did*). It is not claimed that all similarity expressions are fully congruent – there are, in fact, significant differences within and across languages. Still, some variant of similarity is the basic ingredient of all of these expressions and the implementation leaves sufficient room to account for variations (see Umbach & Gust 2021).

Similarity

The similarity relation is implemented as a 3-place relation, SIM(x, y, $\mathcal{F}$). Variables *x* and *y* represent items to be compared and $\mathcal{F}$ is a contextual parameter called *representation* including, among other

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[13] The full formal framework can be found in Gust & Umbach (2021).
[14] Thus similarity is implemented as a 3-place relation, with two entities to be compared and a set of features of comparison (slightly simplified).

things, the relevant dimensions of comparison. This relation is spelt out in a framework including *multi-dimensional attribute spaces* (defined by n dimensions of arbitrary scale types - metric, ordinal or nominal) and *generalized measure functions* mapping individuals and events to points in attribute spaces. The similarity framework is a generalization of the degree semantic approach in, e.g., Kennedy (1999): While in degree semantics adjectival measure functions map individuals to degrees on a single ratio scale, in the similarity framework generalized measure functions map individuals to points in multiple dimensions of arbitrary scale types.

The similarity framework contains one further component that does not exist in degree semantics: there are *classifiers* defined as predicates over points in attribute spaces. Classifiers determine granularity by providing a "grid": given a set of classifiers, points to which the same classifiers apply are considered as indistinguishable. Similarity is defined by indistinguishability with respect to a representation $\mathcal{F}$ (including dimensions of comparison and classifiers): Two individuals or events count as similar if and only if the points they are mapped to are indistinguishable. For details see Umbach & Gust 2014 and Gust & Umbach 2021.

Consider the manner equative comparison in (57). In the similarity analysis, the *wie* clause providing the standard of comparison is interpreted as a free relative, i.e. a DP denoting a set of events similar to Berta's dancing with respect to particular features of comparison. It will be argued that descriptive manner *wie*-complements have exactly the same interpretation as standards in equative comparison – *wie Berta tanzte* – they are DPs denoting sets of events similar to Berta's dancing, see (58). [15]

(57)   a.   Anna tanzte so wie Berta tanzte.
            'Anna danced like Berta danced.'

(58)   a.   [Anna sah / Anna tanzte so] wie Berta tanzte.

       b. $[[wie]] = \lambda e.\ \mathcal{M}_{SIM}(e) = \lambda e.\ e \in \{e' |\ sim(e', e, \mathcal{F})\}$[16]
       c. $[[\ [_{DP}\ \emptyset\ [_{CP}\ wie_{\overline{M}\_i}\ [_{C'}\ \emptyset\ [_{VP}\ Berta\ dance\ t\_i]]]]\ ]]$
            $= \lambda e.\ \iota\mathcal{M}_{SIM}.\ dance(e)\ \&\ ag(e, berta)\ \&\ \mathcal{M}_{SIM} = \{e' |\ sim(e', e, \mathcal{F})\}$

A similarity class[17] $\mathcal{M}_{SIM}$ in (58b, c) contains the events whose images are indistinguishable in the multidimensional space given by $\mathcal{F}$. Think of tango dancing and assume that relevant dimensions are LEVEL, STYLE, NUMBER OF DECORATIONS (with scale types *ordinal*, *nominal*, *metric*). Now suppose that Berta's dancing is high level Milongero style, and includes five decorations. So it is mapped to the point <high level, Milongero, 5>. Suppose, moreover, that there is a classifier – let us call it STYLISH* – conflating advanced and high level while requiring the number of decorations to be more than three. Then the class of dancing events similar to Berta's dancing – *dancing like Berta* – includes all events mapped to points within the range of STYLISH*. (For a detailed example see Umbach, Hinterwimmer & Gust 2021)

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[15] The composition of the *wie*-clause with the parameter part of an equative comparison is shown in Umbach, Hinterwimmer & Gust (2021)
[16] $\mathcal{M}_{SIM}$ and $\mathcal{F}$ are variables, for details see (60) and (61) below.
[17] We use the term *similarity class* although they are just sets because the term is established in the literature on similarity and conveys the idea of classification.

Manners

There is a longstanding dispute in the literature about how to understand the notion of manner: Do manners denote properties of events or are they primitive ontological entities? Do they exist independently of a specific event? How are they related to an event? etc. (for a comprehensive overview see Pinon 2008). The common way of talking about manners in the current literature is such that manners are primitive entities, there are functions from events to manners, and adverbs are predicates on manners. An example along the lines of Schäfer (2013) is shown in (59b). In (59c), in contrast, the concept of manner is spelt out in the similarity framework. If you think of Schäfer's manner function M-DANCE in (b) as a generalized measure function and the variable m as ranging over points in attribute spaces, then (b) corresponds to (c). This is meant to demonstrate that the similarity approach to manner is a conservative extension preserving the structure of the standard approach.

(59) a. Berta danced stylishly.

  b. $\exists e.$ dance(e) & agent(e, anna) & $\exists m.$ M-DANCE (e, m) & stylish(m)

>   (where M-DANCE is a functions from dancing events to manners and *stylish* is a predicate on manners)

  c. $\exists e.$ dance(e) & agent(e, anna) & $\exists m'.$ μ_{dance}(e) = m' & STYLISH*(m')

>   (where μ_{dance} is a generalized measure function mapping dancing events to points in LEVEL×STYLE× DECORATION and STYLISH* is a classifier)

The interpretation of manner wh-words raises the question of what the domain is that these wh-words range over. We prefer thinking of their domain as consisting of similarity classes: sets of all events for which the measure function yields indistinguishable values, see (60). (For details see Umbach et al. 2021.)

(60) {e' | sim(e, e', $\mathcal{F}$) }   where $\mathcal{F}$ is a free variable including relevant dimensions of comparison plus suitable generalized measure functions and classifiers providing granularity

In order to keep formulas manageable we will write similarity classes as variable functions taking the element they are created over as an argument, as shown in (61) (where o stands for situations or events or forms of utterances). The $\mathcal{F}$ parameter representing relevant features of comparison is a free variable to be resolved by the context. Note that truth conditions in (61) are trivial, since the similarity relation is reflexive. The benefit of the function lies in creating the corresponding similarity class.

(61) $\lambda o.$ $\mathcal{M}_{SIM}$(o)   where $\mathcal{M}_{SIM}$ is a function variable such that $\mathcal{M}_{SIM}$(o) is true iff o $\in$ {o' | sim(o, o', $\mathcal{F}$) }

Reconstructing manners as similarity classes of events may seem unnecessarily complex at first glance. The crucial advantage of this approach in the interpretation of manner wh-words is that it makes it possible to formally reflect the insight that the high wh-word *how/wie* in depictive manner complements still stands for a manner.

4.2   Depiction by similarity clouds

As shown in section 4.2, there is agreement in the literature that depictive manner complements have an interpretive effect which can be described as invoking a scene picturing the content of the complement clause – this is what we termed a pictorial add-on. There are, however, no explanations to be found in the literature as to how this effect comes about and how to capture it in semantic terms. We propose an explanation according to which it is brought about by two components: (i) the similarity meaning of the manner wh-word (*how/wie*) and (ii) the high syntactic position of the wh-word. These two components collaborate in creating what we name a *similarity cloud*, which can be seen as representing depictions.

Before looking at the two components in detail, recall that *how/wie* are *wh*-words, that is, mere placeholders. Instantiations are restricted to manners, but this is all we know. Take a standard descriptive manner complement as in *Anna saw (the way) how Berta prepared the soup.* We learn from this sentence that the way of soup preparing is at issue in the discourse, but we learn nothing particular about Berta's action. If the speaker wants to give details she has to add, e.g., a *namely* continuation (*…namely by adding ginger and turmeric*).

The first component of our analysis is the reconstruction of manners as similarity classes (see 4.1). The similarity interpretation of the wh-words *how/wie* (in descriptive as well as depictive complements) is shown in (62).

(62)   [[how]] = [[wie]] = $\lambda e.\ \mathcal{M}_{SIM}(e)$

The second component is the high syntactic position of the wh-word. As argued in section 3, the wh-word is base-generated in situ, as a specifier of CP, and the resulting DP denotes a situation or dynamic event, or an utterance. Regardless of its base-position, the wh-word is interpreted as a manner modifier. When in a low position, the modifier combines with the event type by intersection – this is regular restrictive manner modification. For the high position, we follow Carlson (2003) in assuming that, while the lexical projection of a major phrase contains only type information, in higher functional projections only token information is available. Thus, the high manner modifier non-restrictively combines with a token (analogous to non-restrictive modification of definites, see Fabricius-Hansen 2020).

It has to be kept in mind, though, that the manner modifier is given by a wh-word. In the descriptive case the DP resulting from reification of the free relative clause represents a manner and may later be specified, for example, by a *namely* continuation. In contrast, in the depictive case the DP represents a situation, event or utterance. As a consequence, the manner contributed by the wh-word is not accessible for specification in the matrix clause, e.g., by a *namely* continuation, and does not enter into further semantic composition. This is what we would expect from a non-restrictive, that is, appositive modification (see Potts 2005).

Non-restrictiveness and similarity collaborate in the interpretation of depictive manner complements in creating what we call *similarity clouds*: Modifying a situation token by an unspecified manner is equivalent to saying that there is a manner applying to the situation, which is plainly trivial. This does not change if manner is reconstructed by similarity: Since the similarity relation is reflexive, a situation token *s* is necessarily contained in a set of situations similar to *s*. Does this mean that the role of the high wh-word boils down to expressing a triviality? From a logical point of view, it does. But there is an effect arising from the mere mention of a similarity class: We are made aware of the fact

that the token situation *s* is embedded in a "similarity cloud" of situations deviating only marginally from *s*.

(63)   *similarity cloud triggered by token s*:   {s'| sim(s, s', $\mathcal{F}$)}   (or equivalently $\mathcal{M}_{SIM}$ (s))

Our claim in this paper is that the pictorial add-on observed for depictive manner complements is due to the similarity cloud embedding the situation (or event or utterance) expressed in the complement, where the high manner wh-word is the trigger invoking the cloud. Similarity clouds can be seen as depictions of a situation, since they exhibit the core characteristics of adjunct depiction, which are (a) similarity and (b) non-restrictiveness, see Clark (2016). However, compared to standard cases of gestural depiction, the depictor is not given by a gesture but instead by a *wh*-pronoun which does not contain any specific information.[18]

In section 2.2 and 3 we distinguished three categories of depictive manner complements: those referring to situations in general, those referring in particular to dynamic events, and those referring to utterances. In the case of situations in general, the content of the complement clause is interpreted as denoting a minimal situation (in the sense of Kratzer 2020). For instance, a minimal situation of a dog barking is a situation containing nothing else than what is strictly required to make the proposition *A dog is barking* true, i.e. a situation containing nothing else than an individual that has the property of being a dog and an event of barking whose agent is that dog. The similarity cloud triggered by a minimal situation consists of situations containing some additional enrichments, i.e. situations that make more detailed descriptions true. A similarity cloud triggered by a minimal situation of a dog barking, for instance, includes situations of a big black dog barking angrily, a small brown dog barking hysterically etc.

(64)   similarity cloud triggered by a minimal situation *s* :
          $\mathcal{M}_{SIM}$ (s)   where for all s' $\in \mathcal{M}_{SIM}$ (s): s $<_{part}$ s'

In the case of dynamic events the minimal situation is given by the basic event (see Kratzer 2020). The similarity cloud of an event – this is evidenced by the German data – includes various courses of performing the event, that is, sequences of subevents implementing the event. This is the reason why, in German, depictive manner complements give the impression of a process (see section 2.4). To capture this intuition we define: *e'* is stage of *e* (e'$\leqslant$e), iff *e'* is a (maybe not fully developed) course of events leading to *e*. Importantly, this entails that *e* $<_{part}$ *e'* , since *e'* is more detailed than *e* spelling out a possible course of events implementing *e*. Therefore, similarity clouds triggered by basic dynamic events are a subtype of those triggered by minimal situations.

(65)   similarity cloud triggered by a basic event *e* :
          $\mathcal{M}_{SIM}$ (e)   where for all e' $\in \mathcal{M}_{SIM}$ (e): e'$\leqslant$ e

Finally, in the case of utterances, the denotation of the complement includes the form as well as the meaning of the utterance. We follow Potts (2007) in considering utterances not just as strings. However, in contrast to Potts, we don't use triples of phonological, syntactic and semantic

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[18] Many thanks to the reviewer who urged us to explain what the depictor in depictive manner complements is – it is just the wh-word *how/wie* and, different from gestures, there is no content.

representation but instead tuples of form and meaning, <FORM, SEM>. FORM represents the way the utterance is performed, including a string in a particular language, but also the particular voice and accompanying gestures etc.; SEM represents the meaning of the utterance, which can be any type of (assertive) statement, and FORM(u) denotes SEM(u).[19]

(66)   Utterance u:= <FORM, SEM>
            where FORM(u): the way the utterance is performed
                    SEM(u):   the meaning of the utterance
            and FORM(u) denotes SEM(u)

Similarity clouds triggered by utterances are such that the elements of the cloud vary over forms while the meaning is preserved (modulo entailment). Since there is no "minimal form" available – the linguistic form of the complement cannot be considered as a minimal form because indexicals are shifted – , we assume that for any utterance *u* with meaning *SEM(u),* there is a form parameter *FORM(u)*. Then, the similarity cloud of an utterance *u* is defined as shown in (67).

(67)   similarity cloud triggered by an utterance *u*
        $\mathcal{M}_{SIM}$ (FORM(u))   where for all f' $\in \mathcal{M}_{SIM}$ (FORM(u)): f' denotes φ & φ entails SEM(u)

We assume that, analogous to situations and dynamic events, the pictorial add-on observed for utterance denoting manner complements is due to a similarity cloud. This idea establishes a direct link to the demonstration theory of quotation in Clark & Gerrig (1990). Clark considers *depicting* as a basic means of communication in addition to *describing* and *indexing*, and follows Goodman (1968) in assuming that depictions, like paintings and sculptures, resemble their referents, whereas descriptions do not. In language use depictions occur most prominently as speech-accompanying gestures (see, e.g., Clark 2016) but also by way of quotation: Following Clark & Gerrig (1990), quotations are demonstrations depicting the original utterance in relevant aspects rather than describing it. Our analysis of utterance denoting manner complements as triggering similarity clouds of forms perfectly matches with Clark & Gerrig's theory of quotation.

Another link between manner modification, quotation and iconicity is established by Kathryn Davidson (2015). Davidson compares iconicity found with quotation (in English and in ASL) to that found with ASL classifier predicates.[20] She argues that quotation as well as classifier predicates incorporate their iconic elements via event modifying demonstrations in the sense of Clark & Gerrig introduced in English by, e.g., the quotative marker *be like*, and in ASL by *role shift*. Starting from this idea, Ebert & Hinterwimmer (2020) propose an account for *be like* constructions in spoken language, which is based on similarity of the demonstrated event with the actual event that took place, and is derived from Ebert & Ebert's (2014) and Ebert, Ebert & Hörnig's (2020) account of gesture semantics.

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[19] We use FORM and SEM here to select the components of the utterance. Note that the situation denoted by SEM(u) should not be confused with the situation in which an utterance is performed (which is usually called *utterance situation*).
[20] Classifier predicates in sign languages are also known as *depictive verbs* and are verbs including iconic information about the way an event is performed (e.g., how a ball is thrown).

4.3 The semantics of manner complements

The semantic analysis of descriptive and of depictive manner complements includes the following features:

1. Following Kratzer (2006) and Moulton (2009), we assume that verbs embedding manner complements have a content argument in addition to their event argument. The content is DP-like in nature and corresponds to the silent determiner introduced in syntax. Descriptive manner complements in German as well as English denote manners, indicated by Δ_M. Depictive complements in German denote dynamic events, Δ_E, whereas in English they denote either situations (subsuming dynamic events), Δ_S, or utterances, Δ_U. We postulate that $\Delta_E \subset \Delta_S$ and $\Delta_S \cap \Delta_U = \varnothing$.

2. The manner wh-words *how* and *wie* have the same meaning across the two uses of the complements: They express similarity with respect to relevant features; wh-manner-modifiers are reconstructed as similarity classes indicated by functional variable $\mathcal{M}_{SIM}$ (see sect. 4.1).

3. In descriptive complements the *wh*-words *how/wie* are base-generated in a low position combining with the event type by intersection; in depictive complements they are base-generated in a high position combining non-restrictively with the situation or utterance token, thereby creating a similarity cloud (sect. 4.2).

The interpretation of descriptive complements is straightforward:[21] The manner wh-word denotes a function variable over similarity classes, (69a); the low manner modifier combines with the event predicate by intersection, that is, restrictively, (69b); movement to the left periphery triggers lambda abstraction over $\mathcal{M}_{SIM}$ (analogous to the analysis of standard relative pronouns like *who*, see Heim & Kratzer 1998) and the iota operator induced by the silent determiner Δ_M turns the clause into a DP-like manner object, (69c), which is the content of the matrix event, (69d).

Descriptive manner complements
(68) a. (Frieda saw) how$_{LOW}$ George repaired the bike.
      b. [Frieda see [$_{DP}$ Δ_M [$_{CP}$ how$_{LOW\_i}$ [$_{C'}$ $\varnothing$ [$_{VP}$ George bike-repair t$_{\_i}$]]]]]

(69) a. [[*how*]] $= \lambda e. \mathcal{M}_{SIM}(e)$

      b. [[[$_{VP}$ George bike-repair how$_{LOW\_i}$]]]
          $= \lambda e.$ ag(e, george) & bike-repair(e) & $\mathcal{M}_{SIM}(e)$

      c. [[[$_{DP}$ Δ_M [$_{CP}$ *how*$_{LOW\_i}$ [$_{C'}$ $\varnothing$ [$_{VP}$ George bike-repair t$_{i}$]]]]]]
          $= \lambda e. \iota\mathcal{M}_{SIM}.$ ag(e, george) & bike-repair(e) & $\mathcal{M}_{SIM}(e)$

      d. [[[Frieda see [$_{DP}$ Δ_M [$_{CP}$ *how*$_{LOW\_i}$ [$_{C'}$ $\varnothing$ [$_{VP}$ George bike-repair t$_{i}$]]]]]]]
          $= \exists e'. \exists e.$ see (e') & ag(e', frieda) & th(e', content(e')) &
              content(e') = $\iota\mathcal{M}_{SIM}.$ ag(e, george) &bike-repair(e) & $\mathcal{M}_{SIM}(e)$

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[21] In the descriptive case there is no difference between English and German.

For depictive manner complements, we assume that in higher functional projections only token information is available (see Carlson (2003). Therefore, the high manner modifier non-restrictively combines with a token.

In (70)/(71) the semantics of Δ_S complements is shown. The manner wh-word contributes a variable $\mathcal{M}_{SIM}$ ranging over similarity classes. The content of the matrix event − what Frieda remembered − is a situation s. It is affected by non-restrictive manner modification and thereby wrapped in a similarity cloud which is supplemented by a constraint on its elements (see (64) in the previous section).

Depictive manner complements – situations

(70) a. (Frieda remembered) how$_{HIGH}$ George was a skilled mechanic.

b. (Frieda remember) [$_{DP}$ Δ_S [$_{CP}$ *how*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George skilled-mechanic]]]]

(71) a. [[[$_{VP}$ George be-a-skilled-mechanic]]]

   = λs. ag(s, george) & skilled-mechanic (s)

b. [[how]]   = λs. $\mathcal{M}_{SIM}$ (s)

c. [[[$_{DP}$ Δ_S [$_{CP}$ how$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George skilled-mechanic]]]]]

   = ιs. ag(s, george) & skilled-mechanic(s) & $\mathcal{M}_{SIM}$ (s) & $\forall$s'$\in$ $\mathcal{M}_{SIM}$ (s). s $<_{part}$ s'

d. [[[Frieda remember [$_{DP}$ Δ_S [$_{CP}$ *how*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George skilled-mechanic]]]]]]]

   = $\exists$e'. remember (e') & ag(e', frieda) & th(e', content(e')) &

   content(e') = ιs. ag(s, george) & skilled-mechanic(s) & $\mathcal{M}_{SIM}$ (s) & $\forall$s'$\in$ $\mathcal{M}_{SIM}$ (s). s $<_{part}$ s'

The semantics of Δ_E complements, that is, depictive/eventive manner complements in German, is analogous to that of Δ_S complements, except for their more specific type (dynamic events) and the constraint that elements of the similarity cloud are possible courses of events implementing the event described in the complement, i.e. the bike-repair event, see (73c,d).[22]

Depictive manner complements – dynamic events

(72) a. (Frieda sah) wie$_{HIGH}$ Georg das Fahrrad repariert hat.

b. (Frieda see) [$_{DP}$ Δ_E [$_{CP}$ wie$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George bike-repair]]]]

(73) a. [[[$_{VP}$ George bike-repair]]]

   = λe. ag(e, george) & bike-repair(e)

b. [[how]]   = λe. $\mathcal{M}_{SIM}$ (e)

c. [[[$_{DP}$ Δ_E [$_{CP}$ how$_{high}$ [$_{C'}$ $\emptyset$ [$_{VP}$ bike-repair]]]]]

   = ιe. ag(e, george) & bike-repair(e) & $\mathcal{M}_{SIM}$ (e) & $\forall$e''$\in$ $\mathcal{M}_{SIM}$ (e). e''$\leqslant$ e

d. [[[Frieda see [$_{DP}$ Δ_E [$_{CP}$ *how*$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George bike-repair]]]]]]]

   = $\exists$e'. see (e') & ag(e', frieda) & th(e', content(e')) &

   content(e') = ιe. (ag(e, george) & bike-repair(e)) & $\mathcal{M}_{SIM}$ (e) & $\forall$e''$\in$ $\mathcal{M}_{SIM}$ (e). e''$\leqslant$ e

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[22] Courses of events are, of course, not excluded as depictions in English but there is no such constraint.

Finally, in (74)/(75) the interpretation of Δ_U complements is shown. The manner wh-word ranges over classes of similar forms. The type of forms is distinct from that of individuals or events. But since we assume that forms include parameters of the utterance performance beyond mere strings, we have to leave details for future work. The content of the utterance event – what Frieda uttered – is an utterance $u = <\textit{FORM, SEM}>$. As before it is affected by non-restrictive manner modification. In the case of utterances, the similarity cloud is triggered by the form of the utterance and is constrained by the requirement that each form denotes a meaning φ that entails the meaning of Frieda's utterance u.

Depictive manner complements – utterances

(74) a. (Frieda told me) how$_{HIGH}$ George repaired the bike.

b. (Frieda tell) [$_{DP}$ Δ_U [$_{CP}$ how$_{HIGH}$ [$_{C'}$ $\emptyset$ [$_{VP}$ George bike-repair]]]]

(75) a. [[[$_{VP}$ George bike-repair]]]
   $= \lambda e.\ ag(e, george)\ \&\ bike\text{-}repair(e)$

b. [[how]] $= \lambda f.\ \mathcal{M}_{SIM}(f)$

c. [[[$_{DP}$ Δ_U [$_{CP}$ how$_{high}$ [$_{C'}$ $\emptyset$ [$_{VP}$ bike-repair]]]]]
   $= \iota u.\ u= <f, (\exists e.bike\text{-}repair(e)\ \&\ ag(e, george))>$
   $\&\ \mathcal{M}_{SIM}(f)\ \&\ \forall f' \in \mathcal{M}_{SIM}(f).\ f'\ denotes\ \varphi\ \&\ \varphi\ entails\ \text{SEM}(u)$

d. [[[Frieda tell [$_{DP}$ Δ_U [$_{CP}$ how_{high} [$_{C'}$ $\emptyset$ [$_{VP}$ George bike-repair]]]]]]]
   $= \exists e'.\ tell\ (e')\ \&\ ag(e', frieda)\ \&\ th(e', content(e'))\ \&$
   $content(e') = \iota u.\ u= <f, (\exists e.bike\text{-}repair(e)\ \&\ ag(e, george))>$
   $\&\ \mathcal{M}_{SIM}(f)\ \&\ \forall f' \in \mathcal{M}_{SIM}(f).\ f'\ denotes\ \varphi\ \&\ \varphi\ entails\ \text{SEM}(u)$

5   Conclusion

In this paper, we presented a semantic analysis of manner complement clauses in their descriptive (regular manner) and their depictive (declarative-like) reading, in English and in German. These complement clauses are interesting from a semantic point of view because it is unclear to what extent the second reading represents manner at all – actually, it is often referred to as a non-manner reading and treated on a par with declarative complements. On the other hand, however, the second reading is found with manner complements across languages, Indo-European and beyond. So there seems to be something inherent in the concept of manner facilitating this reading.

One explanation for depictive / declarative-like readings of manner complements refers to a reanalysis of the manner wh-word as a declarative complementizer. However, our data for German and English clearly indicate that these complements are not equivalent to declarative clauses because there is a pictorial effect which is absent in declaratives: depictive complements seem to invoke a scene picturing the content of the clause. From a formal-semantic perspective, this finding raises the question of what it is in the semantics of these complements that the effect is due to.

The analysis in this paper provides an explanation for the pictorial effect based on two assumptions: First, the manner wh-word acts uniformly as a manner modifier; in the descriptive reading the event

type is modified and in the depictive reading the token is modified. This difference in composition is due to the different syntactic positions of the wh-word in the two readings – within the VP and in the left periphery, respectively. Secondly, we assume that manner wh-words denote similarity and that manners can be reconstructed as similarity classes. In the case of the descriptive reading this assumption preserves the standard interpretation of manner modifiers which is basically intersective, that is, restrictive. In the depictive case modification is non-restrictive since it affects a token. Reconstruction by similarity leads to the modified token being embedded in a class of similar elements. This similarity class is unspecific since it corresponds to the denotation of a wh-word; so there is no truth-conditional effect of token modification – any token is included in arbitrary classes of similar tokens. We call these classes *similarity clouds*, and we attribute the pictorial effect observed for depictive complements to the existence of similarity clouds: They serve as cues for the addressee to think of ways picturing the content of the complement clause – ways how it could have been.

The explanation for the pictorial effect refers to the non-restrictiveness of the modification in the case of depictive complements and to the reconstruction of manner by similarity. These two components – nonrestrictive modification and similarity – are, following Clark (2016), the core characteristics of adjunct depiction. Thus the term *depictive* as a name for declarative-like manner complements is well founded in semantic theory.

The depictive analysis subsumes the eventive analysis of German *wie*-complements in Umbach et al. (2021), which are depictive in a particular way: They evoke not just scenes elaborating the basic situation but courses of subevents which constitute possible ways the event might have evolved. Accordingly, the set of embedding matrix verbs in German is narrower than in English, where not only verbs of perception and cognition, but a wider range of experiential verbs and, moreover, verbs introducing utterances are eligible.

The fact that, in English, depictive manner complements may denote utterances supports the depictive analysis: Following the demonstration theory of quotation in Clark & Gerrig (1990), quotations depict the original utterance in relevant aspects. This seems to suggest that high *how*, in English, may take the role of a quotation marker, analogous to similarity expressions like English *like* and German *so* and *wie* (Frey & Pittner in this volume).

Closeness of manner wh-words, complementizers and quotation markers has been observed from a cross-linguistic as well as a diachronic perspective, see the special issue edited by Gentens and Boye (to appear). The ability of manner wh-words to mark quotation may provide an interesting contribution to the landscape of speech reporting as described by Bary & Maier (2021). Depictive manner complements denoting utterances might take a middle ground between direct quotation (marked by quotation marks) and indirect quotation (introduced by declarative *that*). We have to leave a systematic investigation of this relationship open as a question for future research.

At the same time, the depictive analysis developed in this paper is supported by Kathryn Davidson's (2015) analysis, according to which the iconic elements in English quotation as well as the iconic elements in ASL classifier predicates are integrated into the interpretation as event modifiers. The contribution of the analysis in this paper to the recent discussion of iconicity and depiction in, e.g., Davidson (to appear) and Ebert & Hinterwimmer (2020) can be seen as a first step into capturing depictive information in formal semantics.

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